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

Wednesday, August 10, 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 & Co-Hearing Officer
Dorene D'Adamo, Board Member

Staff Present:

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

PART I

For Petitioners:

California Department of Water Resources:

James (Tripp) Mizell
Thomas M. Berliner

The U.S. Department of the Interior:

Amy L. Aufdemberge, Esq.

INTERESTED PARTIES:

For San Joaquin Tributaries Authority, The (SJTA), Merced Irrigation District, Modesto Irrigation District, Oakdale Irrigation District, South San Joaquin Irrigation District, Turlock Irrigation District, and City and County of San Francisco:

Tim O'Laughlin

APPEARANCES (Continued)

INTERESTED PARTIES (Continued)

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

Michael Jackson

For Pacific Coast Federation of Fishermen's Associations and Institute for Fisheries Resources:

M. Benjamin Eichenberg

For Clifton Court, L.P.:

Suzanne Womack

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

Alan Lilly

For State Water Contractors:

Stefanie Morris

For San Luis & Delta-Mendota Water Authority:

Daniel J. O'Hanlon

For Westlands Water District:

Philip A. Williams

For Biggs-West Gridley Water District (BWGWD), Glenn-Colusa Irrigation District (GCID), Sacramento County Water Agency, Placer County Water Agency, Carmichael Water District, and Sacramento Valley Water Users Group:

Andrew M. Hitchings

APPEARANCES (Continued)

INTERESTED PARTIES (Continued)

For Nevada Irrigation District (NID), Butte Water District (BWD), Richvale Irrigation District (RID), Anderson - Cottonwood Irrigation District, Plumas Mutual Water Company (PMWC), Reclamation District 1004, South Feather Water and Power Agency, Western Canal Water District (WCWD) and Paradise Irrigation District:

Dustin C. Cooper

For The Placer County Water Agency:

Dan Kelly

I N D E X

EXHIBITS

GLENN-COLUSA IRRIGATION DISTRICT'S EXHIBITS

MINASIAN LAW FIRM EXHIBITS:

Wednesday, August 10, 2016 9:00 a.m.

PROCEEDINGS

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CO-HEARING OFFICER DODUC: (Banging gavel.)

Good morning, everyone. It's 9 o'clock.

So welcome back to the California WaterFix Petition hearing. Again, I have to go through some general announcements.

First of all, I am State Water Board Member and Hearing Officer Tam Doduc. To my right is Board Chair and Co-Hearing Officer Felicia Marcus. To my left is Dana Heinrich, and to her left is Diane Riddle and also Kyle Ochenduszko. I expect we'll be joined shortly by Board member Dee Dee D'Adamo.

All right. We'll take a moment now, identify the exit closest to you. In the event an alarm sounds, we are required to evacuate. Please take the stairs and not the elevators down to the first floor where you will exit and meet across the street in the park. If you're not able to use the stairs, you will be directed to a protected vestibule.

This hearing is being recorded, so as you provide your testimony or comments or questions today, please speak into the microphone and begin by identifying yourself and stating your affiliation.

We have a court reporter who's present and the transcript will be made available on our website as soon as possible after the completion of Part IA. If you would like to have the transcript sooner, please make your own arrangements with the court reporter.

And we get to my most favorite part and also the most important part. Please take a moment right now and put all your devices on mute, vibrate, do not disturb. I do not want to hear one ding today. I think it will be the first day to get through a hearing without hearing a ding of some kind. The only thing I want to hear is that from the timekeeper there.

Before we assume with Miss Womack who is here -- thank you for coming back -- I believe several questions regarding procedural matters are pending.

So we will begin with Mr. O'Laughlin, and then Mr. Mizell has some as well.

MR. O'LAUGHLIN: Good morning. Tim O'Laughlin representing the San Joaquin Tributaries Authority.

Earlier in the proceeding, you made a statement, Chair Doduc, that if you weren't here for your cross-examination questions, that your turn was skipped. And I understood that, because I wasn't here yesterday, I don't have any questions.

But given the scheduling and the uncertainty

with the scheduling and appointments and everything, as long as we inform the Board staff and the Chair, I'm assuming it's okay that we may start a day later or a day earlier, depending on our scheduling, if we can work it out with other parties and if that's okay with the Board?

CO-HEARING OFFICER DODUC: That's correct, but we'd need to know ahead of time.

MR. O'LAUGHLIN: Yeah, absolutely. Part 1.

Part 2 --

CO-HEARING OFFICER DODUC: And let me also add, Mr. O'Laughlin, as long as it's not disruptive to the other parties or to the examination itself. I mean --

MR. O'LAUGHLIN: Absolutely.

CO-HEARING OFFICER DODUC: -- we're not going to go back and forth between the different panels.

MR. O'LAUGHLIN: Absolutely. Right. Right. It's just mainly trying to get to the end of the line.

Sorry. That was a joke.

Okay. Next one. Two days ago, your -- Ms. Marcus made a question or a comment or a statement or a request, and I was wondering where the followup on that was, where she suggested to DWR, the Petitioners, that they come forward with a flow proposal and a readily identifiable where the flows are coming from, who's going to be responsible, where they're coming out.

And I was just wondering if DWR was going to submit something along that line so that the people here for legal users of water can tell from the proposal where these flows are coming from, at what time, and in what fashion.

CO-HEARING OFFICER DODUC: I don't recall that, but Ms. Marcus?

CO-HEARING OFFICE MARCUS: Yeah, I don't recall that, either. I just -- I just made a comment about people being able to figure out whether they're injured or not in general.

MR. O'LAUGHLIN: Yes. And so --

CO-HEARING OFFICE MARCUS: I was thinking about the construction in particular at the time I said it.

MR. O'LAUGHLIN: Oh, okay. Well --

CO-HEARING OFFICE MARCUS: But, either way --

MR. O'LAUGHLIN: -- I'll retract that.

CO-HEARING OFFICER MARCUS: -- make your -- make your point or whatever. I just want you to be specific.

MR. O'LAUGHLIN: Well, no. I'll get to the second point, then.

So sitting here and in my office for the first part of the hearings, it's pretty obvious that basically the responses have been, "Please see the Operations

Panel" or "Please see the Modeling Group."

I mean, some questions have been answered but, for the most part, when it comes down to the question that we're here for in Part I, which is injury to legal users of water, there's been little or no substantive or relevant testimony that's been given by the Petitioners.

So now we're entering into the second part, or I'll call it Part II, where we're getting to what the nut of the matter is.

And when you look at it, we have a Draft BA that's just come out. We have 10,000 pages of EIR/EIS. We have the testimony that's been submitted. And quite honestly, having participated at the State Board proceedings for 30 years and being fairly knowledgeable but not the smartest tool in the shed, I still don't get it.

And I am sitting here, and I don't know if you're sitting here, but I haven't heard anything yet from DWR in their presentations that leads to any relevant or admissible testimony in regards to the issue that we're here for.

CO-HEARING OFFICER DODUC: And your question, Mr. O'Laughlin?

MR. O'LAUGHLIN: Well, here's my question or my statement:

So, we're going into the second part, and I realize there's time limits, and I realize it's within the Board's discretion on time limits.

But given the amount of material that we have to weigh through, and given the obfuscation by -- on these issues --

CO-HEARING OFFICER DODUC: Mr. O'Laughlin, again, your question or request?

MR. O'LAUGHLIN: Well, the request is -- Or my statement is:

The time limits or extensions for cross-examinations are probably going to have to be extended because there's a -- there's a ton of material here, and if there's not a -- What I was hoping for --

CO-HEARING OFFICER DODUC: Mr. O'Laughlin, let me keep this short.

MR. O'LAUGHLIN: Sure.

CO-HEARING OFFICER DODUC: We have -- We have said in the past, and it is our continuing practice, to provide additional time as necessary for cross-examination upon demonstration of relevance and direction and -- and all of that.

So I'm not going to cut you off at 60 minutes and that's it, unless you're, you know, wasting time.

MR. O'LAUGHLIN: Absolutely. I agree with

that.

CO-HEARING OFFICER DODUC: So, let's -- You know, let's make sure we understand that. I'm not committing to giving everyone --

MR. O'LAUGHLIN: No.

CO-HEARING OFFICER DODUC: -- unlimited time, but I recognize that efficient and productive cross-examination benefits all of us, especially this Board as we're considering these very complicated issues.

MR. O'LAUGHLIN: Yes.

CO-HEARING OFFICER DODUC: So I will grant the additional time as appropriate, as necessary, upon demonstration of relevancy and substantial, you know -- substantiation, I guess is the word I'm looking for.

MR. O'LAUGHLIN: Right. Thank you very much.

I have one -- one final question or request.

There's a re -- We have a -- two parallel processes going on here right now. One is, we're in this phase, Part I, and Part II's coming up.

I was wondering if the State Board was going to inquire of DWR, now that the reconsultation has been requested by NBS and DWR -- NBS -- by Reclamation and DWR to NBS and to U.S. Fish and Wildlife whether or not this Section 7 for the California WaterFix is still on for the time period in -- finishing time that we were told back

in April. And that's it.

CO-HEARING OFFICER DODUC: All right.

MR. O'LAUGHLIN: Thank you.

CO-HEARING OFFICER DODUC: Thank you, Mr. O'Laughlin. We'll notice that and . . .

You want to answer, Miss Riddle?

MS. RIDDLE: We just received a letter from DWR that's posted on our website giving an update on the schedule but DWR can correct, you know, that schedule if it's incorrect. But that was just fairly recently, last couple of weeks, so it's posted on our website, provides an update.

It's maybe not as specific as you would like it to be, as far as schedule goes.

CO-HEARING OFFICER DODUC: All right. Mr. Mizell, you're next.

MR. MIZELL: Thank you.

CO-HEARING OFFICER DODUC: I'll get to you, Mr. Jackson.

MR. JACKSON: Yeah.

MR. MIZELL: So, in response to David Aladjem's question on August 5th, he asked for certain citations to the draft environmental documents, and I provided those to him via e-mail last night. And I wanted to inform the Board and the public as to what the content of that

e-mail was so that everybody has reference to the documents, as we were discussing on the 5th.

So, as for information on the North Delta bypass flow criteria, that can be found in Table 3-16, Pages 3-184 through 3-186 of the Draft EIR/Draft EIS.

For storm water NPDES permit information, that can be found in Appendix 3B as in "boy," Pages 3B-20 to 3B-26 of the Recirculated Draft EIR/Supplemental Draft EIS.

And the differences between Alternative 4 in the Draft EIR/Draft EIS and Alternative 4 in the Recirculated Draft EIR/Supplemental Draft EIS can be found in two places:

One, on Page ES-16 of the Recirculated Draft EIR/Supplemental Draft EIS; or through comparing the tables, Table 3-111 in the Draft EIR/Draft EIS with Table 3.2.1 in the Recirculated Draft EIR/Supplemental Draft EIS.

Those are the citations that I provided to David.

A second item for this morning, if it pleases the Board:

We have pulled from the 2015 Recirculated Draft Supplemental -- Recirculated Draft EIR/Supplemental Draft EIS, Mapbook Figure M12-4, Sheets 6 through Sheets 8, and

provided them to the clerk in case it helps with answering questions that were raised by Miss Womack yesterday.

It's a more detailed map of the Clifton Court Forebay area and hopefully can provide better clarity in that discussion.

MS. D'ADAMO: I would just ask that: That e-mail to Mr. Aladjem, are you posting it?

MR. MIZELL: I have not posted it. I can send it out to the list serve if that is the Board's request.

CO-HEARING OFFICER DODUC: Please do so.

MS. D'ADAMO: Yeah.

MR. MIZELL: Okay.

CO-HEARING OFFICER DODUC: All right. Mr. Jackson.

MR. JACKSON: Now that we're getting very close to the meat of the material, we are . . . I would like to make an oral request. If you'd like to have it in writing, I understand there's one coming.

But the -- At the start of the hearing, DWR and the Bureau received two extensions of time. And my request would be, since we're not -- since we're not going to start again on Part IB until late October, that the Respondents, now that they've heard this kind of evidence, may have to change their -- their -- their

testimony for clarity, to be responsive.

So I would like to ask for another 15 days to -- from the September 1 deadline.

CO-HEARING OFFICER DODUC: Please put that in writing.

MR. JACKSON: All right.

CO-HEARING OFFICER DODUC: And I will give the Chair a chance -- or others a chance to respond to that as well.

MR. JACKSON: Thank you.

CO-HEARING OFFICER DODUC: Yes?

MR. EICHENBERG: Ben Eichenberg for PCFFA.

I just have a schedule questioning, when we expect Mr. Pirabarooban to be available for cross-examination.

CO-HEARING OFFICER DODUC: We'll fit him in as schedule allows after he returns on August . . .

CO-HEARING OFFICER MARCUS: 17th.

CO-HEARING OFFICER DODUC: 17th.

MR. EICHENBERG: Okay. Will that come after the Water Rights Panel, do you think, or just whenever it happens, it happens?

CO-HEARING OFFICER DODUC: Yeah.

MR. EICHENBERG: Okay.

CO-HEARING OFFICER DODUC: I've given up since

yesterday trying to predict the flow and the timing of these things.

All right. If there are no other procedural matters, Miss Womack, please come back up.

Miss Womack, have you seen the new graphics that Mr. Mizell mentioned earlier?

MS. WOMACK: I have no idea.

CO-HEARING OFFICER DODUC: Okay. Let's put this up, and we'll ask Ms. Womack if she would find this more helpful than the other one which was a little bit difficult to see.

(Document displayed on screen.)

MS. WOMACK: Very.

CO-HEARING OFFICER DODUC: Lots of gray shadings.

MR. MIZELL: I'll hand out copies if people prefer paper.

CO-HEARING OFFICER DODUC: We'll do both.

MS. WOMACK: Yeah, I'd like one.

JOHN BEDNARSKI, GWEN BUCHHOLZ and SERGIO VALLES called as witnesses for the Petitioners, having been previously duly sworn, were examined and testified further as follows:

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CROSS-EXAMINATION (RESUMED) BY

MS. WOMACK: I guess I'm curious if --

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

MS. WOMACK: Okay. Sorry.

I guess I'm curious: If this is it, why wasn't this in the testimony? I mean, I -- You know, I just don't know. It's very hard to plan things.

Okay. And I don't know what cross means. Why do I not know what cross means? I don't -- You know, there is crosses on this.

CO-HEARING OFFICER DODUC: Mr. Bednarski or Miss Buchholz, could one of you walk us through the graphic?

WITNESS BUCHHOLZ: Yes. This is an excerpt from the Recirculated Draft EIR/Supplemental Draft EIS, the mapbook pages on this item. I think there's eight pages; this is Page 6.

And the front page -- and we didn't put that up there -- has the key, so that the crosshatches are permanent surface impacts.

And the reason we thought this might be a little more helpful to discuss is that the -- the figures that we had up yesterday as part of the testimony from -- I think it was DWR-2 --

WITNESS BEDNARSKI: Um-hmm.

WITNESS BUCHHOLZ: -- 2, were much more of the engineering aspects and so they're very specific of where the facilities are located on those maps.

In the environmental documentation -- environmental analysis, we -- this was to show what we assumed, because we're more conservative in the environmental analysis to allow for actual siting that could occur during design construction.

So, throughout our environmental document, with respect to the land use in this area, we've assumed that the entire prop -- area between the new Clifton Court Forebay levee and the water body would be permanently impacted.

So all of our analysis associated with agricultural resources, this happens to be natural communities map, habitat, overall land use, we've assumed that this entire area in the environmental documentation would be -- would be changed into -- become part of the Project.

MS. WOMACK: What are the three dots? There's three dots.

WITNESS BUCHHOLZ: Those are transmission tower locations.

MS. WOMACK: That have been moved. Okay.

Yeah, because right now they're in the middle of my fields.

WITNESS BUCHHOLZ: Right.

MS. WOMACK: And you're not taking my island and i.e. -- Do you take all the way up to -- on the other side of Hurdland Road, and all the way to the Delta-Mendota Canal?

WITNESS BUCHHOLZ: The area we're looking at of permanent impacts is the crosshatched area.

MS. WOMACK: I can't tell. Is the Hurdland Road in there?

WITNESS BUCHHOLZ: I'm trying to remember where Hurdland Road is, and I should remember.

MS. WOMACK: Hurdland Road is parallel to the Delta-Mendota Canal.

So does that go all the way to the Delta-Mendota Canal?

WITNESS BUCHHOLZ: It would -- As you can see, it goes up through the Byron Highway and then there's the rectangular area to the north -- or to the southwest of Clifton Court where the word "siphon" is.

MS. WOMACK: So it goes all the way up to the Delta-Mendota Canal. Is that -- Is that what I'm hearing?

Okay. So you would just leave my island. I

have a 3.7 acre island. You have no use for that.

WITNESS BUCHHOLZ: Okay.

MS. WOMACK: Good to know. Good to know. Well, then --

WITNESS BUCHHOLZ: And this is what's shown in -- This is was what was analyzed in the environmental documentation.

MS. WOMACK: Okay. So the -- Is this -- You know, I've been trying since last October to get -- find this out: Are you going to take all my land?

So you said 75 acres would remain yesterday. That -- You're -- That is apparently not true; is that correct?

WITNESS BUCHHOLZ: When you look at the --

MS. WOMACK: Not you but the panel.

WITNESS BUCHHOLZ: No, I understand.

Let me just see if I can explain the differences between the two maps.

The other map was showing specifically where the engineering facilities would be constructed, and there was a border area between that portion of the map and the water body that was around 75 acres of land.

In the environmental documentation, we wanted to complete the -- a more conservative impact analysis in just the positioning of this. And, again, these are just

proposals and full land acquisition would occur subsequent to this.

But I just wanted to let people know that, when you look at acreages in the environmental document, they included the entire property up to the water body and the levee.

MS. WOMACK: Well, that -- That's good to finally get a definitive answer. I appreciate that. It's been very time-consuming with all of the e-mails I've had to send, so I really appreciate that.

Oh, I'm going on time. I'm sorry. I thought we were just catching up here.

Okay. So . . . So my next question is, we've had, you know, huge problems with our levees due to the intake at both the Clifton Court and the -- and at the CVP.

So how will you deal with the levees on either side of the intakes? I keep hearing nothing about how you're going to protect these levees.

There is no body we can go to. All our letters have been ignored. Who is the body that will deal with all the people upstream if these intakes go in? Who is going to pay for redoing levees?

Anybody on the panel.

You know, that's part of the engineering. How

is that going to be paid for, and what's the plan on the engineering?

WITNESS BEDNARSKI: The portions of the levees that will be directly impacted by our California WaterFix, specifically along the three intakes along the river and any of those areas that we modify the levee, we'll be coordinating with the --

MS. WOMACK: That's --

WITNESS BEDNARSKI: -- U.S. Army Corps of Engineers.

MS. WOMACK: That's not my question, though.

I'm talking outside of -- For example, we take 6 cubic feet per second. You take 12,000, 5,000.

The damage caused by that huge sucking just is enormous. So how are you going to deal with these three sets? There's just a huge amount of people that their levees are going to be impacted by this.

MR. MIZELL: I'd like to object to the characterization of the intakes taking 12,000 --

MS. WOMACK: Oh, I --

MR. MIZELL: -- cfs at a time.

MS. WOMACK: That was --

MR. MIZELL: If we're talking about Clifton Court Forebay -- Again, beyond the scope.

If we're talking about the North Delta intakes,

those are 3,000 cfs each.

MS. WOMACK: I apologize. I thought I said 3,000.

3,000 is a lot. We take six. 3,000, six.

CO-HEARING OFFICER DODUC: All right, Miss Womack.

Let's give him a chance to -- give them a chance to answer, if they're able to.

WITNESS BEDNARSKI: Yes. Our intakes will be located along the Sacramento River on the east side, and our obligations will be to comply with all of the requirements in our 408 permit in the design and the construction of any modifications to those levees that will tie into our new intakes at those locations.

As I discussed yesterday, as we're doing work down through the Delta to gain access to the tunnel alignment, we may be finding the need to make improvements to portions of the levees that our construction activity will be impacting.

And so we're committed to investigating what improvements or upgrades may be necessary in those portions of the levees and making those improvements and monitoring the conditions of the levees in those areas related to our construction.

As we move south down to Clifton Court, and the

area I believe that you're specifically referring to, which would be around the intake to the Jones Plant -- Pumping Plant, we do not have any construction activities planned on those specific levees that border that body of water.

So, as far as the California WaterFix is concerned, I do not believe we have any plans to make improvements to that levee. If there are plans, that would be another portion of the DWR that would be looking at that.

MS. WOMACK: Thank you.

WITNESS BEDNARSKI: I can only speak to the California WaterFix facilities that we have in our CER.

MS. WOMACK: Okay. Thank you.

Let's see, I had something about moving the embankment, what was the design purpose?

But, you know, if you're going to take my whole property, I don't -- you can design it how you like.

How is your design going to improve the dirty, filthy water quality at Clifton Court right now?

WITNESS BEDNARSKI: I would have to refer that to the Modeling Panel or the Water Quality Panel.

MS. WOMACK: So it's not part of your engineering.

WITNESS BEDNARSKI: Not as far as making

improvements to water quality to that body of water is not part of our engineering components.

MS. WOMACK: Okay. Thank you.

Let's see. Let's see. I think we've done this but . . .

The original CVP was engineered without a fish screen. When it started, the pumps sucked in all the fish and dirt and debris and it -- the pumps were stuck.

So the Engineers decided to build a fish screen in 1955. They took part of our property. They took our -- our -- our floodgates which were free ways of getting water. They took one of our floodgates.

So there is nothing that shows fish screens that are going to improve the 1950 CVP fish screens and the 1960 SWP fish screens.

Why aren't you improving? Why -- Why is your engineering not improving these fish screens?

MR. MIZELL: I'm going to object just for form.

I expect that we'll go over this again, but this was asked and answered yesterday and the previous week as well. We -- We --

CO-HEARING OFFICER DODUC: I understand. Let's answer it one more time.

WITNESS BUCHHOLZ: There were several studies done in the early 2000 -- early to mid-2000s under the

CALFED program, and this was actually an alternative that was looked at initially, not evaluated in detail. It's described in Appendix 3A of the Draft EIR/Draft EIS.

Because of the locations of the weirs for Clifton Court and the approach channel for Jones Pumping Plant, it's not feasible to construct a fish screen process -- facility at either of those locations.

The program -- The reports that are referenced in that document went through several other alternatives, including other locations around Clifton Court, to see if there could be other version -- ways of moving water into Clifton Court, and they all had problems to -- to achieve the design criteria that U.S. Fish and Wildlife Service and National Marine Fisheries Service would require for fish screens due to the locations, geographic locations of those entrances.

MS. WOMACK: But you're changing the South Clifton Court Forebay. Why not reengineer it? Why not make it better than 1960?

WITNESS BUCHHOLZ: Well -- And the referenced material that's included in that Appendix 3A actually looked at moving the fish screen -- or the entrance to the weirs on Clifton Court all along West Canal, Old River --

MS. WOMACK: Yeah.

WITNESS BUCHHOLZ: -- and there were really no ways to achieve the screening criteria -- the flow criteria that we would require by the resource agencies in that location, just because of the way the sloughs are.

MS. WOMACK: Okay. But back in the -- 2000, probably my property -- we were part of CALFED and they were certainly not going to put -- they weren't going to expand the forebay.

Now that we're expanding the forebay, it would seem to me that the 2000-2003, that -- that's not the same forebay we're looking at.

WITNESS BUCHHOLZ: That is correct. But the geographic configurations of the sloughs surrounding Clifton Court are really what's -- what's driving that decision that we cannot get the flows and the flow directions and the flow rates to achieve a fish screen at the criteria that we have for approach velocities and sweeping velocities established by U.S. Fish and Wildlife Service and National Marine Fisheries Service in the locations of those sloughs.

MS. WOMACK: Okay. Right now, you reversed the flow, so it seems like flow isn't a big deal right now.

Is that going to change? Are we trying to come up to the -- I don't know -- '90s?

You know, 1960s, I -- I just would feel a lot more comfortable giving up my farm for something that was in 2020 -- 2030. 2020, it's not that far off.

WITNESS BUCHHOLZ: And, for the rec -- The reverse flow criteria is a different set of criteria that we have to use for the fish screen design criteria. So it's a lot of different criterias that we end up using.

MS. WOMACK: So the fish don't matter. I mean --

WITNESS BUCHHOLZ: Fish do matter.

MS. WOMACK: -- because right now, they're going backwards.

WITNESS BUCHHOLZ: We -- And for the record, the proposed Project will be reducing the reverse flow occurrences --

MS. WOMACK: Thank you so much.

WITNESS BUCHHOLZ: -- as Miss Pierre talked about in Panel 1.

MS. WOMACK: Okay. So, not to beat a dead horse -- Okay.

So, moving on to, if you can, to slide 2-7 of DWR 2-7.

(Document displayed on screen.)

MS. WOMACK: It's about sediment.

Again, are -- Your original intakes are . . .

are at the Clifton Court Forebay. That's your first intake.

Your second one -- Or maybe your first one is CVP where it adjusts the canal. Who knows?

But your three new intakes are adding sediment ponds. You're addressing your sediment problem. And there's a huge sediment problem in Clifton Court. We all know that.

You're rebuilding the South Clifton Court Forebay. Why don't you fix the sediment problem? I guess I'm asking the Engineers.

WITNESS BEDNARSKI: The sediment issues in South Clifton Court were not included as part of the California WaterFix for the Engineering Team to, you know, conceptually design. I do not --

MS. WOMACK: Do you know why not?

WITNESS BEDNARSKI: I do not know the rationale for that. It was not included as part of our scope of work.

Although as part of our activities for modifying South Clifton Court and North Clifton Court, there will be a dredging operation that takes place and --

MS. WOMACK: Well, there has to be.

WITNESS BEDNARSKI: -- I believe that has been

identified.

MS. WOMACK: It's been dredged, I know, in the '90s, 2000s. It cost 12 million in the '90s. That was quite a bit, the 12 million.

I mean, you're spending a lot of money dredging. But, again, you weren't asked for and so you did not step out of -- and look to solve the problem. Okay. So I -- I understand that you do what you're paid to do.

Okay. The next problem -- Let's see. So -- So you -- You have nothing with sediment. We'll continue to silt up that whole area.

DWR -- If you could put up DWR-212, Page 49.

CO-HEARING OFFICER MARCUS: Could I just clarify for the record that last side was DWR-2, Page 7?

MS. WOMACK: Yes.

CO-HEARING OFFICER MARCUS: Thanks.

(Document displayed on screen.)

MS. WOMACK: And this is near the bottom. It says North and South Clifton Court Forebays, and I'm rather concerned for right now.

(Reading):

"Available subsurface information indicates that the potential for liquefaction exists along all sides of the expanded Clifton Court Forebay."

I'm not sure what that means because north and south.

But does that mean that my property right now, if there were an earthquake, there's danger of liquefaction? Are you -- You know, I want to know, are you going to flood me now?

The danger -- It says it's with expanded Clifton Court. Does -- If there's danger -- going to be danger, is there danger now, preliminary liquefaction analysis.

So, I guess I'm worried about how you built the Clifton Court Forebay in the past. And it sounds like what you're going to do in the future could also, you know, liquefy.

WITNESS BEDNARSKI: Yeah. I think the intent of this paragraph is to say that, due to the -- the relatively flat embankment slopes, that even with some settlement of 1 to 6 inches, the failure is not anticipated.

MS. WOMACK: Oh, it's not? Okay.

"Potential for" --

WITNESS BEDNARSKI: It is not --

MS. WOMACK: -- "liquefactions exists" --

WITNESS BEDNARSKI: -- considered likely to result in the failure of the embankment.

MS. WOMACK: (Reading):

"The potential for liquefaction exists along all sides . . ."

I guess I'm just not reading that. I'm reading the first sentence.

Okay. Well, as long as I'm cool for a few more years until you take me. Cool.

Let's see.

CO-HEARING OFFICER DODUC: Ms. Womack --

MS. WOMACK: Um-hmm.

CO-HEARING OFFICER DODUC: -- please keep your commentary to yourself.

MS. WOMACK: I'll try, but, you know --

CO-HEARING OFFICER DODUC: Just ask the questions.

MS. WOMACK: -- 55 years is hard.

CO-HEARING OFFICER DODUC: Just ask the questions, please.

MS. WOMACK: So -- Okay. So DWR-2-19. If you could see that slide about water rights.

(Document displayed on screen.)

MS. WOMACK: In your presentation, the existing water diversions permanently affected five. I'm not even a dot on your map. I'm permanently affected.

Why am I not considered?

WITNESS BEDNARSKI: The diversions that we identified that were affected were listed in our testimony, and these were the 15 that were identified at the intakes.

We reviewed the alignment and all the facilities on the California WaterFix and looked for other diversions that could possibly be impacted by our construction activities within the footprint of the California WaterFix, and these are the ones that we found.

If we missed one on your property, you know, we'd be happy to take that under consideration if we missed it. I wasn't aware --

MS. WOMACK: I have three diversion points that -- I have -- I'm not -- I'm not part of that team.

I understand I'm not at the intakes, but you can't do the intakes without having somewhere to take the water. I'm part of the WaterFix up north. This wouldn't happen.

MR. MIZELL: There's no question pending.

CO-HEARING OFFICER DODUC: I'm sorry. I didn't catch that, Mr. Mizell.

MR. MIZELL: Objection: There's no question pending.

CO-HEARING OFFICER DODUC: Miss Womack, what is

your question?

MS. WOMACK: My question is, why am I not on this slide as permanently affected?

CO-HEARING OFFICER DODUC: Okay.

MS. WOMACK: It's very clear.

MR. MIZELL: Can we let the witness answer?

MS. WOMACK: Yes.

CO-HEARING OFFICER DODUC: Let's see if we can try this again.

The slide is referring to the water right holders that will be affected in the -- the three intake locations that you're proposing.

Did you do any analysis -- you've been asked this as well but let's get it again -- of potential water rights that might be affected in other parts of the Project?

WITNESS BEDNARSKI: Our team was assigned to look at them throughout the alignment from north to south.

If there -- Again, I'll repeat: If there are some that we missed in the south end, then those should be brought to our attention so we can include them on our list. Without --

CO-HEARING OFFICER DODUC: I think she's bringing one to your attention.

WITNESS BEDNARSKI: Yeah. Without a map, I'm not sure where on our California WaterFix facilities footprint it would intersect our facilities, so I would need to see a map with that location to be able to validate that and then we'd include it on our list.

CO-HEARING OFFICER DODUC: But you will work with her on this.

WITNESS BEDNARSKI: Absolutely.

MS. WOMACK: I'm just very confused. If you're taking all of my property, you're taking all of my water rights; correct?

CO-HEARING OFFICER DODUC: He will work with you on that, Miss Womack.

WITNESS BEDNARSKI: Yes.

MS. WOMACK: So there's a potential not to take my water rights.

WITNESS BEDNARSKI: We will work with you on this -- on this matter to clarify it and understand where your diversions are and how those might be impacted by the California WaterFix.

MS. WOMACK: And that's through engineering.

Okay. Great.

Let's see. So I guess my last thing is: You said that you haven't met with any of the water right people at this point to talk about water rights.

You said that the other day; is that correct? You haven't met with people about their water rights?

WITNESS BEDNARSKI: As far as the type of water rights that are listed here on this slide, no, we have not. That would be commencing with the next phase of the engineer activities Preliminary Design.

MS. WOMACK: And what type of water rights are these? You said "the type of water rights." I'm unclear what that is.

WITNESS BEDNARSKI: My understanding is that these 15 are surface diversions.

MS. WOMACK: So, like what I have. I have -- I divert from the river.

You know, if my father was here, he would -- I divert from the river and I bring it in. I have three places we divert at this point. So that's a surface diversion?

WITNESS BEDNARSKI: Yes. If that's the case, then those should be included on this list, and we will work with you after this meeting to more fully understand those.

MS. WOMACK: Okay. Well, actually, I met with Mr. Valles -- sorry, I'm so bad -- back with Mr. Gardner and Mrs. -- Ms. Spezia back in summer 2012. We were told that Jerry Meryl wanted to work with us.

So, you know, we were taken, and we said, "We want to work with you," and we wanted to settle quickly.

And they told us that -- This was summer 2012. They said, you know, "You're going to be condemned. You can either settle with us and have your" --

CO-HEARING OFFICER DODUC: Your question to this Engineering Panel is?

MS. WOMACK: Is, why did you say you haven't met when you've -- I've met with Mr. Valles four years ago and been told I need to settle quickly.

WITNESS BEDNARSKI: It's my understanding that there have been recent and frequent and continuing discussions between our Property Acquisition Manager and yourself on this subject about your property, and that those are continuing, and that there have been even perhaps offers and counteroffers.

But I don't think it would be appropriate to talk about those --

MS. WOMACK: There have not --

WITNESS BEDNARSKI: -- in this environment.

MS. WOMACK: -- been offers at all.

WITNESS BEDNARSKI: And that's --

CO-HEARING OFFICER DODUC: And that is not something --

MS. WOMACK: Yes.

CO-HEARING OFFICER MARCUS: -- we're going to go into.

MS. WOMACK: It's not engineering, no, it isn't. But, you know, the land -- Frankly, Allen Davis and I back and forth --

CO-HEARING OFFICER DODUC: Miss Womack, again --

MS. WOMACK: Oh, I'm trying, but I --

CO-HEARING OFFICER MARCUS: Just the question.

MS. WOMACK: You know, but he said that I'm talking with him trying to -- No. I've been trying to figure out how much land you're going to take.

You know, it's unfortunate. I've spent since last October. I've been trying for months, and I only now find something buried in, you know . . .

It's -- It's not even part of what you gave out to us.

This would be a lot clearer.

MR. MIZELL: To be clear, this is --

MS. WOMACK: It wastes my time.

I'm sorry. So, anyway, the last thing you said is that you want to make everybody whole. That has anything -- You've said that before.

We'd like to be made whole. We've had 50 years of injury. How are you going to make us whole?

MR. MIZELL: I'm going to object as to the scope of that question. We're not talking about injury that's occurred in the past but injury that may occur through the course of the construction of the California WaterFix in the future.

CO-HEARING OFFICER DODUC: So let's limit your answer to that.

WITNESS BEDNARSKI: In reference to my comment as far as making the current diverters whole, our -- our goal is to, at the end of the Project, ensure that they have the same quantity and quality of water that they have before our Project commenced and . . .

That's -- That's our commitment to the diverters at this point in time.

MS. WOMACK: Miss Doduc, I'm confused, because DWR, the person -- Mr. Cowin said -- started off by saying what a great history we have, and he -- he -- he said, we've been great, 99 percent.

I think the past matters -- Obviously, you know, you can't engineer the past. But I have 50 years of being ignored. I think that's a huge part of this engineering.

See, when you stop your Project and go away, the problems keep happening, and we have -- we have so many years of nobody paying attention to us.

I don't have the money to sue the State. This is my only chance.

I know this is inappropriate but that -- that's why -- you know, especially since Mr. Cowin said, "We're great. Just look at our history."

CO-HEARING OFFICER DODUC: Miss Womack, I appreciate -- Actually, I can't, because I haven't gone through your frustration, so I can't imagine what it's been like for you.

And I am a bit concerned myself at the -- what seems to be a lack of, I guess, productive communication between DWR and you, and potentially others.

But that is also something that we're not going to get into with respect to the -- well, back to this Engineering Panel in particular.

But also, you know, I would encourage DWR to improve your coordination in working with Miss Womack to address some of these issues as appropriate outside of this hearing.

And to the extent that some of your concerns relate to actual operations, results of operations, the modeling effort that's being done in support of this proposal, you may bring those questions up when you cross-examine those panels.

MS. WOMACK: I plan to.

Thank you so much for your kindness. I know I -- I get upset, but it's -- I moved here when I was three, so it goes back a long way.

In fact, Mr. Valles -- somebody, either Mr. Gardner or Mr. Valles, why do you care so much?

And my sister and I were at the same hearing, because this is our farm. This is where we grew up, the Delta. It's magic.

CO-HEARING OFFICER DODUC: Thank you.

MS. WOMACK: Thank you. I'm done.

CO-HEARING OFFICER DODUC: Do you have anything you'd like to add?

Miss Heinrich?

MS. HEINRICH: I hesitate to do this, but I think there still may be a misunderstanding with respect to this figure that DWR pulled out of the record, so I think --

MS. WOMACK: This here (indicating)?

MS. HEINRICH: Yeah. It maybe worthwhile just to clarify one point, which is:

Miss Buchholz, I think you clarified that the crosshatch indicates an area where -- and I'm referring to Figure M-12-4, Sheet 6 of 8.

WITNESS BUCHHOLZ: Um-hmm.

MS. HEINRICH: You've indicated the crosshatch

is an area you've identified in the Draft Environmental Impact Report that there may be a permanent impact to the -- to the land.

WITNESS BUCHHOLZ: Right.

MS. HEINRICH: And I think Miss Womack interpreted that to mean that this is all land you propose to take through inverse condemnation or eminent domain, and I'm not sure that that's necessarily the case.

WITNESS BUCHHOLZ: I appreciate the opportunity to -- You're correct.

It is what we analyzed in the environmental document. How that relates to eventual land acquisition is -- they're two different things.

MS. HEINRICH: Thank you.

WITNESS BUCHHOLZ: Thank you very much.

MS. WOMACK: And so --

CO-HEARING OFFICER DODUC: And, again, I'd courage you to work with Miss Womack and clarify any misunderstanding in terms of --

MS. WOMACK: Well --

CO-HEARING OFFICER DODUC: -- her land and her property.

MS. WOMACK: Could I -- And so, Miss Heinrich, that means permanent isn't permanent? I'm trying to --

I, you know --

CO-HEARING OFFICER DODUC: Again, I would encourage you to work with DWR on that, or their representative.

MS. WOMACK: Okay.

CO-HEARING OFFICER DODUC: This is not the best person to give you answers with respect to the Project that is before us.

MS. WOMACK: I'm just trying to figure out what she brought up. I just --

CO-HEARING OFFICER DODUC: I think it's best for you to follow up with the Department.

MS. WOMACK: Huh. Okay. Well, thank you so much.

CO-HEARING OFFICER DODUC: Thank you.

MS. WOMACK: I think that's it.

Let me make sure I look through my notes.

Okay. Yeah. No, I'm done.

I'm looking forward to the next part. Thank you so much.

CO-HEARING OFFICER DODUC: All right. Well, Miss Heinrich, you started, so let me go ahead and -- That concludes the list of parties for cross-examination.

I'm turning to staff to see if you have any questions for these witnesses.

MS. RIDDLE: I'm not sure you'll be able to answer this at this time.

But just to make sure you have a proposal in place for addressing disagreements regarding mitigation measures for impacts to other legal users of water, including surface water diverters and groundwater diverters.

You said that you plan to follow up. But if there should be a disagreement on whether the Project was the cause of the impact or it was an existing issue, how do you intend to resolve those conflicts?

WITNESS BUCHHOLZ: At this point in time, there's no formal reparation of how that would occur yet. We -- There are Land Acquisition Guidelines from DWR on other projects, but we haven't formalized anything specifically to this Project at this time.

MS. RIDDLE: And with regard to groundwater diversions -- You may have answered it but I'm not sure I heard.

Have you identified how many groundwater diverters might be affected along the alignment?

WITNESS BUCHHOLZ: No.

MS. RIDDLE: Have you quantified those and identified those yet?

WITNESS BUCHHOLZ: No. During the next phase

of design, we will need to have access to properties to both visually observe, but also we need to get access to the well logs that are available through the State and so we can confirm depths. And -- And we need to confirm production rates adjacent -- in areas adjacent to the construction areas. That's standard, what we've usually done in the past.

MS. RIDDLE: And with the unknown diverters, do you have any information regarding those diverters, their quantities, rates, any other information, GPS coordinates, any of that available, included in any of your materials?

WITNESS BEDNARSKI: Which unknown diverters were you referring to? The ones that were unlisted that --

CO-HEARING OFFICER DODUC: I think there were four of them that were not identified in the Board's Water Rights Information Management System.

WITNESS BEDNARSKI: Yeah. I believe the only information that we have on those, what was listed in that table.

I -- Let's see. I think it was DWR-221, that I think that table summarizes all of the information that we have to date on those. So --

MS. RIDDLE: And I think you've answered this,

too.

Has there been -- There hasn't been any communication with those parties; is that correct?

WITNESS BEDNARSKI: That's correct.

MS. RIDDLE: Okay. And then, just lastly, on the additives that may be included in the grout materials.

Are those all standard construction-related additives, or is there something new and different about this for which the Board may not have established water quality criteria or guidelines for those?

WITNESS BEDNARSKI: To the best of my knowledge at the present time, we're planning to do just -- use standard additives if any of those are necessary to any of the grouts beyond just cement, sand, water, so I'm not aware that there's anything new or unique that would not have been brought before this Board before as -- as an additive.

CO-HEARING OFFICER DODUC: Any other questions from staff?

Let me look to my colleague.

Miss D'Adamo, do you have any questions?

MS. D'ADAMO: No questions.

CO-HEARING OFFICER DODUC: Chair Marcus?

CO-HEARING OFFICER MARCUS: Yeah. I had a

relatively long list which I left at home, unfortunately, this morning, so I can't get them.

You know, there have been a lot of numbers thrown around, a lot of questions. And I know that we're allowing very free-ranging conversation about impacts, and we'll have even more in the Operations and Modeling Panel -- Panel, especially when it comes to the water-related impacts, including construction.

But this has been more focused on construction and we'll surely have conversations about the scope of injury and the scope of our conditioning if we were to go ahead and approve this. I know that's all to come.

But I just want to be clear on a couple of sort of key sets of numbers, in particular after listening to the policy statements, the days of those, where, because a lot of this is yet-to-be determined, you understandably have lots of people scared about worst-case scenarios on every front, from vibration, to drinking water, in terms of their wells, potentially surface water and the like. And without specificity, people would be right to be concerned about worst case until they know it's not right.

So there was a lot of concern about 13 years of construction. But, obviously, through your panel, there's a discussion -- there's -- it's going to be

impacts of varying impact on varying numbers of people.

So, we heard a lot about the piles, and we heard about the vibration approach which sounds like it would be less.

We heard about the dewatering and the slurry process and have the memo that Miss Buchholz talked about in terms of changing that to minimize some of the ongoing impact or what would have been a 13-year impact.

And then there's the issue of the tunnel going by and what's potentially in the way or affected by it, whether drinking water wells, or gas lines, and all that.

Can you just help me understand, levying all of that, understand the timelines a little clearer?

So, you talked about construction of the intakes being around three years. Is that simultaneous, when you were talking about the issues around the intake structures versus the tunneling?

WITNESS VALLES: Yeah. Let me answer that.

Each intake will take anywhere between three to five years.

CO-HEARING OFFICER MARCUS: Okay.

WITNESS VALLES: It depends on the intake.

CO-HEARING OFFICER MARCUS: Okay.

WITNESS VALLES: There's a little bit of a stagger in between Intake 2, Intake 3 and Intake 5. If I

remember correctly, I believe Intake 5 is the first one, then followed by Intake 3, then followed by Intake 2.

And overall duration, I think it's, like, a total of seven years for the construction of the intakes.

CO-HEARING OFFICER MARCUS: All right. So for folks that are concerned about either the dewatering or the piles or those things, it kind of depends on what thing they're nearest to.

WITNESS VALLES: Yes.

CO-HEARING OFFICER MARCUS: All right. And then how long -- I thought I heard a number of months -- will it take in each of those to do the dewatering and set the slurry wall?

So that would be the period of time in which you estimate that there could be an impact to their wells or . . . et cetera.

WITNESS VALLES: Yeah. I expect that the -- that the slurry walls would take about four months, five months, to construct.

The actual dewatering within the slurry walls would take -- depending on, you know, the soil conditions -- several months. It -- It totally depends on what the geology looks like.

CO-HEARING OFFICER MARCUS: But would that -- Would there be any more impact after the slurry walls

were in with the dewatering of the internal, have any impact on people around the facility?

WITNESS VALLES: I do not think so.

CO-HEARING OFFICER MARCUS: Yeah. I mean, that's what I'm understanding --

WITNESS VALLES: Right.

CO-HEARING OFFICER MARCUS: -- in terms of the explanation of what you're going to do.

WITNESS VALLES: Yeah. In essence, we're creating a bathtub. We're solidifying the ground or going into clay layers. And once we put that -- the slurry wall in and dewater, there should be no impacts after that outside of the slurry walls.

CO-HEARING OFFICER MARCUS: And then the pile vibrating or driving, that whole process, how long does that take? I know you have to figure out the geotechnical. Obviously, if it's deeper, it might take longer, but maybe not.

WITNESS VALLES: Yeah. We're -- We're obligated to fully construct during -- between, I -- I believe it's June through October for the piles.

We believe we can get piles installed during that period of time for all of the -- certainly the sheet piles.

If it's necessary to build the -- the

foundation piles for the intakes, that potentially could be done in a separate season.

CO-HEARING OFFICER MARCUS: Okay. And then the complaint process which was asked about. Thank you. We have to figure out how that factors in. That's a big question.

That would be for drinking water, levees, and the undermining homes and facilities?

WITNESS BUCHHOLZ: The mitigation measure in the noise chapter was for vibration and noise, said that that would be initiated during design, and then that would be monitored. There would actually be a person assigned to that so they'd have one point of contact at each of the -- probably at each of the locations or total location. I'm not sure how that will work, how many people.

But it's already in the mitigation measure, so we have a complaint monitoring program.

CO-HEARING OFFICER MARCUS: Do you -- Can you point people to -- You say it's what is usually done. But can you point people to an existing -- or a prior system that employed the noise, vibration, dewatering, you know, groundwater impact so it's not just a promise but a -- there's a model?

WITNESS BUCHHOLZ: It's used in many of the

projects.

I -- I personally was that complaint person that took complaints on a project in Monterey County when we were installing pipelines through many agricultural areas. And I also worked in -- for a sewer project in a similar capacity in the City of Berkeley. If you put that as part of your --

CO-HEARING OFFICER MARCUS: All right.

WITNESS BUCHHOLZ: -- Design Group that starts it off, and in the plan section, the spec for the contractor so he knows where he has to -- could work with you.

CO-HEARING OFFICER MARCUS: Right. No, I understand that, having worked on construction and helped run projects like that.

I'm wondering if there's a DWR model, or a model that's closer to home for folks that they can look at and have a sense of what it would be.

WITNESS BUCHHOLZ: We'd have to talk to the DWR Design Team to find that out. I'm not -- I don't remember one in their spec, but that doesn't mean it's not there.

CO-HEARING OFFICER MARCUS: It's kind of a theory in practice issue for people.

All right. I know I'll have more but that was

the most important.

MS. RIDDLE: I have one follow-on question to Chair Marcus' questions regarding the pile driving.

You mentioned there were two different types. How is a decision going to be made? I imagine there's a cost difference between the cast-driven and the pile.

Do the considerations of the landowner come into play? And how is that decision made?

WITNESS VALLES: It's -- I think it's going to be based on the permit conditions that we're obligated to follow. Right now, we're looking at the vibration type to minimize those impacts.

I don't see that we would do anything different than that, than what we've -- we've stated before.

WITNESS BEDNARSKI: Yeah. I'm not anticipating that the decision would be left just solely to the contractor based on what's the cheapest approach to drive these piles, that our specifications will be very prescriptive from the standpoint of having, like, a performance specification on how much noise and vibration can be generated by the equipment as it's driving the piles, the sheet piles, or the concrete piles.

And, so, through their submittal process, once they're awarded the contract, we'll understand what type of equipment they're planning to use to install these

temporary and permanent facilities, and then we'll be able to judge at that point in time whether, you know, we expect that they'll meet the noise and vibration criteria.

And if their means and methods are not, then they would be compelled to modify their proposed operations to something that does fall within the specifications.

And then during the actual construction activities, you know, in addition to having, you know, people that the residents of the Delta can call, we'll also have Inspectors on the sites monitoring these activities and monitoring vibration and noise to make sure that the contractor's in compliance with the contract specifications.

So I think there's multiple levels to this process.

MS. RIDDLE: And so the specifications would be designed around preventing settling of homes and foundation issues, and those sorts of things -- is that correct -- near the construction site?

WITNESS BEDNARSKI: Yes.

MS. RIDDLE: It is designed around -- Those types of impacts are more the integrity of the facility that you're building, or both.

WITNESS BEDNARSKI: I -- I believe that they would be primarily driven by the commitments that we're making in the environmental documents as far as noise and vibration.

Those are going to set the stage for how the specifications are eventually crafted because that's going to be the guide point for how we can hold the contractor's feet to the fire, so to speak.

But we would go back to the environmental documents and the commitments that we've made there, and -- as a foundation, and that those are based on not wanting to have an adverse impact on homes or the residents around the area.

CO-HEARING OFFICER DODUC: Any other questions?

Any redirect, Mr. Mizell, or Mr. Berliner?

MR. MIZELL: No. Thank you for asking.

CO-HEARING OFFICER DODUC: All right. With that, we note that you still have one other member of this panel who will be returning, depending on the schedule, sometime after August 17th.

MR. MIZELL: That's correct.

CO-HEARING OFFICER DODUC: Right. With that, I will thank you and you are dismissed.

(Panel No. 2 dismissed.)

CO-HEARING OFFICER DODUC: Do you need a break,

Mr. Mizell, or is your Panel 3 present right now?

MR. MIZELL: Our Panel 3 is out in the lobby.

If we could take five minutes to gather them and then we'll be prepared to start.

CO-HEARING OFFICER DODUC: We will do so. Thank you.

(Recess taken at 10:00 a.m.)

(Proceedings resumed at 10:05 a.m.)

CO-HEARING OFFICER DODUC: (Banging gavel.)

All right. It's 10:05 and we're back in session.

Is this the entirety of your panel, Mr. Mizell, Panel 3?

MR. MIZELL: No, Hearing Officer Doduc. Mr. Milligan is --

CO-HEARING OFFICER DODUC: On his way.

MR. MIZELL: -- walking down the aisle right now.

There is an additional witness who is going to be arriving from the airport. He's part of the cross-examination panel. He's not presenting direct. He will be here within the hour.

CO-HEARING OFFICER DODUC: All right. So, let me ask all the witnesses to stand and please raise your right hands.

(Witnesses sworn.)

JOHN LEAHIGH, RON MILLIGAN,
MARK HOLDERMAN and MICHAEL ANDERSON,
called as a witnesses by the Petitioners, having been duly sworn, were examined and testified as follows:

CO-HEARING OFFICER DODUC: Thank you. Please be seated.

You may begin, Mr. Mizell.

MR. MIZELL: Thank you.

So, the panel we have before you at the moment is Operations experts who will testify about the operations of the Project today, and under certain circumstances as projected in the future, as well as providing you an example of what could have occurred should the Project have been in place over the first part of this year adjusted for illustration purposes and discussion purposes.

The members of the panel you have before you are Mr. John Leahigh, Mr. Mark Holderman, and Mr. Ron Milligan. As indicated previously, Mr. Michael Anderson will be joining us for cross-examination purposes today.

WITNESS ANDERSON: I'm here.

MR. MIZELL: Oh, and here's Mr. Anderson.

CO-HEARING OFFICER DODUC: Mr. Anderson, before

you sit down, please raise your right hand.

(Witness sworn.)

CO-HEARING OFFICER DODUC: Thank you. Be seated.

DIRECT EXAMINATION BY

MR. MIZELL: Mr. Leahigh, is DWR Exhibit 21 a correct copy of your statement and qualifications?

MR. LEAHIGH: Yes, it is.

MR. MIZELL: And is DWR Exhibit 61 a correct copy of your testimony?

MR. LEAHIGH: Yes, it is.

MR. MIZELL: Mr. Holderman, is DWR Exhibit 22 a correct copy of your statement and qualifications?

WITNESS HOLDERMAN: Yes, it is.

MR. MIZELL: And is DWR Exhibit 62 a correct copy of your testimony?

WITNESS HOLDERMAN: My testimony?

MR. MIZELL: Yes.

WITNESS HOLDERMAN: Yes, it is.

MR. MIZELL: Mr. Anderson, is DWR-24 a correct copy of your S&Q?

WITNESS ANDERSON: Yes.

MR. MIZELL: Mic.

WITNESS ANDERSON: Yes, it is.

MR. MIZELL: And is DWR-64 a correct copy of

your testimony?

WITNESS ANDERSON: Yes, it is.

MS. AUFDEMBERGE: Mr. Milligan, is DOI-3 a correct copy of your statement and qualifications?

WITNESS MILLIGAN: Yes, it is.

MS. AUFDEMBERGE: Is DOI-7 a correct copy of your testimony?

WITNESS MILLIGAN: Yes, it is.

MR. MIZELL: For the order of direct examination, we'll be beginning with Mr. Leahigh.

Mr. Leahigh, please introduce yourself to the Board and also -- and provide them with a summary of your written testimony using the PowerPoints you prepared for them.

WITNESS LEAHIGH: Okay. Yes. Good morning, Hearing Officers Doduc and Marcus and Board staff.

Again, my name is John Leahigh, last name L-E-A-H-I-G-H, and I am the Water Operations Manager for the State Water Project with DWR, so I'm responsible for operating the system as it currently exists.

I will go ahead and step through my summary of my written testimony, and I will be using a PowerPoint as many of the other previous testimonies have done.

(PowerPoint presentation on screen.)

So, just a summary of what I'm going to cover

today.

I think it's very important to establish the foundation for, really, how do we operate the system as it exists today, prior to going forward with how would we expect things to change with the new California WaterFix facilities in place?

And, so, what I hope to start with is kind of laying a foundation of -- of how the State Water Project and the Central Valley Project develop their water supply within the system.

Next, I will touch on the real-time operations, the complexity associated with that, and the -- the challenges associated with that real-time management of the system.

I'll next go into the past track record of the two projects that we are jointly responsible for meeting the Water Quality Control Plan objectives. I'll take a look at what our record has been in meeting those objectives.

I'll next talk about the last couple years where there have been some modification to those objectives due to the severe drought conditions that we faced in the state and touch on the reasons that the Projects did petition for some modifications to those objectives.

I'll then talk about increased flexibility and perhaps some additional opportunities that would be available to the projects as part of the new California WaterFix.

And I will conclude with some highlights of some of my testimony at the end.

So, to begin with, just a kind of an overview of the current operations of the system.

We have a map here that depicts the Federal Central Valley Project facilities, major facilities, in -- highlighted in yellow, the State Water Project facilities in red, local projects in green, and natural waterways and channels depicted in blue on -- on this graph.

So, I'll go ahead and start and step us through a typical -- typical year and how -- how we develop that water supply for the projects.

So, to begin with, we'll look at the three major reservoirs in the Upper Sacramento Watershed: So Lake Shasta, Folsom Lake for the Central Valley Project, and Lake Oroville for the State Water Project.

In the winter period with direct runoff and snow melt, when that runoff is in excess of the needs of the system downstream, this is when the projects have the right to divert that water into these large storage

reservoirs: Shasta, 4.5 million acre-feet; Oroville, 3.5 million acre-feet; and Folsom, approximately a million acre-feet. So that's happening in the wintertime/early spring typically.

In addition to the excess flows that are diverted to storage upstream, there's a great deal of excess flows that occur downstream of the major reservoirs in the wintertime/early spring, and this is from unregulated tributaries that feed into the Sacramento system. It's also a result of direct runoff from precipitation in the Sacramento Valley. So there are quite often excess flows entering the Delta that are above and beyond any of the Bay-Delta water quality flow and flow requirements.

At that point, the projects will divert to San Luis Reservoir storage South-of-Delta, excess flows from Banks Pumping Plant and Jones Pumping Plant. The diversion location for the State Water Project is at Clifton Court in the South Delta which feeds the Banks Pumping Plant.

So you can see San Luis Reservoir also depicted on there in orange, and it's in orange because it's a jointly operated facility. It's about 2 million acre-feet. A little over half of that storage is for State Water Project storage and the other half for the

Federal Central Valley Project storage.

So, again, this is our opportunity to divert excess flows -- flows that are excess to the system into that reservoir during the typically winter/early spring period.

As the system dries out, the -- the natural flows in the system are no longer great enough in order to meet a lot of the in-basin uses, including the Bay-Delta standards. And at that point, the projects start drafting the previously stored water from their northern reservoirs in order to meet the Bay-Delta standards.

There's often also additional storage that the projects will release from their major upstream storages for re-diversion at Banks and Jones during the late spring/summer period.

And so these -- this re-diversion of stored water is used to meet our deliveries along the California aqueduct, there shown in red, and the Federal facilities, Delta-Mendota Canal, the San Luis Canal portion of the California Aqueduct.

So these re-diverted diversions from -- of stored water from Banks and Jones are supplemented from the previously stored water in San Luis Reservoir in order to meet those peak demands during the summer

period.

So that sort of lays the foundation. A lot of these concepts will be important as we -- as we move forward in this testimony.

So, I talked about excess flows, that that's what the projects are looking at to develop their supply. And how do we determine what's excess?

Well, we have to ensure that the higher priority needs of the system are met first, and so couch those into two groupings here:

In-basin requirements. There's, of course, the Bay-Delta Water Quality Control objectives themselves, so these are typically flow and water quality objectives as implemented under decision -- currently under Decision 1641.

And we need to also ensure that natural flow that's going to other legal users of water is not restricted as well.

So those would be the two in-basin requirements that are -- that we're -- have to ensure are met before we develop our supply.

There are other regulatory requirements that limit the amount of excess flow that we can divert to storage, either upstream storage or in San Luis Reservoir.

One example on the limitations on our diversion of excess flows would be the example of the recent biological opinions for both Delta smelt and under the NBS BiOp of 2008-2009, which limit the reverse flows on Old and Middle River that feeds just north of the two Project exports. So this -- These new actions will limit the amount of excess flows that we can divert to storage.

Other examples of regulatory limitations on our diversion to storage would be upstream; for example, our Flood Control Criteria. All the major reservoirs upstream have Flood Control Criteria where we are required to provide vacant space in the reservoirs in order to capture an extreme flood event in order to knock down the peak flows from that event and protect the downstream levee systems. So that -- That's a limitation on the amount of diversions to upstream.

Another limitation would be, for example, Lake Oroville. We're required to meet minimum Feather River flow releases for fishery purposes. And so that would also be a limitation on the volume of -- of diversion of excess flows to storage.

So, you know, the bottom line here is, the -- the development of the Project supplies is secondary to all of these other needs.

So just a little bit more on, again, what is

considered excess conditions.

And essentially, it's when our releases -- These required releases that I've talked about, including flood control releases, minimum in-stream flows. When these releases plus the other unregulated flows that are coming into the system downstream of the major reservoirs, when those flows exceed the in-basin requirements. And that's when the excess flows will exist in the system.

Under balanced conditions, it's essentially when those releases, plus the unregulated flows, is approximately equal to the in-basin requirements. And under some circumstances in balanced conditions, there's enough unstored or natural flow that will meet all of the in-basin requirements, and there's additional unstored flow that's available for diversion at the South Delta diversion points, Banks and Jones.

As the system dries out further in the summertime, typically, we're in essentially what's the Term 91 period, where the projects are making supplemental storage withdrawals in order to meet some of those in-basin requirements, essentially the Bay-Delta standards.

Another way to describe the balanced condition is that the two projects are actively managing the system

during balanced conditions.

So this leads us to where, what does it mean when we're actively managing the system?

Essentially, this is -- comes down to managing flows and the salinity regime in the Delta.

And so, first, we need to really understand the Delta hydrodynamics, the complexity of that, and the challenges associated with managing the Delta hydrodynamics. So I'm going to go over through -- through a few points there.

Also talk a little bit about our real-time monitoring system, which is something that, in -- in -- in real-world operations, we are able to react to observed conditions. This would be a difference from what you might see from a simulation model.

You're going to hear from the Modeling Panel after this panel and, of course, they're dealing in -- with simulation models that cannot make -- do not have the human element in order to make responses to observed conditions, which is something that, of course, we can do in real-time.

And then I'm going to talk about the tools that are available to the projects in order to influence the conditions in the Delta and to meet these Water Quality Control Plan objectives.

So, just a summary of the Delta hydrodynamics that I'm going to talk about.

You can't really understand the Delta hydrodynamics without first understanding the tidal influence. Essentially tidal Estuary has two ebb and floodtides today. Overlaid on top of that would be the monthly spring and neap tidal cycles. Also talk about the river marine influence associated with the Delta inflows.

I'm going to talk about the in-Delta diversions, which is really part of the larger net Delta consumptive use; talk about the SWP and CVP exports. And all of these components combine together and result in a net Delta outflow. And it's a Net Delta Outflow because of this tidal influence.

So, starting with the title action.

We've got the diurnal two floodtides, two ebb sides each day, resulting in naturally-occurring reverse flows and positive flows in the various channels of the Delta.

This slide gives an example of what the magnitude of that tidal flux is at various locations throughout the Delta. You can see that, at the Suisun Bay portion of the Delta, that tidal flux is -- will vary by well over 300,000 cfs, both positive and negative.

As you move towards the interior of the Delta, the magnitude of the tidal flux decreases but it's still a significant number.

So, just an example, to put the 300,000 cfs in perspective: If that was a flow that was coming directly into Folsom Lake, it would fill the lake in just a day and a half. So this is an extreme amount of flow that would be occurring -- that is occurring as part of the natural process of the -- of the tidal flows in the Delta.

So, overlaying the diurnal tidal effects, there is also a secondary tidal factor, which is the spring and neap tidal action, which is a gradual average filling and average draining of the Delta channels, if you will.

And this component of the tides is related to the lunar cycle, so essentially corresponding with the full moon and new moon phases of the cycle, we see a gradual higher energy period of the tides which results in a gradual filling. With that filling come the salt -- come the salts from the ocean.

So, all other things being equal, we tend to see the salts intrude into the Delta channels during those spring tide periods.

During the half moon cycles part of the cycle, we see a lower energy period of the tides, the deep

tides, and these tend to be fresher periods of the Delta.

So this is one of -- These are the conditions that the projects need to react to in order to maintain the standards.

And, fortunately, this aspect of the tides is -- is completely predictable. We can predict centuries in advance what the timing and the magnitude is going to be on these tides. The unfortunate thing is that the astronomical effects are only half the story.

The other major influence on the tides would be meteorological effects, so these would be essentially the barometric pressure. The winds in the system have a profound effect on the tidal stage.

So, typically, the barometric pressure, for example, when we see low barometric pressure, we see the tendency -- there's less downward force on the water bodies. They will tend to rise.

Same goes with onshore winds associated with a storm surge event, for example. That would tend to push ocean flows into the Delta channels and also have a -- an effect of increasing the tidal stages.

So what you have -- What I've shown here is an example of a storm surge event, and those go hand in hand. Low barometric pressure plus onshore winds have a profound effect. They will often overwhelm the

astronomical factors influencing the tides, and this particular graph shows an example of where -- what would have been a neap tide period resembled something much closer to a spring tide.

So these kind of events are much less -- We cannot predict these before a few days in advance often, and we certainly can't predict the magnitude of the change in the stage.

And with that increase in stage comes the salts. And so we're having to react to these kinds of -- these kinds of events in real-time.

And this is something -- These meteorological events cannot be picked up on any of the simulation models. So it's much more challenging than -- you know, than what the models would suggest. But the good news is, we also have the tools to react to these kinds of conditions in real-time.

So, fortunately, we do have a very comprehensive network of monitoring stations throughout the Delta, and these are telemetered. You can access -- We have access to these from the California Data Exchange Center. This is anybody in the public would have access to this data.

And this would give us a good comprehensive picture of the salinity conditions in the various

channels throughout the Delta; also the flow information as well. So this would give us something to react to.

So, just going a little more in detail on the way that we influence the salinity conditions in the Delta is essentially by trying to influence the Net Delta Outflow.

And so to understand how that's done, you need to look at the components that make up the Delta outflow. And one of those would be -- The first is the actual inflow, so from the Sacramento River, the San Joaquin River, and other tributaries on the west side of the Delta.

As far as on the Sacramento River, this is where we have our major project reservoirs, and so we would be making releases.

We -- We -- In order to influence that inflow component, unfortunately, we just have limited influence there because there are a number of, as I noted earlier, either unregulated tributaries coming into the Delta; in the summertime, we have substantial amount of diversions, of course, that are taking place in the Sacramento Valley.

So, much of the time, when we make a release change upstream, there's no certainty that we're going to see the same amount of flow show up at Freeport, which is

the measurement point for the Sacramento River as far as that inflow component. So we know what it is.

There's also a long travel time, five days from Lake Shasta, three days from Lake Oroville and a day from Folsom Lake. So that's another component of uncertainty as it relates to trying to influence the Delta inflow piece.

The other component I'm showing there is the Delta -- net Delta consumptive use. So, again -- Wrapped in that assumption is -- There's a lot of unknowns, and certainly nothing that we can really control.

There's the 1800 or so diversions located throughout the Delta. There's -- It's -- It's also going to include any accretions or rain events directly on the Delta itself, any losses in the system, vapal transporation that occurs in the Delta.

So it's a very not well-known and certainly not controlled piece of the Net Delta Outflow. We only have assumptions that we're working with on that particular component.

The -- The final component would be the actual Project exports themselves in the South Delta and, of course, these are well-known and they're something that we do control.

So that piece -- All of those together leads us

to a Net Delta Outflow.

And the Net Delta Outflow is defined by this equation in D-1641 and, essentially, it is the additive, the Delta inflows minus the net Delta accumulative use component and also minus the Delta export.

And as I stated earlier, the projects do influence the Delta inflow piece of that. We do not have full control but we can influence it and we do have direct control over our exports from the South Delta of course.

So, again, here are those two principle knobs: The releases down the Sacramento River from the major Project reservoirs, and then the exports in the South Delta.

And so all of this management of the salinity conditions and flows is, of course, all in our effort to meet the Bay-Delta D-1641 standards.

And I'm going to go over what some of the key compliance stations are, and then I'm going to review what our historic compliance record is.

And important to note, again, that we -- I think one thing you'll see as a difference between this presentation -- this testimony here, this presentation, and the Modeling Group is, you'll be able to see our track record as it has been historically in meeting these

objectives versus some of the results that are coming out of the model and it -- even in the modeling of no-action conditions.

You may see a disconnect as far as much higher noncompliance in the model versus real-time. The difference is, in real-time, we can respond to actual conditions.

The -- The model is just making simplified approximations of how the system would -- would work. Although it is our best available tool to take a look at effects and compare effects, it cannot capture all the nuances of real-time operations.

So, this is a summary of the Bay-Delta standards, and there's really two major components to them. One is flow, operational, and the other is the water quality standards.

The -- Shown in the upper part here in blue, all the flow and operational standards are really for the purposes of fish and wildlife protection. So it will be Table 3 in D-1641 standards.

And you can see that there are standards year-round. They're -- More of the standards occur in the fishery-sensitive periods, so those would be in the winter and the spring.

These standards, as all the standards will,

vary somewhat depending on the year type. The five-year type classifications, wet, above normal, below normal, dry and critically dry.

With -- Under wetter years, higher flows are required, for example, better salinity conditions. So there is some adaptability to those standards tailored to the particular type year we're experiencing.

And then we have, again, the water quality standards, three different purposes for those standards. There's municipal and industrial standards shown there in the pinkish purplish color.

We have agricultural standards for water quality, EC, and some fishery and -- fish and wildlife water quality standards as well.

And for Part I of the hearing, I'm going to focus on -- As far as legal users of water in the system, I'm going to focus on the M&I standards and the ag standards. But I will be looking comprehensively at our records for all of the standards as well.

So, this is a map that -- So, geographically, points out the standards from the previous chart, and it is color-coded the same as that chart. So you see the fish and wildlife flow and operational standards in blue.

So the example, you see the box there in the confluence area, Suisun Bay, Port Chicago, Chipps Island

and Collinsville, those are essentially the X2 standard locations for fish and wildlife purposes.

For the water quality standards, you see the purplish M&I and the green agricultural objectives, and also fish and wildlife water quality objectives.

So, again, I'm going to focus -- When I pinpoint some of our compliance with some of these locations, I'm going -- for Part I, I'm really going to focus on our record here for the M&I and ag standards.

Now, I think it's good that we have this map up to kind of explain generally how we're meeting those standards. So those standards would be in effect -- the M&I and ag standards would be in effect in the summertime. Primarily those would govern during that period and the fall.

So during that period, when the release of the fresh water down the Sacramento River, typically during that period, we'll have the Delta Cross Channel. You can see there is typically open, which allows much of that fresh water to make its way into the interior channels, to the Mokelumne, then hooking up in the Lower San Joaquin River into the central Delta. So that -- That fresher water will help us meet those standards in the interior.

But we also need a certain amount of pumping in

the South Delta to actually bring some of that fresher water down. We need a certain amount of reverse flow to bring the fresher water down into the M&I diversion locations to meet those standards as well down into the South Delta.

I'm going to point out right now the three standards that typically govern our operations, would be Emmaton on the Lower Sacramento River. You can see Jersey Point right there in the center of the map on the lower San Joaquin River for ag standards. And then Contra Costa Canal intake at Rock Slough. And the purple square there is typically the governing standard for the M&I -- For meeting that standard, we're typically meeting all the M&I diversion locations.

At this point, though, I'd also like to point out, because I'm going to go into this a little more detail later:

In the kind of the southeast corner of the map here, you see the three green squares, Brentridge, Old River, Middle River, and Old River Tracy Road Bridge.

These are X standards that we don't have a lot of influence -- little to no influence at certain times in meeting the objective of those locations. So I'm going to -- Later, I'm going to focus a little more on those standards in particular.

So, this is a -- looking at what our success rate has been in meeting the operative standards for the Bay-Delta objectives back to 1978. So this would be back to D-1485 all the way through last year, 2015.

And you can see that we have been meeting the objectives close to 90 percent of the time. So the overall -- Comprehensively, all of the standards that were shown on the -- on the -- two slides ago, it's been about 1.1 exceedance over the entire time period.

So kind of walking through the methodology that we used on that:

On any given day, let's say there's 10 objectives in play. If on any one given day we're meeting -- or nine out of 10 are being met, that would represent a 90 percent compliance or 10 -- or, let's say, 10 percent exceedance rate for that one particular day.

Let's say we move to the next day and we're meeting all 10 of the standards on that day. So our -- our two-day exceedance rate would then fall to 5 percent for that two-day period.

So we did -- We basically followed that same methodology for every day of the year from 1978 through 2015.

And, as I -- as I noted earlier on the larger map, you know, all -- all standards are not created

equal. There are three in particular that will govern the operations more often than others with regard to the M&I and ag standards. And, again, this is going to be Emmaton on the Lower Sacramento River, Jersey Point on the lower San Joaquin, and Contra Costa Canal intake at Rock Slough off of Old River.

So, the success rate at meeting the Rock Slough diversions -- again, this is from the 1978 through 2015 -- is only a .2 percent exceedance rate there.

And it'll be good to note, these exceedance rates versus the exceedance rates you're going to see from the modeling in the next panel, this is where you'll really see some differences.

The same goes for Jersey Point. Again, .4 percent exceedance versus 99.6 percent meeting that objective.

Emmaton success rate, not quite as good. And this is for the same period, '78 to 2015, point-- sorry -- 2.6 percent exceedance.

I think what you'll find is part of the reason why at this particular location our success rate is not as good -- And this goes back to when you saw the big -- larger map. We can make changes at the South Delta diversion locations very quickly, and we can influence -- If we have salinity intrusion in the lower San Joaquin

River, the lower part of the Delta there, we can affect the -- stop the salinity intrusion much quicker than if we're looking at a station on the Sacramento River.

Changes in exports have very little influence on the Sacramento River objectives. We're going to rely more on release changes on the Sacramento River.

And as I noted earlier, there's -- there's limited -- our capabilities are limited on that side of the -- of the Delta, where we have the long lead times from Shasta, Oroville and Folsom, and we don't have complete control over how much of that change in flows are going to show up in the Delta.

So with the -- with the new facilities in California WaterFix, take a look at a little bit how this picture could change a little bit as far as our ability to meet some of the water quality objectives.

Of course, we'll still be responsible for meeting whatever water quality objectives are required of us with new infrastructure in place.

We're not asking for any change in our water rights permits. We're -- Essentially what we're doing is, we're bifurcating where the diversion location is.

So, for example, for the State Water Project, our exports are still limited by the physical capacities at Banks Pumping Plant. Currently our only diversion

location to feed Banks Pumping Plant is Clifton Court.

The new California WaterFix is adding the second diversion point -- well, three new intakes on the Sacramento River, but the second overall diversion point.

It in some -- But it's still feeding the same export location, which is Banks Pumping Plant, and we're not -- we're not looking at any physical changes there.

And our water rights permits are linked to that physical capacity at Banks and, therefore, that's the reason we're not asking for any changes on the water rights permits.

But one thing that, with the new diversion location in the North Delta, would give us increased flexibility. It would give us another knob to turn in order to perhaps more precisely manage those salinity conditions.

So I -- I just gave the example of -- of -- of the challenge of meeting and responding to a salinity event of -- let's say salinity intrusion up the Sacramento River.

If we're diverting at the northern diversion location as part of WaterFix, we could shut down that diversion location. We could shift the diversions to the South Delta location, assuming water quality was better in the South Delta at the time, and vice versa.

If we're having salinity intrusion along the lower Sac -- San Joaquin River, and let's say things -- conditions are fine on the Sacramento, we could shift diversions from the south to the north.

So, this would give us much greater flexibility in more precisely managing the salinity conditions in the Delta.

So now I'm going to talk a little bit -- I mentioned this early, the South Delta standards stations.

CO-HEARING OFFICER DODUC: Mr. Leahigh --

WITNESS LEAHIGH: Yes.

CO-HEARING OFFICER DODUC: -- before you move on to the next topic, let --

WITNESS LEAHIGH: Sure.

CO-HEARING OFFICER DODUC: -- me check in with the court reporter.

I did promise you a 15-minute break.

THE REPORTER: I'm fine.

CO-HEARING OFFICER DODUC: You're fine?

THE REPORTER: Um-hmm.

CO-HEARING OFFICER DODUC: How much longer do you think you'll have?

WITNESS LEAHIGH: Let's see, I -- the total presentation would be an hour and 15 minutes roughly.

CO-HEARING OFFICER DODUC: So you'll have

another 40 minutes about.

You know what? I'm a bit concerned about the court reporter. Let's go ahead and take a 10-minute break.

Is that okay, Candace?

THE REPORTER: (Nodding head.)

CO-HEARING OFFICER DODUC: Let's do that now and resume at 11 o'clock.

(Recess taken at 10:48 a.m.)

(Proceedings resumed at 11:00 a.m.)

CO-HEARING OFFICER DODUC: (Banging gavel.)

All right, everyone. It's 11 o'clock on that screen and now it's 11 o'clock on that screen. We are back in session.

Mr. Leahigh, thank you for indulging us in that break, and you may continue.

WITNESS LEAHIGH: Okay. Thank you.

So where I left off was, I was now going to focus in on the South Delta water quality objective stations in these South Delta channels.

And as I noted earlier, this is -- this is a part of the Delta under which we have very little to no control, really, in meeting these objectives. I think this was recognized as far back as -- at least as far back as D-1485, that the projects had limited influence

on the water quality in these locations.

We -- The issues essentially are lack of circulation of these channels, and localized degradation in some of these locations as well.

And to address that, part of that is the Project's temporary barrier program, where we put the barriers in. Those are primarily for water level improvements, but they also have some -- some elements of helping with the circulation.

Mark Holderman to my left here is the Program Manager for that particular program.

These -- These standards became particularly of issue in 2005 when the objective actually changed from 1.0 during the irrigation season to .7. And at that time, the exceedances at these locations increased significantly.

This -- This whole issue has been addressed as part of -- starting in -- after hearings in 2005 on a Cease and Desist Order for the Project. There was an order from the Board in 2006, which was later amended in 2010.

So this is the process on which we're dealing with this particular issue. We've been working with both -- Delta Watermaster, South Delta Water Agency, and the Department have been actively pursuing the terms in

the existing orders and the existing process.

But let's take a look at what the exceedance computation is for these particular stations.

So, the -- the worst of the three is really the Old River at Tracy Road Bridge.

And, so, these particular stations, there was no assignment of responsibility, as I said, under 1485. This came much later.

These locations were identified in the '95 Water Quality Control Plan. And then, subsequently, as part of D-1641, there was nominal objectives at these -- at these locations.

Tracy Road Bridge, essentially this is -- I talked about the localized degradation. This is the station that's closest to that -- that localized degradation and so it, of course, has the worst compliance record.

The Middle River is a little bit better. But, also, it's further away from the localized sources but it is still subject to the -- the . . . bad circulation in the South Delta channels.

The same with Brandt Bridge, showing 3 percent exceedance.

So these are based on going back to the Water Quality Control Plan of 1995. Many of the objectives as

part of D-1641, the projects, as part of the Bay-Delta Accord, did start meeting some of the D-1641 standards early as part of the Bay-Delta Accord.

So that's the basis for these particular numbers, is going back to that period.

The -- To summarize the South Delta water quality exceedances, you know, the projects -- we've been asserting that they're beyond our reasonable control for our operations and the tools that we have available as far as operations.

We did include those as part of the comprehensive pie chart that you saw at the beginning of this section of my testimony because they are, of course, objectives.

South Delta -- If you took those three, though, and isolated them from the other comprehensive list of objective locations, the South Delta stations themselves account for 89 percent of the exceed -- of the 1.1 percent of exceedances that you saw in the first pie chart.

Another way to say that is, if you removed those three locations from the entire comprehensive picture, our exceedance rate would drop to .2 percent for the entire period going back to 1978.

So now I'm going to talk about -- We did

include these objectives as part of that overall comprehensive record.

I'm now going to talk about the past three years of exceptional drought and why the Department's -- the Department and Reclamation petitioned for some modified requirements on some of the objectives.

And it was a small subset of the more comprehensive list. They were primarily some of the fish and wildlife flow requirements in the spring.

There was only one standard in which we petitioned for a change as it relates to an M&I or an ag standard, and this was the Western Delta ag standard at Emmaton. We essentially asked to meet the same requirements but at upstream location at Three Mile Slough.

And that was the one change to an ag standard that we petitioned and received approval for over the past two years of exceptionally warm and dry period.

I'm next going to go into some data just exactly explaining how exceptionally warm and dry it has been, and how this had resulted in insufficient storage available to the projects.

We were not able to store enough water in order to meet all of the standards we had been projecting that there was a substantial amount of risk that, if we had

tried to meet standards early on in the spring, that we would have ran out of stored water to meet the M&I and ag standards later in the year. There was substantial risk we would have completely lost control -- salinity control of the Delta.

And so this would include a threat to the health and safety M&I diversions as well, and that was essentially the reason for us going to the Board in this extreme case during this drought emergency in order to ask for relief on some of those standards.

So, these next three slides were prepared at my direction by the State Climatologist, Mr. Michael Anderson on the far right -- my far right of the panel here.

So, I'm going to start with the California Statewide four-year precipitation totals, and this is going back to 1899.

And you can see that, indeed, 20 -- the four-year sum ending in 2015 was indeed the dryest for the entire record going back to 1899 at almost an inch drier than the next dryest four-year period, 1920. In fact, you can say that, in modern times, this has been by far the dryest period for California history. The next sixth dryest years were in the 1920s and the Dust Bowl in the 1930s period. So not only was it record dry, it was

a record warm period.

So, this graph here, which is the Sacramento Valley calendar year data from 1895 back to last year, 2015.

What we have on the Y axis is the annual precipitation, and on the X axis is the annual average temperature for all of these calendar years.

The blue diamonds are the datapoints for everything prior to the 21st Century, so 1895 through year 2000.

The black squares with the yellow shadow is -- represents all of the 21st Century datapoints, so from year 2001 through 2015.

And the yellow triangle is the period of record average for the entire period 1895 to 2015.

And what really jumps out at you is, all of the black squares, essentially everything in this century -- current century -- has been warmer than the period of average.

In fact, the period of drought, 2012 through 2015, you can see 2012 was on the far right side of the warmer years. 2013 was also very warm, but it was also extremely dry. In fact, 20 -- calendar year 2013 was the dryest entire record.

You next step to 2014, which was a complete

outlier in terms of warmth. And 2015 arguably is an outlier both in terms of warmth and dryness.

So, another way to look at the same type of data is the Sierra snowpack versus winter temperatures. And this is for the snowpack records going back 1950 through 2015.

So what's shown on the Y axis would be April 1st snowpack percentage of average. And April 1st is used as the metric there because April 1st is -- on average is the date of maximum snowpack accumulation typically for the Sierra Nevada.

On the X axis is the Sierra winter average minimum temperatures, so this is for the months of December, January and February. And, again, the -- most of the data shown in the blue diamonds, with the exception of the green squares, which is the last four years of drought; again, the yellow triangle is the period of record average.

As you can see starting in 2012, we're just barely above 50 percent of an average snowpack; 2013 slightly less than 50 percent of average snowpack on April 1st; 2014 was on the outer edges of a warmer year, and it actually tied the record for the lowest snowpack, tied the record set in 1977, which was 25 percent of an average snowpack on April 1st, and that record held up

for precisely one year when we had the devastatingly essentially no snowpack in 2015. 5 percent of an average snowpack on April 1st.

And what's also of note is that the average minimum temperature for that three -- for the three winter months was above freezing in 2015.

So all this data may be interesting, but where the rubber really hits the road as far as the amount of supply in which the projects have to work with is in terms of the actual runoff that results from the precip and the snow melt. So it's important to look at that aspect as well.

And what I've shown -- shown here and plotted is the eight-river four-year average water year runoff for the years back to 1909 to 2015.

The eight rivers are -- is essentially the four major tributaries in the Sacramento Valley and the four major tributaries to the San Joaquin River.

So the total runoff of all eight years is plotted here. It's sorted from the -- sorted data from the wettest to the dryest, and you can see -- and it's based in million acre-feet. And you can see, yes, indeed, four-year average period ending in 2015 was the dryest on record.

Another metric that is used for water supply

purposes is the April through July runoff. Again, this is for the eight rivers. It is a three-year average for the April through July runoff from 1908 to 2015, again, sorted from wettest to dryest. And not only is water year 2015 -- 3 years ending in 2015 -- the dryest, but dryest by a wide margin, as you can see there, only about 70 percent of the previous dryest three-year period.

And why is the April to July runoff so important? Well, part of the reason is, this is the natural flows that would be some of this unregulated flows coming into the system, helping meet some of the Bay-Delta flow and water quality standards.

To the extent that the natural flow is not there, the projects need to make up that deficit. And this deficit was -- has been so enormous in the last two to three years that we -- again, we were projecting very early on that there would be insufficient storage for the projects to be able to make releases in order to meet all of the standards for the entire year.

And so that's why we were trying to tailor a plan that we could meet, at least the bare minimum, salinity control in the Delta to meet health and safety needs.

And so that was -- This was -- This was the big reason for our petition over these extreme extraordinary

dry years that we've seen.

In fact, in 2015, the hydraulic barrier that we're typically using with our releases we were expecting to not be enough to ensure that we keep that -- those salinity conditions -- keep -- keep somewhat of a fresh water corridor.

So we installed the West False River rock barrier that year as well to provide a physical barrier in order to prevent salt water intrusion in 2015. So that was in addition to the petition for modified standards in 2015.

So now I'm going to switch gears a little bit and talk about, again, the South Delta operational constraints that have come online since the new BiOps in 2008 and 2009.

And so the effect that -- that these new regulations have had on the Project's ability to develop water supply is that it has restricted our ability to divert the unregulated flows in the winter and spring period.

There's an inherent conflict between the fishery-sensitive time and when most of this water supply is available to the projects to develop.

And so the effect has been, for the most part, the restriction of diversion of the unregulated flows in

that winter/spring period.

There's been some restriction of our ability to re-divert stored water during balanced conditions. That's a -- That's a more minor component, mostly in the very late spring. June, for example, would be the month there.

With the proposed Water -- California WaterFix, with our ability to shift some of our diversions to the North Delta diversion location, this would increase our opportunity to restore some of that ability to divert some of that unregulated flow in the winter and spring and, again, building to re-divert some stored water maybe late May-June period.

So, what I'm going to do now is step through an example using this past year's actual hydrology if we were to have the proposed California WaterFix infrastructure in place. What opportunity might we have had to divert additional supplies?

So the proposed -- The other assumption here was that the New North Delta diversion intakes and tunnels were in place. We assumed the existing pumping facilities at Banks and Jones. We assumed the operating criteria associated with Alternative 4(a) H3.

And so with it includes the proposed North Delta diversion bypass flow criteria, new Rio Vista flow

criteria, new South Delta Old and Middle River criteria, which on the upper end is actually more restrictive than the current BiOps, and the new Operable Head of Old River Gate.

So this is the scenario that we stepped through, and it goes from December 1st of 2015 and ends on April 30th of this year, 2016.

What's shown in the solid blue line is the actual Delta outflow for the entire period. What's shown in the blue dashed line is the Bay-Delta -- the D-1641 requirements for outflow. It -- It also is an -- would represent an outflow that would be the equivalent of that necessary to meet a water quality objective as well. So that's what's shown in the blue dashed line.

And you can see that the difference between the actual outflow and the necessary outflow to meet the standards, the difference was 4.4 million acre-feet.

So, to put that in perspective, that's essentially the entire amount of storage that Lake Shasta is capable of.

The next thing we looked at was, then, the solid red line there is the actual South Delta diversion, so this is both the diversions into Clifton Court and the diversions at Jones Pumping Plant off the -- off of Old River, and that's shown in the solid red.

And we were under an Old and Middle River restriction based on the new BiOps for this entire period. So that had an effect for the entire period on our ability to divert water from the South Delta channels.

The dotted red line there is the -- what hypothetically would have been available if the California WaterFix infrastructure were in place, including the North Delta diversion.

So that dotted red line represents the combination of the South Delta diversion plus the New North Delta diversion capability.

And you can see there was actually -- For the first part, I'll point out on the far left-hand side of this chart, from December 1st through beginning part of January, there's no difference between the two. And essentially that's because we were -- partly because we were struggling with water quality.

So the first couple of little freshets of outflow was -- although we were hitting the standards, we needed the system to freshen up before we could really start some additional diversion. Even with the WaterFix in place, we would have to wait until the conditions were fresh enough in order to begin additional diversion.

But the difference you can see between the

California WaterFix from that early January period through the end of April was about 1.2 million acre-feet of additional diversion.

Now, this would have gone a long way in helping to recover from what has been record low allocations to both State Water Project customers and Central Valley Project customers for the last three years, through the exceptional drought that we've experienced.

Our customers on the State Water Project side have seen their internal storage capabilities used up, to a large extent, to just get through these last few years, both in terms of surface supplies and additional groundwater pumping in order -- in order to mitigate effects of the drought.

So, this additional diversion of 1.2 million acre-feet, to put that in perspective, that's -- that's more than the storage capacity of Folsom Lake.

Now, during this entire period, we were making minimum required releases from the reservoirs and those would have been either for flood control releases or minimum in-stream Delta -- I'm sorry -- minimum in-stream flow requirements.

So the tradeoff between this additional diversion would have been a reduction in total Delta outflow because there's no change in the upstream

operation between the California WaterFix case and the actual condition.

So the dotted blue line shows if you reduce the actual outflow by the amount of the additional diversion would be 4.4 million acre-feet. Subtracting out the 1.2 million acre-feet of additional diversion would have resulted in 3.2 million acre-feet, again of excess outflow above and beyond what was necessary to meet the current set of standards. And 3.2 million acre-feet is almost as much as what we can store in Lake Oroville.

So the next thing we wanted to do was -- And, again, one of the reasons we used H3 as the assumption for this particular scenario that we walked through was that, if you recall, this is on the bookend that is more aggressive in terms of the exports and also lower in terms of outflow.

So we wanted to take a look at the more aggressive scenario to test the effects on other legal users of water in the system.

So . . . The next graph here, we're showing the daily average EC at Bacon Island on Old River.

And the reason we use this particular location, it's a better representation of the type of water quality we would see at the M&I diversions in the Delta, and that was essentially the major standard that would be in

effect during this period.

We've highlighted a couple of levels of where standards apply, and this is at Rock Slough. The lower gray dash line is the approximation of 150 milligrams per liter chloride requirement. It's couched here in terms of EC. And then there's also the 250-milligram per liter chloride requirement on the upper gray dash line.

Now, the 250-milligram per liter standard is required year-round. The 150-milligram per liter level is only required for a certain amount of days every year. And we had already met the requirement for 2015 earlier in the water year, so that what's shown in the solid red line is the actual EC at this particular location.

We had already met the -- the days that were required at the 150-milligram per liter location, so that didn't -- does not represent an exceedance there. But, again, the solid red -- solid brown line here is the actual EC.

The next step we took was to utilize the Delta simulation model, which has in addition to simulating the hydrodynamics of the hydraulics through the Delta channels, it also has a component which can simulate the movement of salinity in the Delta channels.

So we took that model and applied the actual conditions, input the actual conditions into the model,

and we also put in the hypothetical California WaterFix scenario in the model as well. And we took a look at the difference, and that's the proper use of simulation models, is to use them in comparative mode.

We took the difference from the two Delta simulation model outputs and we applied that difference to the actual EC that's shown on this chart. And so the degradation in water quality that we would have expected to see as part of this WaterFix scenario is shown in the dotted brown line on here.

And so I think -- You know, our conclusion is, although there certainly would have been some effect in terms of water quality degradation, it doesn't come anywhere near having any sort of impact on the ability to have met the standard. In fact, water quality was much fresher than required under the objectives for this entire period.

So, I'm now going to conclude with just some of the high points of what I just discussed.

Again, looking at our historical compliance record, this is going back to 1978, so this would have been when D-1485 standards came into effect.

Our records show that the -- there's only an exceedance of 1.1 percent. I did note that includes standards in which we have very limited if no reasonable

control to meet at -- at much of the time.

I also noted that real-time adjustments they were capable of making, even though the actual conditions are much more complex and can be captured by the models, we do also have the ability to respond to actual events with the tools available to us. And those available tools, the flexibility will only increase with the California WaterFix.

So we have no reason to believe that our track record would be any worse. If anything, it might improve with the additional tools available to us with the WaterFix.

We will have to continue to meet all of our in-basin requirements, including whatever Water Quality Control Plan objectives are assigned to us, increased flexibility in, as I said, a more precise salinity management in the Delta.

Also, the last point I just reviewed is increased opportunity perhaps on the actual permit conditions to capture water supply without significant impact to other legal users of water, and that's where I stepped through that last example.

And so that concludes my summary of my written testimony.

CO-HEARING OFFICER DODUC: Thank you,

Mr. Leahigh.

Mr. Mizell.

MR. MIZELL: Yes. At this time, I'd like to turn to mic over to Miss Amy Aufdemberge for Ron's testimony.

DIRECT EXAMINATION BY

MS. AUFDEMBERGE: Mr. Milligan.

WITNESS MILLIGAN: Yes. My name's Ron Milligan. Last name is M-I-L-L-I-G-A-N. I am the Operation Manager for the Central Valley Project and I work for the U.S. Bureau of Reclamation.

I'm going to be very complimentary to John and his summary of his testimony. It hit a lot of elements there. And, you know, I have reviewed his testimony and his presentation here before today and do concur and agree with the elements in his testimony.

And I wanted to be, in view of the time, fairly quick with my summary of the remainder of my testimony in that.

I also want to point out that, you know, the level that John outlined was a summary of our joint operations in the Delta, which is -- which is very necessary and probably very germane to our request for -- as it relates to this hearing.

But we do have a number of CVP-specific

obligations in criteria that's really back to a Congressional authorization for the Central Valley Project, individual regulatory requirements on the reservoirs and the streams that CVP operates all along, specifically the Trinity, the upper Sacramento, and the American, as well as the Stanislaus.

And we have a number of Federal statutes and contract obligations that weave into this that are all part and rolled up into what John described as the in-basin elements, and we aren't proposing any changes to any of those places.

I also want to emphasize the -- the theme of flexibility. A lot of what the projects are able to accomplish that's well beyond what you see in some of the modeling results is the fact that two operation offices are collocated, that we have very close coordination of the two Projects' operations. They're integrated in a great deal in ways that we're able to use the strengths of both projects to meet these various obligations.

I also see that, as we move forward with this concept of flexibility, that the one element that John didn't hit on that's going to be a later phase is -- relates to an element of management entrainment risk for Delta fish, both pelagic and migratory.

The key element of the design is to deal with

that and I only bring it up here in the context that this is an area that has affected the Projects' collective yield over the last few years.

And although we're not adding any additional infrastructure beyond the new intakes, it certainly gives us the flexibility to deal with, you know, fish presence within the Delta within our current coordination with fishery agencies and stakeholders.

So, with that, I'll end the summary of my testimony so we can move on.

CO-HEARING OFFICER DODUC: Anything else, Mr. Mizell, or Miss Aufdemberge?

MR. MIZELL: No. At this time, I believe the panel's ready for cross-examination.

MS. AUFDEMBERGE: Agreed.

CO-HEARING OFFICER DODUC: All right.

Mr. Lilly.

MR. LILLY: Yes. Alan Lilly appearing for Cities of Folsom and Roseville, San Juan Water District and Sac Suburban Water District.

I just have a question before cross-examination starts regarding the version control of these slides.

It appears that the slides that were projected today have one additional slide and that they've been renumbered, and this is going to create some confusion

because all of us have prepared our cross-examination questions based on the version of DWR-4 that was filed back when the Petitioners filed their exhibits.

So, I -- And I understand that from time to time it may be necessary, and even appropriate, to add a slide after the submission date. We may need to do that, too. I think people should tell the Board when they're doing that.

But beyond that, I just think we need some guidance. I would like to have our questions referred to DWR Exhibit 4 and those slide numbers and not the slide numbers that were posted today.

CO-HEARING OFFICER DODUC: Any objection to that, Mr. Mizell or Miss Aufdemberge?

MR. MIZELL: I believe that if -- if the references are made to DWR-4 and not DWR-4, you can make the match between those two. Our July 21st notice to the Board and to the public is to what was contained in 4-E will help to alleviate some of the concerns Mr. Lilly is talking about.

CO-HEARING OFFICER DODUC: All right.

MS. D'ADAMO: I'd just like to note I noticed that problem as well. And I believe that a number of the PowerPoints have been updated, so it might be good to provide that information, including one in the future.

MR. MIZELL: Yes. Our letter of July 21st actually detailed all the changes that were contained in the errata slide shows that were submitted at that time and that we have been presenting.

CO-HEARING OFFICER DODUC: All right. Before we get into cross-examination, I think, based on the cross-examination of the previous panel, I'm going to add some, I guess, additional instructions to everyone involved.

First of all, Mr. Mizell, Miss Aufdemberge -- and please convey this to Mr. Berliner when he returns -- I will remind you that cross-examination may exceed the scope of the direct testimony, so -- Of course, the witnesses are free to answer that they do not know or it's beyond the scope of their expertise, but I would urge you to think about that before you make any objections about questions under cross-examination being outside the scope of the testimony.

To the witnesses: Since this is going to be obviously -- you are so far going to be the star of the show today -- there will be a lot of interest. There will be a lot of cross-examination, a lot of questions.

I would encourage you, strongly encourage you, to keep your answers succinct, focused, on point, and responsive to the questions being asked.

And to everyone else who is conducting cross-examination: I appreciate Mr. O'Laughlin's questions early on, and you have my assurance that to the extent your cross-examination is relevant, meaningful, productive, add values to the record and to this Board's consideration, I will allow you additional time as appropriate.

However, I encourage you to listen very carefully to the cross examiners that precede you. I will be less flexible in terms of allowing you to revisit questions and areas that have been already been asked unless you demonstrate the need for either a different line of questioning of that specific area or how or why your perspective is different from the previous cross-examiners.

Any questions on that?

Mr. Jackson.

MR. JACKSON: Since the Delta is a large place and the hydro-- hydrodynamics are different in different parts of the Delta, it would seem to me that if -- if we're going to try to protect our property from legal injury, we're going to have to be pretty specific in regard to our area and, therefore, the answers that someone gives in the South Delta -- for instance, Miss Womack's questions -- are going to be very different

from mine at Collinsville. So I would ask that that be considered --

CO-HEARING OFFICER DODUC: Yes, I understand that.

MR. JACKSON: -- since it's a legal injury investigation.

CO-HEARING OFFICER DODUC: Definitely.

All right. With that, then, let me start with Group Number 3, the State Water Contractors.

MS. MORRIS: Stefanie Morris, State Water Contractors.

I have no questions for this panel.

CO-HEARING OFFICER DODUC: Group Number 4.

MR. O'HANLON: Daniel O'Hanlon appearing on behalf of the San Luis & Mendota Water Authority.

We have no questions.

CO-HEARING OFFICER DODUC: Thank you.

Group Number 5.

MR. WILLIAMS: Philip Williams. I'm here appearing for the Westlands Water District.

No questions.

CO-HEARING OFFICER DODUC: Group Number 6.

Group Number 6 is not present.

Group Number 7.

Just for my planning purposes, how many members

of Group 7 expect to conduct cross-examination?

Two. Three. All right. Thank you.

MR. HITCHINGS: Good morning. Andrew Hitchings. I'll be asking questions on behalf of the Sac Valley water users group as a whole. We tried to coordinate our cross-examination for time purposes.

And then also I individually represent a number of the Sac Valley water user clients in this proceeding, including Glenn-Colusa Irrigation District, Biggs-West Gridley Water District, Sacramento County Water Agency, Placer County Water Agency, and Carmichael Water District.

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

You may begin.

CROSS-EXAMINATION BY

MR. HITCHINGS: So good morning, Board Members and staff. And to the witnesses this morning, thank you for your testimony.

I would like to direct primarily a number of my questions to Mr. Milligan this morning. So I think we'll start with you, Mr. Milligan, and then it may be that some of the questions bleed over into some of the other witnesses' testimony as well. So I will start there.

And then I did give a thumb drive to staff, and

I have them labeled Docs 1 through 8. And so if you could pull up Document 1, that's Department of Interior Exhibit 7, which is Mr. Milligan's testimony.

(Document displayed on screen.)

MR. HITCHINGS: I have certain sections of that highlighted so it's a little built easier to follow.

And if I could direct you to Page 4 and the third paragraph of that exhibit.

(Document displayed on screen.)

MR. HITCHINGS: And in this, Mr. Milligan, your testimony at the third paragraph at the beginning states that you are aware of the modeling for the Project operations to support the petition for the Cal WaterFix Project; is that correct?

WITNESS MILLIGAN: Yes, it is.

MR. HITCHINGS: And when I say "Cal WaterFix Project" or "Project" throughout these questions, when I just use the term "Project," I'm going to be referring to the Cal WaterFix Project, which is the Project that's the subject of the Petition for Change.

So, just as I go through this, unless it has a different meaning, I'll indicate that. But assume that that's what my questions are covering; okay?

WITNESS MILLIGAN: Very well.

MR. HITCHINGS: So, Mr. Milligan, did you have

any role in developing the operation scenarios used for the Project?

WITNESS MILLIGAN: Probably in its early stages, a role in discussing, let's say, what the possibilities were. But I think the final selection of the alternatives that were presented, no, I was not.

MR. HITCHINGS: So when you say the early stages, did -- did that -- did your role in providing any input in the operations center was as of a certain date?

WITNESS MILLIGAN: No. I would say till the point they were submitted, I've had some interactions about, let's say, what the operations might be with each scenario.

But this culmination of the WaterFix and its earlier development, Bay-Delta Conservation Plan, has been going on for a number of years. And years ago, I did have some interactions with thinking through and formulating what types of criteria might be beneficial to meet the -- some of the purposes involved.

MR. HITCHINGS: And when you say once they were submitted, are you referring to the submittal date of the actual final written testimony and exhibits, which was May 31st of this year?

WITNESS MILLIGAN: Yes.

MR. HITCHINGS: Thank you.

Did you provide the Modelers with any assumptions or instructions as to how CVP operations should be reflected in the modeling?

WITNESS MILLIGAN: Nothing's particularly -- We've always had some discussions about not so much the Project as you've referred to it, as much as how CalSim may emulate overall Project operations with -- with the particular planning scenario involved. But that's not unusual, given planning studies related to CalSim use.

MR. HITCHINGS: Was there anyone else from Reclamation that would have provided any assumptions or instructions as to how CVP operations should have been reflected in the model?

WITNESS MILLIGAN: Oh, there may have been. There have been a number of Reclamation staff involved in this but I don't know anyone specifically, no.

MR. HITCHINGS: Okay. I'm going to talk a little bit about or ask questions a little bit about model operations versus real-time operations.

And if we could switch to Document 2 that's on the thumb drive.

(Document displayed on screen.)

MR. HITCHINGS: And this is State Water Board Exhibit 2. This is a copy of the petition.

And if you could change -- If you could move

forward to Page 6 on that, please.

(Document displayed on screen.)

MR. HITCHINGS: And if you could scroll down into the description box there.

(Scrolling document.)

MR. HITCHINGS: That's great.

Do you have an understanding that the Petition for Change submitted for this proceeding characterizes the proposed Project as Alternative 4(a) under their Recirculated Draft EIR and Supplemental Draft EIS?

WITNESS MILLIGAN: That is slightly different than my understanding, but I certainly see the words here.

MR. HITCHINGS: Well, could you describe what your different understanding is as to what the proposed Project is?

WITNESS MILLIGAN: I think as it stands, at least into my review of the document, thinking with operations as we've gone through, and understanding this is a multiphased proceeding, you know, I've been giving a lot of my thought to how the Project would operate within the range of Alternative H3 to H4.

MR. HITCHINGS: But those operational scenarios are embedded within Alternative 4(a); isn't that correct?

WITNESS MILLIGAN: I believe that's correct,

yes.

MR. HITCHINGS: And do you have an understanding that Alternative 4(a) includes both physical facilities as well as assumed operations?

WITNESS MILLIGAN: Yes, I do.

MR. HITCHINGS: Do you have an understanding of how the CVP and the State Water Project would operate with the Project in place?

WITNESS MILLIGAN: Yes. And in terms of a joint fashion, yes, I do.

MR. HITCHINGS: Did you discuss with staff and consultants that conducted the modeling for the Project how the CVP would be operated with the Project in place?

WITNESS MILLIGAN: Yes, we have had a number of conversations.

MR. HITCHINGS: And did those conversations and did that input include input all the way up through the submittal of the written testimony and exhibits for Petitioners?

WITNESS MILLIGAN: To some degree, yes, but certainly more intense as the modeling effort was compiling. This was probably well before the May -- May date that we've talked about.

MR. HITCHINGS: And can you identify who in particular would have been primary contacts that you

provided your input to for the modeling purposes?

WITNESS MILLIGAN: A number of these things were settings with meetings with the contractors, meeting with consultants, and involved various staff from both the Department of Water Resources and Reclamation. So, depending on the particular meeting, there would be a number of different people.

I think that from what I've seen of the panel that'll be put together for the Modeling Group, that that covers the -- you know, the prime representatives there.

MR. HITCHINGS: And would that be the -- the lead representatives, Mr. Tehrani and Munévar?

WITNESS MILLIGAN: Yes. But then also some staff from -- from the consultant groups that were working on doing a lot of the modeling as well, so . . . Mr. Munévar as well.

MR. HITCHINGS: Would you characterize that the input that you and Reclamation provided would have been less than the input that DWR provided with regard to operations assumptions for the modeling?

WITNESS MILLIGAN: I wouldn't be able to gauge the relative input.

MR. HITCHINGS: Did -- Let me put this it way:

Did DWR take the lead more so than Reclamation in providing those Operations assumptions for the

modeling?

WITNESS MILLIGAN: Well, all I would say is that DWR was the -- you know, the contract for the consulting work for the modeling was, you know, through Department of Water Resources.

So, on one level, I would have expected them to have more input to the consultant. But I think, as related to CVP operations, and then the joint operations of the two projects, they're probably a joint effort.

MR. HITCHINGS: Okay. If we could back to Document 1, which is the -- Mr. Milligan's written testimony.

And you have a section starting on Page 2 with the following heading, "Statement on real operations -- real-time operations and working with SWP"; is that correct? Do you see that?

WITNESS MILLIGAN: Yes, I see it.

MR. HITCHINGS: And, then, if you could look at -- If we could go ahead to Page 3, the first full paragraph of your testimony, you state there that real-time operations dictate actions.

Do you see that?

WITNESS MILLIGAN: Yes, I do.

MR. HITCHINGS: Do you agree that managing and coordinating State Water Project and CVP operations in

real-time is different from analyzing and critiquing operations through model simulations?

WITNESS MILLIGAN: Yes, I do.

MR. HITCHINGS: Do you agree that real-time operations of the Project will deviate from the operational scenarios embedded in the modeling for the Project?

WITNESS MILLIGAN: Could you repeat your question, please?

MR. HITCHINGS: Sure.

Do you agree that real-time operations of the Project will deviate from the operational scenarios embedded in the modeling for the Project?

WITNESS MILLIGAN: Yes, real-time operations will be different primarily because the hydrology is different. Many of the models employed, depending on which one, operate on what we call different time-steps, whether they were based on monthly averages, some of them on more crude averaging.

So the circumstance that the projects may be -- the operators may be confronted with on a given day is probably something that's not specifically identified in a planning simulation like is used and presented to the Board.

MR. HITCHINGS: Notwithstanding that, would you

agree that the Operations assumptions in the modeling should be as close to how the Project would actually operate in real-time as is reasonably possible to do that?

WITNESS MILLIGAN: I think, to be informative to a planning or decision-making process, that the models should first be able to emulate as best as they can base condition and then be able to capture the nuances of whatever the proposed change is. That's typically how we do a lot of our planning work. And to the degree that that can be then identified into actions that could be translated into such instructions for Operators, that makes a lot of sense.

Those things don't always crosswalk very well in the sense that what you may need to make as an assumption in the model may not be verbatim something you can reword into a permit term or condition or instruction for an Operator.

MR. HITCHINGS: Have you reviewed the modeling assumptions and model runs for the Project to see if the expected real-time operations of the Project are accurately reflected in the modeling?

WITNESS MILLIGAN: I have to the extent to, say, within the range that's been identified, to think about what the incremental effect of what's being

proposed. Does that seem reasonable?

Some of the absolute numbers that are involved in the modeling output was not as much a concern in terms of my review as it relates to the real-time operations of the Project with -- with a new facility in place like North Delta diversion.

MR. HITCHINGS: Okay. But would you agree that the more the modeling assumptions about Project Operations depart from the reality of how the Project will be operated in the future, the more likely that the impact analysis could be inadequate?

WITNESS MILLIGAN: It would depend on the particular element involved. And, again, the model output needs to be kind of evaluated in the context of what particular element we're looking at.

MR. HITCHINGS: But if the Modeling assumptions depart from the reality of real-time operations and how the Project will be operated in the future, and the more that departure occurs, isn't it more likely the impact analysis will be inadequate if you're modeling impacts?

WITNESS MILLIGAN: As a hypothetical, that is -- that is true. You would like your modeling to be as close to reality as you think is accurate and so that you can be -- know that you're measuring impacts, relative impacts, off of something that makes -- that

makes more sense.

MR. HITCHINGS: Okay. So let's talk a little bit about the modeling operational scenarios regarding upstream reservoir operations.

Is it fair to say that the Project, if constructed, would provide additional operational flexibility to the CVP and SWP?

WITNESS MILLIGAN: It would appear that, yes, that is true.

MR. HITCHINGS: And in -- in what ways would that operational flexibility occur?

WITNESS MILLIGAN: I think a prime and best example is what Mr. Leahigh presented in his example, which is the ability to pick up excess flows in the Delta and still be able to maintain some fairly rigorous reverse flow criteria that's kind of built into that model assumption.

A year like this last -- this last -- or the current year in terms of last winter into spring, those are some great examples of where a facility like the North Delta diversion can help provide flexibility to the Project and preserve our storage, particularly in a mode like this particular year and recovery from drought to be able to maintain that storage upstream but to be able to augment the flows that we're able to pick up in storage

south of the Delta.

MR. HITCHINGS: So, I understand from your answer and also from the overview of the operations that the Project, if constructed, would increase the capacity or capability of the two projects to re-divert more water to the existing export pumps; is that correct?

MS. AUFDEMBERGE: Objection.

CO-HEARING OFFICER DODUC: What is your objection, Miss Aufdemberge?

MS. AUFDEMBERGE: It's capacity or capability. I think that's a compound question and we need to be clear which one he's speaking about.

CO-HEARING OFFICER DODUC: Mr. Hitchings.

MR. HITCHINGS: That's fine. I'll rephrase.

So, I understand from what you just stated, and also Mr. Leahigh's summary, that it would increase the capability of the CVP and the State Water Project to re-divert more water to the existing export pumps than they do now; is that correct?

WITNESS MILLIGAN: It would allow us to divert within some particularly -- even more rigorous criteria than we currently have to be able to re-divert or divert water from the Delta during these times of excess. But it is with the same physical capacity of our pumps and canals.

MR. HITCHINGS: Right. I understand that.

The whole Project, though, is to increase the ability to re-divert more water for export at the export pumps; is that correct?

WITNESS MILLIGAN: Yes.

MR. HITCHINGS: Is it fair to say that the Project, if constructed, would enable the CVP and State Water Project to export more upstream stored water than they currently can?

WITNESS MILLIGAN: My review of the modeling results would suggest that, at least as it relates to the CVP and all -- I'll limit my comments to that -- haven't seen a significant change in terms of the movement of North Delta CVP water out of storage, particularly in the summer, that would -- or into the fall than we are currently able to do. Most of the effects seem to be more related to operational collectively for these excessive flow conditions.

MR. HITCHINGS: So you're referring to the modeling that you've seen.

My question was, would it -- Notwithstanding what the modeling shows, would it enable the State Water Project and CVP to export more upstream water, stored water, than they currently can?

WITNESS MILLIGAN: At this particular point,

we've been able to think about this as the collective, and I think that there may be the opportunity somewhat on the State Water Project side.

But the CVP have not seen anything yet that would suggest that a movement of stored CVP water would change significantly with the new facility.

MR. HITCHINGS: In the modeling that was done for the -- the different Project alternatives, the rules governing upstream reservoir operations were -- were never varied; is that correct?

WITNESS MILLIGAN: We used the same criteria, obviously, that were both in the no action alternative as well as what was proposed, so the criteria that would govern regulatory-wise upstream were not changed. And we didn't make any changes to -- in the model that would relate to how water would move out of storage upstream as well.

MR. HITCHINGS: Okay. Let -- Let me -- If we could pull up Document 8 that's on the thumb drive. It's DWR Exhibit 1, Page 7.

(Document displayed on screen.)

MR. HITCHINGS: Actually, I'm sorry, I should -- I need DWR Exhibit 1, Page 11, and it's not on the thumb drive.

MR. OCHENDUSZKO: For the clarity of the group,

we just pulled up DWR-1 errata.

MR. HITCHINGS: Thank you.

Have you seen -- This is the Project overview that Miss Pierre presented as part of the Project Overview Panel.

Do you recall seeing this PowerPoint and DWR Exhibit 1?

WITNESS MILLIGAN: Yes. It's been awhile ago so it may not be the errata version, though.

MR. HITCHINGS: But that slide hasn't changed from the prior version; correct?

WITNESS MILLIGAN: To the best of my knowledge, no.

MR. HITCHINGS: And the key point in this slide, it's indicating things that aren't changing and the assumptions within the modeling of what's not changing.

And in this slide, and as it's been presented in this proceeding, it's been represented that upstream operations of the CVP and State Water Project are not changing under the Project as it's been modeled; is that correct?

MR. MIZELL: I'm going to object to that.

Miss Pierre clarified it was up to operational criteria, not upstream operations, that would relate to

one of John's real-time decision making.

CO-HEARING OFFICER DODUC: I'm not sure I understand your objection, Mr. Mizell.

MR. MIZELL: I'm objecting to Mr. Hitchings mischaracterizing the information in Miss Pierre's slide.

CO-HEARING OFFICER DODUC: Mr. Hitchings?

MR. HITCHINGS: I'll clarify.

But the modeling assumptions assumed that upstream operations for a State Water Project and CVP Project will not change; is that correct?

WITNESS MILLIGAN: My understanding of the modeling was, because you don't fix the operations as such, the criteria involved, though, would not change. I think that was the intent of the clarification of Miss Pierre.

Now, as of -- What it does appear is that, from the modeling, that very limit -- very small, if any, changes to the actual operations in the modeling have occurred and primarily given that the criteria upstream hasn't changed.

But that doesn't necessarily mean that the added flexibility of the existence of a new set of Delta criteria with the North Delta diversion from an Operator standpoint, as we talked about, would have some flexibility which may allow us to operate more

efficiently throughout the system.

So there would -- There probably would be some small changes to operations when you add a significant piece of infrastructure, but the modeling, and our collective understanding, is that, if anything, that would probably be better on the whole and be very small in terms of changes.

MR. HITCHINGS: Okay. Well, let me be more specific on that.

The operational scenarios that were embedded in the modeling assume that, even with the tunnels in place, the Project Operators would not release additional water from the upstream reservoirs for diversion at the three new intakes or the South Delta diversions; is that correct?

WITNESS MILLIGAN: That's what the model said, yes.

MR. HITCHINGS: Okay. And this assumption was made not only for dry years, it was also made for wetter years; is that correct?

WITNESS MILLIGAN: I think this was across the full simulation, which captured all those year types.

MR. HITCHINGS: Okay. Thank you.

Did -- Did -- Did you or did anyone from Reclamation ever suggest that this operational assumption

is unrealistic given real-time operations?

WITNESS MILLIGAN: I think there was a recognition kind of consistent with my last answer, is that depending upon what the rule sets are -- and we're still dealing with kind of a range here -- that there may be opportunities to be more efficient both with upstream operations as well as Delta operations that have yet to be captured and probably are a point of resolution that we need to narrow exactly where we're going to be going with the full set of criteria, which may be the product of something to look at after the next phase.

So, is it significant -- Would I say that, if you add a piece of infrastructure like this, there would be no changes to operations upstream? I would probably concur that's not realistic.

Is it a difference, though, that shows up within the time-step that we're talking about in trying to assess what adverse effects are? Particularly as it relates to other legal users of water, it does not appear that we have anything to be concerned with here.

MR. HITCHINGS: So, to -- to summarize what I think you just said, distilled down, is that there's a possibility that Reclamation or DWR would make additional releases from upstream storage to increase Delta exports under real-time operations with the Project in place.

WITNESS MILLIGAN: I wouldn't infer that from my statement, no.

MR. HITCHINGS: I -- I said that could happen.

WITNESS MILLIGAN: It is --

MR. HITCHINGS: And I understood that that's essential what you said distilled down.

WITNESS MILLIGAN: It is possible, but that's not really the point of the Project. And given the fact that, from a -- particularly from a CVP standpoint -- I can't speak to how John and his group may operate the State Water Project. But from a CVP standpoint, we are typically limited to our South Delta capacity in terms of what we can move through the Jones Pumping Plant and the DMC.

And what was being proposed doesn't change that, and that's typically what would drive the release of stored water.

The potential advantages, they're significant in the picking up of the excess flows that John kind of described. But as it currently stands, I don't see an opportunity to augment our releases from upstream under balanced conditions as John's outlined to significantly move stored water from upstream CVP reservoirs South-of-Delta.

MR. HITCHINGS: Okay. Well, let's -- let's

take a potential scenario, then.

Let's assume the Project comes online and we're in a particular future year. There's surplus water in storage that -- that's in the CVP and State Water Project reservoirs that's above the amount needed for cold water pool requirements of the BiOps and all other regulatory requirements.

So, if you have that circumstance, based upon your experience, don't you think DWR and the Bureau would release more water from upstream reservoirs to take advantage of the new conveyance capacity?

WITNESS MILLIGAN: I think there's probably a lot more assumptions to be made with that. Seems like an incomplete scenario to think through.

However, there really isn't any additional conveyance capacity proposed by the Project. So, again, that would have to be under balanced conditions, which it seems like your describing, and there is no additional conveyance for the CVP to be able to do that.

Again, I can't speak to what the -- what the State Water Project might do in that scenario.

MR. HITCHINGS: Well, there's additional re-diversion capacity as a result of the Project if it's approved; isn't that correct?

WITNESS MILLIGAN: The -- As it relates to the

Central Valley Project, just to be clear, there's -- water may be moved or diverted at the North Delta diversion, but once it gets to the South Delta, let's say at the latitude of Tracy as a placeholder, Reclamation is still limited by its physical pumping and conveyance capacity at Jones Pumping Plant in the DMC.

MR. HITCHINGS: So -- And that capacity is 4600 cfs?

WITNESS MILLIGAN: As a maximum. But as a matter of practice, it probably ranges from 42 to 45, roughly.

MR. HITCHINGS: And in some years, particularly in the last several years, it's been significantly less than that -- is that correct -- as far as what's actually been diverted?

WITNESS MILLIGAN: On an average, certainly so, yes.

MR. HITCHINGS: And with the new diversion facility in place, isn't it possible that you would more frequently divert more water up to the physical capacity of the South Delta CVP pumps?

WITNESS MILLIGAN: Yes, during excess capacity, but I don't believe that's the case during balanced conditions.

MR. HITCHINGS: To the best of your knowledge,

are DWR or Reclamation proposing any conditions in their water right permits requiring that, with the Project in place, the CVP and the State Water Project may not release any more water from upstream storage than they do now under current conditions?

WITNESS MILLIGAN: If so, I'm not aware of that, no.

MR. HITCHINGS: Okay. I'd like to change gears slightly.

If we could go to -- back to Document 1, Mr. Milligan's written testimony, and to Page 3, last paragraph of the testimony.

(Document displayed on screen.)

MR. HITCHINGS: In this section, Mr. Milligan, you identify the water supply allocations to CVP South-of-Delta contractors for ag purposes from 2012 through 2015 as follows: 2012, 40 percent; 2013, 20 percent; 2014, 0 per cent; 2015, 0 percent; is that correct?

WITNESS MILLIGAN: Yes, it is.

MR. HITCHINGS: In your opinion, could any of those allocations have increased if the Project had not in place and functioning?

WITNESS MILLIGAN: Again, hypothetically speaking, which may be difficult, but it does seem, based

on some of the information John showed, would be that their -- I've seen some other rough analyses of some of the earlier years -- that it would have been possible to, let's say, have additional CVP supply South-of-Delta in some of these years. That probably would have been the product of picking up excess flows more so than we were able to do.

But these two years with the zero allocations are years where we were not able to meet -- fully meet the terms of the exchange contract from the Delta, from the Sac Valley side of the system, and had to make a call on the Friant system to be able to do that.

So those allocations of zero may not depend on quantity, may not have been adequate to award the zero allocation.

MR. HITCHINGS: So the 1.2 million acre-feet that Mr. Leahigh discussed in his overview of his testimony, based upon what you just said, I'm understanding that that would have been more yield available to -- to the State Water Project side as far as allocations; is that correct?

WITNESS MILLIGAN: No. No. John's presentation related to 2016. I don't know that we have, let's say, a comparable analysis of 2015 or 2014. So I'm not quite sure what volume of water may have been

available for that, and we certainly haven't been able to do enough analysis to say just how that would be split between the two projects. So that's another uncertainty.

But there would have been more CVP water available. My assumption is that some of that would have been available to the Central Valley Project south of Delta. How it would have been distributed in an allocation process is probably a little bit of an unknown depending on what that quantity is.

So the two zero amounts were very difficult. Obviously, a lot more analysis would be required to come to the bottom of that.

MR. HITCHINGS: Okay. If we could move to Page 2 of your testimony, second full paragraph.

(Document displayed on screen.)

MR. HITCHINGS: In that paragraph, you state that (reading):

"CVP operations must . . . meet obligations to those holding . . . water rights senior to CVP rights, including (sic) the Sacramento River Settlement contractors."

Is that correct?

WITNESS MILLIGAN: Yes, it is.

MR. HITCHINGS: Did you provide any input into the modeling for the Project regarding the Project

operations that are needed in order for Reclamation to comply with its obligations to the Sac River Settlement contractors?

WITNESS MILLIGAN: As best of my understanding, the base CalSim model does a fairly good job of providing that assurance.

So, as best as -- From my recollection, no additional guidance was given to any of the modeling staff.

MR. HITCHINGS: But there's no proposed permit terms or conditions that Reclamation is proposing to assure that those modeling assumptions would remain in place as an operations requirement if the Project is approved; is that correct?

WITNESS MILLIGAN: That is correct. There's many contractual obligations and Congressional directions and Federal statutes that are not part of our proposal to the Board to be included.

MR. HITCHINGS: And there's been no specific permit terms or conditions that Reclamation has proposed in order to ensure that those modeling assumptions are, in fact, a requirement in the way that the CVP is actually operated with the Project in place; is that correct?

WITNESS MILLIGAN: That is correct. We would

have -- We would go back to the requirements of the contract.

MR. HITCHINGS: If we could go to Page 4 of the written testimony.

(Document displayed on screen.)

MR. HITCHINGS: And second paragraph. That states, in part, that (reading):

"With the addition of the new points of diversion, Reclamation will continue to . . ." manage and operate "the CVP in a manner that is," quote, "protective of other water users . . . consistent with Reclamation's authorities."

Is that correct?

WITNESS MILLIGAN: Yes.

MR. HITCHINGS: In that, what, quote, "other water users" are you referring to?

WITNESS MILLIGAN: Well, specifically, I would say, first of all, senior water right holders, but then certainly in terms of our partnership with the Department of Water Resources and State Water Project as well.

So it's a fairly generic statement but, you know, we tried to coordinate -- It's also in the paragraph as it relates to coordination of -- amongst stakeholders and agencies, that we would certainly want to coordinate our operations. And although we may be

doing something that's within our permit terms and conditions, we don't want to adversely affect the use of water, access of water of other -- of other users of water, even if they may be junior to us --

MR. HITCHINGS: And --

WITNESS MILLIGAN: -- so --

MR. HITCHINGS: -- when you use that term "protective," is that what you're referring to as not adversely affecting those other users of water?

WITNESS MILLIGAN: Yes.

MR. HITCHINGS: Do you have an understanding that the proposed Project includes possible increased spring outflow requirements as described in Alternative 4(a)?

WITNESS MILLIGAN: Yes, I am.

MR. HITCHINGS: And, in your opinion as the Operator of the CVP, what effect would increase spring outflow requirements like those included in Alternative 4(a) have on water supplies for south of Delta CVP contractors?

WITNESS MILLIGAN: We have -- That is an area where I don't have a good answer for.

We still need to work out, if we were to be at that particular outflow, just exactly how the sharing of that obligation would work out with the State Water

Project.

MR. HITCHINGS: And --

WITNESS MILLIGAN: At this particular point, we have a pretty good idea of what the collective operations would be, but particularly for that circumstance, how we would split that is still a work in progress.

MR. HITCHINGS: And would you have the same answer if that question was as to the north of Delta contractors that don't receive any water through the new proposed points of diversion?

WITNESS MILLIGAN: I think as it relates to -- It depends on the contractor group.

MR. HITCHINGS: Okay. So we're talking about what effect the increased outflow requirements under Alternative 4(a) would have on the water supplies for CVP contractors located north of the Delta that don't rely on the new points of diversion.

WITNESS MILLIGAN: Yeah, but I think that there -- there's separate for some of the contractors, as an example, and M&I contractors with water service contracts, as well as water service contractors for agriculture, predominantly.

MR. HITCHINGS: Okay. So can you -- In your opinion, how would those differences break down between the Sac River Settlement contractors; for example, the

Tehama-Colusa Canal contractors and the American River division contractors.

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

Miss Morris.

MS. MORRIS: Thank you.

I think the record is becoming muddy and we're not being very specific when we say 4(a).

Miss Pierre specifically was talking about Alternative 4(a) and then two operational scenarios, H3, H4, Boundary 1 and Boundary 2, and Mr. Hitchings' questions are unclear as to what operational scenario he's talking about.

So, for purposes of the record and having a clean record, I think we need to be clear about what operational scenario within the Project we're discussing and what those impacts are for that operation scenario.

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

Mr. Hitchings, could you clarify.

MR. HITCHINGS: How about we go to Document 4 on my thumb drive. It's DWR Exhibit 515.

CO-HEARING OFFICER DODUC: And as we're doing that, Mr. Hitchings, I just want to do a time check. I don't want to interrupt you in the middle of a line of

questioning, but I would like to take our lunch break, say, around 12:30-ish.

MR. HITCHINGS: That's fine. I think I can probably cover this subject area and then that would be a good break.

CO-HEARING OFFICER DODUC: All right. Good.

MR. HITCHINGS: Thank you.

CO-HEARING OFFICER DODUC: Please proceed.

(Document displayed on screen.)

MR. HITCHINGS: So, if you could scroll down to Pages 2 and 3.

(Scrolling document.)

MR. HITCHINGS: And if you look -- Why don't we use the H4 scenario. That's got some descriptions of the outflow requirements.

So this is the H4 scenario within Alternative 4(a).

Do you have that understanding, Mr. Milligan?

WITNESS MILLIGAN: Yes.

MR. HITCHINGS: And at -- You'll see the heading on that is "Delta Outflow Requirements."

And under the H4, it's got those requirements that would be -- that have been modeled under that scenario; is that correct?

WITNESS MILLIGAN: That's what the table shows.

MR. HITCHINGS: Okay. So that -- My -- My questions were particular to -- Let's -- Let's use that as an example of the Delta outflow requirements that would be in place under the Alternative 4(a) Project.

And my question to you was: What effect would those increased spring outflow requirements have on water suppliers for CVP contractors located south of the Delta?

WITNESS MILLIGAN: Off the top of my head, I don't recall. I would probably in this particular case go to the model output that's been summarized for this particular scenario and, as a first point, look at what that was suggesting.

MR. HITCHINGS: If those higher spring outflows are required as part of the Project operations, and let's say under the H4 scenario, is it possible that the State Water Board Standard Permit Term 91 would be imposed more frequently?

WITNESS MILLIGAN: I don't have enough information to know. I'd have to look at some modeling, and I don't know if that's been modeled or not.

MR. HITCHINGS: Is Reclamation proposing any specific permit terms or conditions that would preclude Term 91 from being imposed more frequently with the Project in place?

WITNESS MILLIGAN: Not that I'm aware.

MR. HITCHINGS: I think this is probably a good place for the break, Chair Doduc.

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

We will resume at 1:30.

(Luncheon recess was taken at 12:25 p.m.)

Wednesday, August 10, 2016 1:30 p.m.

PROCEEDINGS

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CO-HEARING OFFICER DODUC: (Banging gavel.)

All right. Welcome back, everyone. It's 1:30 and we are back in session.

All the witnesses are here, their attorneys are here.

Mr. Hitchings, you may resume your cross-examination.

MR. HITCHINGS: Thank you. Good afternoon.

Mr. Milligan, I want to pick up on a topic that we talked about right before we broke for the lunch break, and it had to do with the 4600 cfs limit you mentioned for the CVP diversion facilities at Jones.

And I think that raises the question that: How are the CVP and State Water Project proposing to share, if they are, existing south of the -- South-of-Delta diversion facilities under the Project?

WITNESS MILLIGAN: There haven't been any decisions made on changing, let's say, how we currently share capacity. For the most part, each Project will rely on its own facilities to move water.

But we're still in the process of seeing if there's some other sharing formulas to who might have

priority to water in the Delta at a particular time. But as of right now, beyond what's currently -- current -- practices currently underway, there's no changes in terms of -- that I'm aware of -- as to how the facilities would be used differently.

MR. HITCHINGS: But with the Project in place, would the CVP use Banks, under the joint point of diversion arrangement, to convert CVP water that is conveyed at the New North Delta conversion facilities?

WITNESS MILLIGAN: I'm not sure how much could be used from the -- how much as far may be actually moved through the north -- a new diversion north of Delta.

But it is possible, it seems like, in the some of the simulation outputs that I've seen, that there is some amount of joint point, as it's referred to, to move some CVP water but this -- from the results of quite a few of the modelings that I've seen, it's very limited.

MR. HITCHINGS: But if you did use joint point in that regard, that would allow the CVP to divert more than the 4600 cfs limit that it is currently constrained by at Jones; is that correct?

WITNESS MILLIGAN: Potentially. But within, probably, the current protocols, which you get quite a bit of deference to State Water Project operations, and also to moving water for State contractors as well.

MR. HITCHINGS: But, potentially, it could so you wouldn't be limited by the 4600 cfs limit you mentioned prior to the break; is that correct?

WITNESS LEAHIGH: Correct.

MR. MIZELL: If I might interject real quickly.

If Mr. Hitchings could again clarify which scenario he's talking about. These witnesses are going to be testifying about four different scenarios as represented on the chart that's currently on the screen and we want to be clear that the records indicate which question it goes to.

CO-HEARING OFFICER DODUC: Mr. Hitchings.

MR. HITCHINGS: Yeah. My -- My questions actually didn't have anything to do with the scenarios. They had to do with the limit that Mr. Milligan was stating was in place with regard to what the CVP could physically divert at the Jones Pumping Plant.

I can move on to -- I think we got the answer to that question --

CO-HEARING OFFICER DODUC: All right.

MR. HITCHINGS: -- so . . .

CO-HEARING OFFICER DODUC: All right.

MR. HITCHINGS: I want to go back, Mr. Milligan, if I could, when there was the question about which outflow scenario was being considered under

Alternative 4(a). I had asked you a question and there had been an objection interposed to clarify what outflow scenario.

So let's go back to that line of questioning where I had asked, and assume that it's the Alternative 4(a) H4 scenario and the outflows that are required under that or that are modeled under that on DWR Exhibit 515 and described on Pages 2 and 3.

And my question was: In -- In your opinion as the Operator of the CVP, what effect would those spring outflow requirements have on the water supplies for CVP contractors located north of the Delta that would not receive any water through the New North Delta diversions?

WITNESS MILLIGAN: And if I recall, my answer was, we should probably look at the results for this H4 to see what that looked like. It would certainly inform my answer. That'd be the first place I'd look.

MR. HITCHINGS: So --

WITNESS MILLIGAN: To my recollection, it wasn't a lot of change.

MR. HITCHINGS: But your answer previously, when we had not necessarily specified a specific scenario, you had started to make a distinction between Sac River Settlement contractors and different north of Delta water service contractors.

Can you please explain or expound upon those distinctions you were making as to the relative effect, if any?

WITNESS MILLIGAN: Well, again, I'd look at the result. The modeling results probably in this case do show those broken out by this model group -- by those particular contract groups. So each of those could be different, potentially.

But, as I recall now, thinking about the results, again, we should probably look at them. There was not any difference between -- for the H4 scenario and the no-action.

MR. HITCHINGS: But sitting here today, you don't know the relative difference in impacts, if any, between those different types of CVP contractors north of the Delta?

WITNESS MILLIGAN: My recollection -- It's been a while since I looked at that output, but my recollection is there wouldn't be a change. But it would be associated with this particular modeling output for H4.

MR. HITCHINGS: Okay. Thank you.

If we could pull up Document 1, it's Mr. Milligan's direct testimony, DOI-7.

(Document displayed on screen.)

MR. HITCHINGS: And if I could refer you to Page 1, second paragraph of your testimony.

In that, you indicate that you have responsibility along with DWR for implementation of the Coordinated Operations Agreement between Reclamation and DWR, what you refer to as the COA; is that correct?

WITNESS MILLIGAN: Yes.

MR. HITCHINGS: And then if we could switch to Pages 2 and 3 of your testimony.

(Document displayed on screen.)

MR. HITCHINGS: I've highlighted some sections on there where you provide some general explanations of how Project operations are addressed under the COA and how Reclamation and DWR coordinate to meet their respective obligations under the COA.

Is that a fair characterization?

WITNESS MILLIGAN: Well, in a summary sense, yes. It's much more detailed than what's in the -- this particular paragraph.

MR. HITCHINGS: Okay. I -- Would you agree that your summary paragraph, there's a lot more detail within the COA than -- than you've actually detailed in the summary paragraphs in your own testimony?

WITNESS MILLIGAN: Yes, there is. And there's also more coordination than just the COA that's being

referenced here in this paragraph as well.

MR. HITCHINGS: Okay. I'd like to provide a copy. We have -- I have Document 3 that's on the thumb drive that I provided, and I have a copy of the COA agreement here.

(Distributing documents.)

Sorry about that.

So, Mr. Milligan, is this the Coordination Agreement you were referring to in your testimony?

WITNESS MILLIGAN: Yes, it is.

MR. HITCHINGS: And you're familiar with this agreement; is that correct?

WITNESS MILLIGAN: Yes, I am.

MR. HITCHINGS: All right. I'd like to have that marked, if I could, as -- let's mark it as GCID-1, if we could.

(Glenn-Colusa Irrigation District's Exhibit GCID-1 marked for identification).

MR. HITCHINGS: If I could refer you to Article 6 of that agreement, and it starts on Page 8 of the Agreement. That's the -- the internal pagination. Yeah.

(Document displayed on screen.)

MR. HITCHINGS: Yeah. And that's entitled

"Coordination of Operations."

Do you see that?

WITNESS MILLIGAN: Yes.

MR. HITCHINGS: And are you familiar with this provision and its implementation?

WITNESS MILLIGAN: Yes, I am.

MR. HITCHINGS: And Article 6(c) of the Agreement on Pages 9 and 10, that addresses the CVP and State Water Project's sharing of responsibility to make Sacramento Valley in-basin use with storage withdrawals during balanced conditions; is that correct?

WITNESS MILLIGAN: Yes.

MR. HITCHINGS: And under this provision -- If you could scroll down to Page 10.

(Document displayed on screen.)

MR. HITCHINGS: That's where it breaks down the percentages, and the responsibility for storage withdrawals is assigned 75 percent to the CVP and 25 percent to the State Water Project; is that correct?

WITNESS MILLIGAN: That's correct.

MR. HITCHINGS: And then under Article 6(d) on Pages 10 and 11, it addresses the CVP and SWP sharing of responsibility during balanced water conditions when unstored water for export is available; is that correct?

WITNESS MILLIGAN: Yes.

MR. HITCHINGS: And under this provision, the responsibility is assigned 55 percent to the CVP and 45 percent to the SWP; is that correct?

WITNESS MILLIGAN: Yes, it is.

MR. HITCHINGS: So, in your familiarity with implementation of the COA, could you briefly describe -- and I mean briefly -- I know there's a lot that goes into this, Mr. Milligan, but for the purposes of the Hearing Officers and staff and the rest in attendance -- how the sharing of responsibility provisions under Article 6(c) and 6(d) are implemented.

MS. AUFDEMBERGE: Objection: Are implemented under what circumstances?

MR. HITCHINGS: Well, how about under the conditions in Article 6(c).

If you've got those conditions in place, and if you could -- if you could provide an example, for instance, from this year's operations, briefly describe how the 6(c) provision is implemented.

MR. BERLINER: Objection: Compound question.

CO-HEARING OFFICER DODUC: I understood that question.

MR. BERLINER: I did, but he's asking for two things. He's asking for an explanation of 6(c) and then he's asking for an explanation as to how it would operate

this year. He ought to take one at a time.

CO-HEARING OFFICER DODUC: Mr. Hitchings.

MR. HITCHINGS: Well, I was trying to limit it to a specific example which the first objection had interposed.

So, I'm asking, in this year, could you just briefly describe an example of how 6(c) has been implemented?

CO-HEARING OFFICER DODUC: That's how I understood the question.

WITNESS MILLIGAN: Yes. So, an example of 6(c) would be a circumstance where we're in balanced conditions, which means -- and there's not excess flows in the -- in the system.

And if a requirement that's one of the agreed to in-basin uses is -- requires some additional water for release out of the stored water, then the responsibility for that would fall 75-25, as an example.

And we typically track this on a daily basis. And we're looking at the daily changes in reservoir storage at CVP and State Project Reservoirs.

And on a particular day, meeting those in-basin demands and taking into account what was re-diverted in the Delta under the balanced conditions, we would keep a running count between the two projects.

But the basis for that account -- accounting on that particular day would be 75-25.

MR. HITCHINGS: And then how about the same for implementation of Article 6(d)?

WITNESS MILLIGAN: 6(d)'s a little more -- It's hard to parallel that.

But, in essence, if we're in excess conditions but there are some constraints or there are some demands that need to be met, and based on demands, then we are able to -- Basically, that daily accounting follows the 55-45 percentages.

So it's important to know if we're in excess conditions, then we're not. And there are sometimes during further wet periods that we have suspended accounting between the two projects.

MR. HITCHINGS: And is that spelled out in the COA or is that pursuant to some other way that just the COA is determined to be administered?

WITNESS MILLIGAN: Well, I think there's some reference in the COA, but then this is an area where the two projects do get together and determine whether we have a situation that it's appropriate to suspend the COA.

MR. HITCHINGS: Okay. I'd like, if we could, go back to Document 1, Mr. Milligan's written testimony.

(Document displayed on screen.)

MR. HITCHINGS: And Page 2, second full paragraph states that (reading):

". . . Reclamation must operate the CVP consistent with many other statutes, regulatory requirements, and contractual objections."

Correct?

WITNESS MILLIGAN: That's correct.

MR. HITCHINGS: And does this include Reclamation's obligations under the COA?

WITNESS MILLIGAN: Yes, it does.

MR. HITCHINGS: And is it also your understanding that Federal law requires Reclamation to operate the CVP according to the COA?

WITNESS MILLIGAN: Yes.

MR. HITCHINGS: At Page 4, second paragraph of your testimony, the last sentence states that Reclamation intends to operate the system including use of the New North Delta diversion -- use of the New North Delta diversions in a coordinated fashion to meet project obligations; is that correct?

WITNESS MILLIGAN: Yes.

MR. HITCHINGS: So how would the COA influence CVP and SWP coordinated operations with the Project in place?

WITNESS MILLIGAN: I think, consistent with the COA, the two projects -- in this case DWR and Reclamation -- need to sit down and evaluate the addition of the significant new piece of infrastructure to be able to determine that.

MR. HITCHINGS: So, has -- have those discussions taken place yet?

WITNESS MILLIGAN: We've had discussions but nothing has been finalized.

MR. HITCHINGS: And, so, compliance with the COA, has that been dealt with in the modeling for the Project itself?

WITNESS MILLIGAN: I think to the degree where we're asked to split some of this, there's a representation of the COA as it currently stands, but that would not -- If there are changes to the COA, then it may be appropriate, given the implementation of the Project, as we've discussed here, then that could be changed.

But what's currently in the modeling is a current implementation of the COA.

MR. HITCHINGS: But there has not been a determination or decision yet as to actually how the Project would operate under the COA at this time?

WITNESS MILLIGAN: As the Project would operate

under a modified COA, which is consistent with the -- with the COA document we just had, it does outline a procedure where the projects would get together and maybe do a review and then make adjustments.

MR. HITCHINGS: Ah. But at this time, we don't know what those adjustments might be; is that correct?

WITNESS MILLIGAN: That's correct.

MR. HITCHINGS: Do you know if there's been any -- With regard to having the Project in place, would the CVP or SWP have priority over the use of the new diversion facilities?

WITNESS MILLIGAN: It's unclear as to who would have priority at this point.

MR. HITCHINGS: How about, have there been discussions as to the sharing of the new diversion facilities in any percentage?

WITNESS MILLIGAN: There's been lots of discussion, but I don't think there's an agreed-to percentage.

MR. HITCHINGS: So we don't know that, sitting today here, whether and if there will be any sharing of the facilities under COA.

WITNESS MILLIGAN: Well, whether it's under COA or just a Use Agreement, the answer is, no, we don't know. This is, in part, why the materials to volumes of

water diverted South-of-Delta are lumped in terms of this particular material to the Board, was because this is still an active discussion between the two projects.

(Timer rings.)

WITNESS MILLIGAN: So we feel comfortable that we've identified the overall volume of water that's involved here, but the actual split of that south of Delta has yet to be determined.

CO-HEARING OFFICER DODUC: Do you need additional time, Mr. Hitchings?

MR. HITCHINGS: Yes, Chair Doduc, if I could. I think that I probably have about 15 to 20 more minutes, if that's okay.

CO-HEARING OFFICER DODUC: On what particular line of question?

MR. HITCHINGS: I'm just about -- I have a few more line -- few more questions within this line with regard to COA, and then a couple other specific questions with regard to South-of-Delta refuge deliveries and specific questions about some other points in his testimony.

CO-HEARING OFFICER DODUC: All right. 20 minutes.

MR. HITCHINGS: Thank you.

If we could go back to DWR-15. That's

Document 4 on the thumb drive.

(Document displayed on screen.)

MR. HITCHINGS: And, again, I specifically refer to the box for the H4 Delta outflow requirements.

And, again, you -- Do you understand that this reflects the modeling assumptions related to implementation of the Alternative 4(a) outflow H4?

WITNESS MILLIGAN: That's my understanding.

MR. HITCHINGS: Based upon your experience operating the CVP, how would the COA sharing responsibilities under Article 6 apply to increased Delta outflow of obligations like those proposed in scenario H4?

MR. MIZELL: Objection --

MS. AUFDEMBERGE: Objection.

MR. MIZELL: -- it's been asked and answered at this point. He's indicated the COA sharing is still to be hammered out.

CO-HEARING OFFICER DODUC: Mr. Hitchings, were you going for something else?

MR. HITCHINGS: I wanted to see if it was specific, if that's all-encompassing as to any and all obligations under the COA, and it includes the -- these outflow requirements. And if that's your answer, then that's fine.

So can we clarify that that is your answer? It would include these outflow scenarios?

CO-HEARING OFFICER DODUC: Mr. Milligan, please answer.

WITNESS MILLIGAN: In terms of if H4 was the Project, then I would see that as part and parcel what would be the element of a -- of a review under the COA and would be part of a discussion between the two projects.

MR. HITCHINGS: Okay. I'd like to briefly change gears here and -- and talk a little bit about the Biological Assessment modeling that's been performed.

Are you familiar with the -- When I say "BA," it's the Final BA or the most recent BA that was just submitted by DWR and Reclamation to the fishery agencies.

Are you familiar with that for the clean water -- for the Cal WaterFix Project?

WITNESS MILLIGAN: Not as familiar as the materials prepared for the Board, but I am somewhat familiar with it, yes.

MR. HITCHINGS: Did you have any role in the preparation of the BA?

WITNESS MILLIGAN: Less so than the work for the WaterFix but, yes, some. There's quite a bit of cross over between the two efforts.

MR. HITCHINGS: To the best of your knowledge, is Reclamation or DWR proposing any terms or conditions on any approval of the Project that would require the projects to operate according to the Delta outflow rules used in the modeling done for the BA?

WITNESS MILLIGAN: That, I'm not -- That, I do not know.

MR. HITCHINGS: Here they are. Excuse me.

I have a few questions about the Refuge -- South-of-Delta Refuge requirements.

Do you know whether the South-of-Delta Refuges have experienced any reduced allocations as a result of current operational restraints in the last five years?

WITNESS MILLIGAN: Yes, I do.

MR. HITCHINGS: Can you describe the extent of those reduced allocations and -- and let's use from 2012 on, if you know, or at least a ballpark range.

WITNESS MILLIGAN: I think that, particularly last year, there was a reduced availability of water for refuges South-of-Delta.

Refuges for the Level 2 supplies, as dictated by CVPIA, are linked to the inflow criteria at Shasta. They're very similar to what the Sac River Settlement contractors designed for our allocation of either a full 100 percent quantity or reduced 75 percent quantity in

years where we hit what's called Shasta Critical Year.

That 75 percent reduction was triggered both in 2014 and 2015.

In 2014, we may have been slightly below the 75 percent quantity to deliveries of -- for refuges South-of-Delta. But last year, they were hit even more of a reduction. Their contract entitlement would be 75 percent, but their quantities probably were closely to 65 percent of their Level 2 contract supply.

MR. HITCHINGS: And then could operations under the proposed Project result in additional water being made available by the CVP to the South-of-Delta Refuges?

WITNESS MILLIGAN: In the circumstance like 2015, I'm not sure. It is possible.

But, as I said before, we really don't know what exactly an operation in 2015 would have looked like with the facility in place, the North Delta diversion and criteria.

But to the extent that some water was potentially available to the CVP, particularly in the December-January timeframe, where there are refuge demands at that time, it may have been possible to increase the deliveries.

MR. HITCHINGS: Okay. I'd like to turn to your testimony again, to Document 1 on the thumb drive.

If we could go to Page 4, second-to-last paragraph.

(Document displayed on screen.)

MR. HITCHINGS: You'll see the last clause in that second-to-last paragraph is highlighted, but the full sentence reads (reading):

"Given the operational range set forth in the Project Description testimony, it is anticipated that the new diversion points can be operated in a manner that will not impede Reclamation's ability to meet its requirements . . ."

Do you see that?

WITNESS MILLIGAN: Yes. Yes, I do.

MR. HITCHINGS: And when you refer to operational range, what operational range are you referring to there?

WITNESS MILLIGAN: The difference between -- let's say, between H3 and H4.

MR. HITCHINGS: To the best of your knowledge, is Reclamation imposing any permit conditions for any approval of the Project that would require the CVP to operate within this operational range?

WITNESS MILLIGAN: I'm not aware that we are.

MR. HITCHINGS: Also, your testimony on Page 4 in a couple of places states that the new diversion

points may add flexibility to Project operations; is that correct?

WITNESS MILLIGAN: Yes.

MR. HITCHINGS: Is there a reason why you're equivocal on this point?

WITNESS MILLIGAN: Partly the existence of a new diversion certainly has the potential to have significant flexibility for the projects, but there's also some additional criteria there in place: Bypass flows at the new screens, for example; different flows in the Old River that need to be complied with.

So it's hard to say specifically depending what those are that the aggregate of the -- of the Project as conceived that way may have some flexibility but may take away some other flexibility, so we're not quite sure.

And the outflow question is another one that may also take away some element of flexibility.

So it depends on the full package as to how much -- how well we're able to meet this type of objective.

MR. HITCHINGS: So do you have some level of doubt that, if the Project's constructed, it may not provide any more flexibility in CVP and State Water Project operations than currently exist?

WITNESS MILLIGAN: There is conceivably some

set of criteria, even though you may have a new facility physically at North Delta diversion that is -- provides less utility to the projects than we currently have.

MR. HITCHINGS: All right. I'd like to direct you to just the last paragraph. It's a sentence in your testimony on Page 4. It says (reading):

"Reclamation has reviewed the DWR testimonies and agrees with their characterizations of the project operations."

Do you see that?

WITNESS MILLIGAN: Yes, I do.

MR. HITCHINGS: Do you know who from Reclamation you're referring to in this statement?

WITNESS MILLIGAN: Well, certainly myself, but also various Modeling staff, and those working on the California WaterFix for Reclamation.

MR. HITCHINGS: So, have you reviewed all of the testimonies and exhibits submitted in this proceeding by DWR?

WITNESS MILLIGAN: As they relate to the Project operations? Yes.

MR. HITCHINGS: And are you familiar with every single characterization of the Project operations in those testimonies and exhibits.

WITNESS MILLIGAN: At least the ones I've seen,

unless I missed something.

MR. HITCHINGS: So is it possible that there are some statements in those testimonies that characterize Project operations that you do not agree with?

WITNESS MILLIGAN: I suppose it's always possible. But in the coordination with DWR, I think we've hit on all the operational components of what's been presented and provided to the Board.

MR. HITCHINGS: Given that there's a possibility that there is not an agreement with those characterizations as just indicated, I would move to strike that portion of the testimony on the basis that it lacks foundation and is speculative.

CO-HEARING OFFICER DODUC: Miss Aufdemberge or Mr. Mizell?

MR. MIZELL: I believe the expert's allowed to make his opinion known. And he indicated that, based on the information he's reviewed and his professional opinion, this statement remains true and correct.

I don't think that the speculative possibility that there is some statement out there that may exist is sufficient grounds to strike this particular sentence.

CO-HEARING OFFICER DODUC: I'll take that under advisement for now, Mr. Hitchings.

MR. HITCHINGS: Okay. Thank you.

That's all I have for now. Thank you.

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

Next cross-examiner from Group 7. Was that Mr. O'Brien or . . .

MR. COOPER: Good afternoon. Dustin Cooper. Give me just a minute to set up.

CO-HEARING OFFICER DODUC: And as Mr. Cooper is setting up, who would be the third cross-examiner from Group 7? Mr. Lilly?

Okay. Thank you.

CROSS-EXAMINATION BY

MR. COOPER: Good afternoon again, panelists, Board Members. My name's Dustin Cooper.

I'm representing nine separate protestants. They are Western Canal Water District, Richvale Irrigation District, Butte Water District, Anderson-Cottonwood Irrigation District, Reclamation District number 1004, Plumas Mutual Water Company, Paridise Irrigation District, Nevada Irrigation District and South Feather Water and Power Agency.

I struggled to come up with a shorthand but could just not do it so hopefully that'll be the only time I have to repeat that.

My questions are primarily directed to you, Mr. Leahigh.

Your title again is Chief of the State Water Project Water Operations Office at the Department of Water Resources; is that correct?

WITNESS LEAHIGH: Yes, that's correct.

MR. COOPER: If the California WaterFix were constructed, would one of your tasks as part of your job be to operate the new WaterFix facilities in conjunction with other State Water Project facilities?

WITNESS LEAHIGH: Yes, I believe that would be the case.

MR. COOPER: Is it fair to say that the California WaterFix Project, if constructed, would provide additional export capacity for the CVP and SWP?

MS. AUFDEMBERGE: Objection: Asked and answered.

CO-HEARING OFFICER DODUC: I'm sorry. Mr. Cooper, could you repeat that?

MR. COOPER: The question: Is it fair to say that the California WaterFix Project, if constructed, would provide additional export capacity for the CVP and SWP?

CO-HEARING OFFICER DODUC: I think that question will be asked many different ways.

Why don't you go and answer that, please.

WITNESS LEAHIGH: Well, as I stated in my summary of my written testimony, the actual physical export capacity at Banks Pumping Plant would not change as part of the California WaterFix, if that's the question.

MR. COOPER: Let's -- Let's get into that.

So what is the physical capacity at Banks currently?

MR. BERLINER: Same objection.

CO-HEARING OFFICER DODUC: I have a feeling this is an area that will be explored repeatedly, and so I will allow this question.

And I will ask that, Mr. Leahigh, you answer as directly as possible.

MR. BERLINER: And if the Hearing Officer pleases, rather than me being obnoxious and imposing, if we could just have a standing objection to this line of questions.

CO-HEARING OFFICER DODUC: So noted.

MR. BERLINER: Thank you.

WITNESS LEAHIGH: So, the export capacity as it relates to Banks Pumping Plant, if all units were available, essentially would be 10,300 cfs is the maximum possible export capacity, assuming water supply was

available.

MR. COOPER: Do you happen to know -- and if you don't, I can direct this question to Mr. Milligan -- what is the physical capacity at the Jones Pumping Plant?

WITNESS LEAHIGH: I'll defer to Mr. Milligan to answer that.

WITNESS MILLIGAN: The physical capacity -- Apologies. Let me get this done one time.

There are six units, pump units, at the Jones Pumping Plant. Physically, if all six were operating, if my memory serves me, it's about 5,200 cfs. But that exceeds the capacity of the Delta-Mendota Canal just downstream from that point.

So, currently, we typically have one unit out of commission, probably undergoing -- or some kind of maintenance at any particular time.

So, the plant itself will limit itself to whatever the capacity is in the DMC. That could be as high as 5600 cfs but depending on tides and demands on the canal as well.

So, optimally, 4500 cfs but more in the range of 4200 to 45.

MR. COOPER: Maybe I misheard you.

The capacity of the DMC, I thought you said, is 5,600 cfs. Did you mean 4,600?

WITNESS MILLIGAN: 4,600. But the capacity of these six units at Jones Pumping Plant is in the 5,200 range.

MR. COOPER: Okay. Mr. Leahigh, back to you.

So we've established the physical capacity at Banks. Describe for me the permitted capacity at Banks.

WITNESS LEAHIGH: Yes. Our water rights permits allow us to utilize the full physical capacity, 10,300 cfs.

MR. COOPER: In earlier testimony, I believe from Miss Pierre, she referenced a permitted capacity limitation of 6,680 cfs. Does that sound familiar to you?

WITNESS LEAHIGH: Well, I was responding to the question with regards to our water rights permits, would be 10,300 cfs.

MR. COOPER: So the figure I just referenced, the 6,680 cfs limitation, where does that come from?

WITNESS LEAHIGH: Yes. So there is a -- a permitted capacity through the U.S. Army -- U.S. Army Corps of Engineers that varies depending on the time of year. I believe that's the permit she was referring to.

For much of the year, essentially for most years March through October or -- sorry -- March through mid-December, there is a permitted capacity of 6,680 cfs

on a three-day average.

MR. COOPER: And during the other times of the year, what's the permitted capacity at that time?

WITNESS LEAHIGH: So, under the same permit, the -- the capacity can increase from the 6680 cfs plus a third of whatever the San Joaquin flow is at Vernal.

MR. COOPER: Is there a maximum under the permit?

WITNESS LEAHIGH: The maximum would allow us to export the full 10,300 cfs of physical and water rights permitted capacity at Banks.

MR. COOPER: So, if the California WaterFix were to come online and was operational, would you be constrained by this Army Corps of Engineer permit limitation?

MR. BERLINER: Objection: Calls for speculation.

CO-HEARING OFFICER DODUC: Mr. Leahigh happily can answer that to the best of his ability.

WITNESS LEAHIGH: Yes. I believe that that permit would still be in place as it relates to our -- The permit is with regard to our current diversion location at Clifton Court Forebay. So there's nothing in the California WaterFix proposal that would change that permitted capacity there at Clifton Court.

MR. COOPER: So if you're using the full 9,000 cfs capacity of the proposed California WaterFix, then you're limited for your -- from your diversions from Clifton Court at the Army Corps of Engineer permitted limited -- limitations?

WITNESS LEAHIGH: No. I -- The -- The current limitation at Clifton Court, I don't see any reason why that would apply to the North Delta -- any New North Delta diversion location. That -- That permit is specific to Clifton Court Forebay.

MR. COOPER: Would you agree, then, that the California WaterFix would increase the existing capacity of the Central Valley Project and State Water Project to divert water to the existing export pumps?

WITNESS LEAHIGH: Not necessarily, no. It would depend on the -- the final permit conditions.

MR. COOPER: Do you anticipate having permit conditions that would limit you to these same United States Army Corps of Engineers limits?

WITNESS LEAHIGH: No. So, okay. I'm sorry.

To be -- to be clear, the -- the capacity limits for the New North Delta diversion location are part of the -- the North Delta diversion bypass flow criteria on -- on which has been submitted as part of the proposed Project.

I'm sorry. Maybe I missed the question there.

MR. COOPER: Why don't we shift gears slightly.

And let me ask: To your knowledge, have there been any instances during the past decade when additional water could have been released from Project west reservoirs to augment South-of-Delta supplies if there had been additional export capacity available?

MR. MIZELL: I'm going to object to vague and ambiguous.

We're talking about any circumstances in the past under -- I mean, that's -- that's so incredibly broad.

MR. COOPER: The question was limited to the past decade.

MR. MIZELL: Same objection in regards to the past decade.

CO-HEARING OFFICER DODUC: Yes. Let's let Mr. Leahigh ponder that and answer it if he can.

WITNESS LEAHIGH: So, in the past decade, it's -- it's -- it's very difficult to say for sure.

I'm sorry. Can -- Can you repeat the question?

MR. COOPER: To the extent of your knowledge, have there been any instances in the past decade when additional water could have been released from Project reservoirs to augment South-of-Delta supplies if there

had been additional export capacity available?

MR. BERLINER: I'm going to object: It's an incomplete hypothetical.

We don't know what constraints are going to be put on the new facilities that could affect the answer to this question.

CO-HEARING OFFICER DODUC: Do you wish to provide any additional specificity, Mr. Cooper?

MR. COOPER: With all due respects, I posed the question already once. There was an objection lodged that I heard you overrule.

Now, as a courtesy to the witness, I've restated the question, and I'd --

CO-HEARING OFFICER DODUC: And I'm asking if you have additional specificity and, if you don't, you don't.

MR. COOPER: No, I do not.

CO-HEARING OFFICER DODUC: All right. Mr. Leahigh, again, answer to the best of your ability.

WITNESS LEAHIGH: Yes. So, to the best of my ability, I know if we look at the last decade as an example, I know there are a number of years during that period where we were not using even the full capacity that we had available to us at Clifton Court.

As far as specific to your question, I know in

2011 -- it was a very wet year -- there would have been certainly an ability, and in my example there would have been an ability, to pick up additional excess flows as with the California WaterFix.

I can't say for sure sitting here whether there would have been any opportunity to move additional stored water, if that's what the question was.

MR. COOPER: As part of your job duties, are you involved in the decision-making at DWR in establishing an annual allocation of water to State Water Project contractors?

WITNESS LEAHIGH: Yes, I am. We make recommendations to the Director of Water Resources for those allocation decisions.

MR. COOPER: Can you maybe describe that in a little greater detail, the process you typically go through.

WITNESS LEAHIGH: Sure.

So, the process that we go through is to take a look at the potential supplies that are going to be available in the system in the coming year.

So, a big part of that would be the forecasted runoff information that we receive based on snowpack measurements from our Division of Flood Management. They'll provide us with various exceedances of possible

runoffs to occur throughout the system, generally broken up by water basin on a monthly time-step for the remainder of the year.

We will also take a look at storages in the system that would also be available for that supply.

Then we would also take a look at obligations that we have. Part of those would be our settlement contract obligations to the Feather River Service Settlement contract group; would also be -- take a look at our requirements under D-1641 for both flow and water quality objectives that we would need to make and that would require some of that supply.

We -- We'll essentially run through -- Well, we'll make a very conservative estimate. We'll use a very conservative estimate in terms of the amount of runoff that we would expect to see, and this would be based on, you know, amount of rainfall, which is something we're not going to know coming into the year, so we make a very conservative estimate of what that rainfall will be for the coming year, meeting all the obligations, sort of as I laid out in my summary of my written testimony.

If after doing this analysis and stepping through the year we find that there is an additional supply that we're able to either, through the course of

the year, divert to storage upstream or divert directly at the export facilities and excess flows, to the extent once we get the summer period, if we're able to release some of those -- some of that stored water from upstream and re-divert it in the export locations during the summer -- these are all projections -- we can -- we can -- we also factor in the delivery patterns from our contractors.

So they'll tell us basically when they're going to need the water, and that's important in that it determines whether or not there would be space available in San Luis Reservoir south of the Delta to capture some of these excess flows in the spring period.

But looking at all of these factors together, including Flood Control Criteria, in-stream -- minimum in-stream flow criteria, factoring all of the regulatory obligations that we have, will determine what the delivery capability of the Project would be under those conservative estimates of water supply for the year.

And that's the basis for which we make our recommendations to the Director with our first initial allocation being made on December 1st prior to the coming year. We will update those recommendations on a monthly basis as we step through the winter and then into the spring.

And we -- As -- As we do step through those months, we obtain better and better knowledge as far as what -- what sort of water supply will be available to the Project based on the amount of precipitation that occurs.

By the time we get into May, which is typically the end of our wet season, we will have firmed up to a large extent what sort of supply's available and that's typically when we make our final allocation recommendation to the Director.

MR. COOPER: Thank you.

It sounds like you're considering a lot of factors before you make a recommendation.

Does current South-of-Delta export capacity factor into that process that you just described?

WITNESS LEAHIGH: Yes. So all of the physical limitations of the system will be factored in, whether it be usable storage in Lake Oroville, and still adhering to flood control requirements. It'll also consider our share of capacity in San Luis Reservoir. It will also consider our release capabilities to the Feather River from Lake Oroville. It will also consider our permitted capacities for exports in the South Delta.

MR. COOPER: What about current biological opinion requirements? Does that factor into your

decision-making when you make a recommendation for an annual allocation?

WITNESS LEAHIGH: Yes, absolutely. In fact, the -- the way the biological opinions are structured is, they actually present another level of uncertainty as far as the water supply that will be available to the projects in that those Old and Middle River limitations are based on biological parameters, so fish distribution, salvage of listed species, turbidity, what have you. And the effective Old and Middle River constraints would be based on a range.

And so -- By the same token that we use a conservative estimate of the precipitation, we also use a conservative estimate on how restrictive those biological opinion permits will be on our ability to export water from the South Delta.

MR. COOPER: How, if at all, would you expect that current process in setting annual allocations to change in the California WaterFix Project were constructed?

WITNESS LEAHIGH: We would basically follow the same process.

The -- The new infrastructure, of course, changing in -- in some respects, depending -- again, depending on the permits that go with the California

WaterFix, there may be some opportunities to move water.

Additional excess flows, as I've noted in my example, which we would factor into that allocation decision in the -- if there -- if it's in a period that -- so we have no conflict with the Old and Middle River criteria and no conflict with any other criteria, there could perhaps be additional ability to divert from that North Delta. That would be factored in.

If we're operating to more restrictive Old and Middle River criteria in the South Delta, that would be factored in. If there's any new health flow requirements, those would have to be factored in as well.

And, so, there would probably be, depending on the timing, a lot of pluses and minuses. But essentially we would follow the same process as -- as looking at the water supply, looking at the constraints in moving water supply at the diversion locations, and come up with our recommended deliveries, delivery allocation.

MR. COOPER: Would export capacity at the South Delta still be as significant a factor as is currently the case?

WITNESS LEAHIGH: Yes, absolutely, it would be. Well, it would -- it would . . .

Diversion capacity at South Delta will -- in the South Delta will continue to be something we look at,

and the new diversion -- the capabilities of the new diversion location would be a piece of that as well.

The biggest boost to the allocation that we would expect to see would be the increased ability to capture excess flows in the winter/spring period, essentially restoring a lot of the capability that we had at the South Delta location prior to the BiOps coming in place.

Again, assuming on whatever -- whatever permit conditions we ended up with.

MR. COOPER: You've already referenced the analysis you did for the period of December 1, 2015, through, I believe, the end of April 2016. That's in DWR Exhibit 411.

The current 2016 State Water Project allocation is 60 percent; is that correct?

WITNESS LEAHIGH: That's correct.

MR. COOPER: How -- Let's use 2016 as an example.

How would picking up that surplus flow have affected or changed the current State Water Project allocation?

WITNESS LEAHIGH: Well, it's not completely certain, but in my estimate, I assumed, with the WaterFix under that particular scenario, which was H3, we would --

there would have been an additional 1.2 million acre-feet capable for diversion.

Now, as Mr. Milligan had indicated, it's not entirely clear how the split would be on that -- that . . . that diversion between the two projects. But for the sake of a hypothetical, let's say half of that was available to the State Water Project so, say, additional 600,000 acre-feet of potential deliveries to the State Water Project would amount to approximately an additional 15 percent allocation. So perhaps 75 percent allocation to the State Water Project rather than 60 percent.

This is all hypothetical, of course.

MR. COOPER: Let's -- Let's go to a different year.

Were you involved in the decision-making or the recommendation process you earlier described for Table A allocations in the year 2012?

WITNESS LEAHIGH: Yes.

MR. COOPER: Do you recall what the Table A allocation was in 2012?

WITNESS LEAHIGH: I believe it was 60 percent.

MR. COOPER: I have 65 percent. I don't know if that helps refresh your recollection or not, but for purposes of continuing our -- our discussion here, let's

assume you're correct that it's 60 percent.

Do you recall: What were the limiting factors in the -- In the multifactor analysis you go through to make a recommendation, in 2012, what were the factors that were limiting the State Water Project allocation in that year?

WITNESS LEAHIGH: I -- I can't remember all of the factors sitting here today, what those would have been.

MR. COOPER: Do you recall if South-of-Delta export capacity was a limitation in 2012?

WITNESS LEAHIGH: I couldn't say for sure. But with an allocation at that level, we were most likely utilizing most of our capacity during the summer months. I can't say if we were using all of it.

Also, as far as whether it was a limitation, I can't say definitively whether it was in that particular year.

MR. COOPER: If there was a capacity constraint in 2012, and that constraint was lifted, at least in part, as a result of the California WaterFix Project, would you have moved more stored water in that year?

WITNESS LEAHIGH: I -- I can't say for sure unless I really looked at all of the factors for that particular year.

MR. COOPER: Back to your example, I believe it's DWR-411. And we can bring that up if you like.

But what struck me as significant is, you were only conducting an analysis of picking up the Delta surplus; is that correct?

WITNESS LEAHIGH: That -- That is correct.

MR. COOPER: Have you done an analysis of potential California WaterFix operations where you were moving more stored water.

WITNESS LEAHIGH: Well, in this particular example, there was more than enough excess flows for the -- through the entire period, so there would have -- there . . . would have been -- would not have made sense to release additional stored water, for one, when there's pleasant of other excess flows in the system.

But, no, I have not done -- So it's not applicable to this period -- this period of time.

MR. COOPER: Can -- Mr. Baker, would you pull up exhibit DWR-1, and I believe it's Page 11 of that document.

(Document displayed on screen.)

MR. COOPER: Yes. Thank you.

Are you familiar with this slide, Mr. Leahigh?

WITNESS LEAHIGH: Yes.

MR. COOPER: Did you assist in the preparation

of this slide?

WITNESS LEAHIGH: No.

MR. COOPER: Were you here for Miss Pierre's testimony on July 29th, 2016?

WITNESS LEAHIGH: Yes, I was.

MR. COOPER: I believe her testimony concerning this slide was that the regulatory Reach requirements governing the operations of upstream reservoirs are not proposed to be changed.

Is that also your understanding?

WITNESS LEAHIGH: Yes, that's my understanding.

MR. COOPER: What are some of those regulatory requirements that govern your operations?

WITNESS LEAHIGH: Well, I -- Yeah. I think she -- If I remember correctly, she said upstream operating criteria. So, to me, that would be not just regulatory criteria.

So I'll start with the regulatory criteria which essentially would be our flood control parameters that we would need to follow as far as limiting the amount of diversions into Lake Oroville and providing flood control space for protection downstream, flood -- flood control protection downstream.

It would also include any minimum in-stream flow requirements that we currently have in both our FERC

license and with agreement with State Department of Fish and Wildlife.

It would also include some flow stability standards in the fall to avoid stranding.

So those are the types of regulatory criteria it would include, but it would also include our obligation -- our contractual obligations, so . . . meeting the contract amounts to the Feather River Service Settlement contractors.

It would also include providing ample storage to meet the Water Quality Control Plan objectives for that particular year.

So that -- I don't know if that's all-inclusive but that, I think, hits on most of those regulatory/contractual obligations that we would be looking at. This would remain as part of the WaterFix.

MR. COOPER: Thank you.

I want to make sure we're using the same terminology.

You said, as all those items you just spoke, you would classify those as, quote, upstream operating criteria; is that fair?

I just -- I want to use some term that we can both agree on for the next series of questions.

WITNESS LEAHIGH: I -- I would refer to those

as our . . . regulatory/contractual obligations in the upstream -- for the upstream operations.

MR. COOPER: Regulatory/contractual obligations?

Let's -- Let's contrast that with what I would call actual on-the-ground conditions in the reservoirs.

Now, this slide says that what isn't changing is upstream operations of the State Water Project CVP.

What I want to ask is: Would the actual on-the-ground conditions of the reservoirs change as a result of the California WaterFix?

WITNESS LEAHIGH: Well, it would depend on the time period I think that you're talking. Certainly the day-to-day operations could very well change.

I think there could be some shifts in -- in timing to a certain degree seasonally, but I think by the time you get to the end of the year, you would -- you essentially end up in the same storage conditions as with or without the California WaterFix in place.

And I think to a large degree this is where this -- this part of this particular slide is getting at, and that -- and that bears out in the modeling results that you would look at that were conducted as part of this Project.

MR. COOPER: By end of year, are you meaning

end of the water year and September storage levels?

WITNESS LEAHIGH: Yes. That's typically the most common period we're looking at as far as gauging end-of-year storage conditions.

MR. COOPER: You mentioned the modeling for the California WaterFix Project.

Were you involved in developing the operational scenarios used for the modeling that was done for the California WaterFix Project?

WITNESS LEAHIGH: I wouldn't say it was necessarily part of the development of those. I did review those in terms of feasibility, if you will, for some of those scenarios. I wouldn't say necessarily as part of the development of those.

MR. COOPER: Are you aware of anyone else at DWR that was involved in the development of the operational scenarios used for the modeling that was done for the California WaterFix Project?

WITNESS LEAHIGH: I -- I don't know about -- I don't know for sure about DWR employees directly. I know that our contract with CH2M Hill, that those folks were involved in the development of those scenarios.

MR. COOPER: Did you have any discussions with either staff at CH2M Hill or -- or DWR modeling staff about how you would operate the California WaterFix once

it was constructed?

WITNESS LEAHIGH: Yes, we had -- we had discussions. Yes, we had discussions.

MR. COOPER: Tell me: Who were those discussions with?

WITNESS LEAHIGH: So, those would have been with CH2M Hill probably, primarily, Chaundra -- I'm sorry, I don't -- I don't know that I can pronounce his last name, I forget it offhand -- Armin Munévar, so those two gentlemen.

MR. COOPER: Anyone else?

WITNESS LEAHIGH: I think those were the two -- Those are the two I recall.

MR. COOPER: Have you reviewed the model runs and modeling assumptions to see if your description of how the California WaterFix would be operated is accurately reflected?

WITNESS LEAHIGH: Yes. I mean, we -- So, essentially, we would follow the criteria contained in the WaterFix so this would include the North Delta bypass criteria; it would include the new OMR criteria in the South Delta; it would include the operations of the Head of Old River Gate and Rio Vista flows.

So when we step through our example for this year, we followed all those criteria to a T in coming up

with the capability of diverting that excess flow that occurred during that period.

MR. COOPER: In your written testimony, you state that the State Water Project and Central Valley Project operations in real-time are much different than analyzing and critiquing operations through model simulations.

Do you recall that?

WITNESS LEAHIGH: Yes.

MR. COOPER: Would you agree that real-time operations will deviate from the operational scenarios embedded in the modeling?

WITNESS LEAHIGH: Yeah. So this would be a good opportunity to clarify that.

I -- The statement that the modeling does not do well in emulating real-world operations, it depends on kind of the time-step.

The models do not -- are not able to capture kind of the day-to-day decision-making on responding to salinity events and that type of thing.

What I do think the -- the models do a good job of is more on a monthly time-step. They -- They do a good -- They're very good at emulating over a longer period of time and for planning purposes how the projects would operate.

So, on the day-to-day, not so good. On the long-term planning perspective, I'd say pretty good.

In fact, we -- As a general case, CalSim represents the best state-of-the-art simulation model for the system that exists, in my view, and we're constantly achieving to improve on it.

So not just through the course of this California WaterFix development but ongoing improvements to the model are -- are constantly being made with interaction between Operators and Modelers. And that's why I feel that the -- the model does a good job of emulating the operations on the monthly time-step over a long period of time.

MR. COOPER: Would you agree that the operating assumptions in the model should be as close to how the Project would actually operate in real-time as reasonably possible?

WITNESS LEAHIGH: I'm sorry. Can you repeat that question?

MR. COOPER: Sure.

Would you agree that the operating assumptions in the model should be as close to how the Project would actually operate in real-time as reasonably possible?

WITNESS LEAHIGH: Yes. I mean, I -- I believe all models -- No model is going to be perfect, but,

again, I think, you know, we should constantly be trying to strive to produce better models. I think the model that exists is the -- is the best that's out there.

MR. COOPER: In the modeling that was done for the different California WaterFix alternatives, the operational parameters for upstream reservoir operations were never varied.

Is that your understanding?

WITNESS LEAHIGH: I'm sorry. I'll need you to repeat that question.

MR. COOPER: In the modeling that was done for the different California WaterFix alternatives, the operational parameters for upstream reservoir operations were never varied.

Is that your understanding?

WITNESS LEAHIGH: So, the . . . The modeling -- Well, I'm -- It's -- It's too vague. I can't answer that question.

MR. COOPER: Do you not know or do you not understand the question?

WITNESS LEAHIGH: Well, I don't know what rules exactly you're talking about in the model.

MR. COOPER: Well, let me -- let me try to ask a maybe real question from a modeling output.

Are you aware in the modeling for the

California WaterFix Project that Oroville end-of-September storage is approximately 90,000 acre-feet higher than under the No-Action Alternative modeling?

MR. MIZELL: Objection: Vague.

Can the questioner please specify under which operating scenario he's referring?

MR. COOPER: I don't know that the operational parameter -- I don't know that the question -- or answer differs depending on which version we're talking about.

CO-HEARING OFFICER DODUC: Mr. Leahigh, could you answer, or would you -- or do you need further specificity?

WITNESS LEAHIGH: Well, it would be helpful if I actually saw the data.

But my recollection, from looking at the output, is, the storage levels were very similar amongst all of the -- all of the scenarios for the WaterFix -- for end of -- end-of-year storages.

MR. COOPER: Would you anticipate that your real-time operations of the Project with the California WaterFix in place would also have very little effect on end-of-September storage?

WITNESS LEAHIGH: Yes. I think that for the same reasons that the model is limiting . . . the amount

of stored water that's released, would -- those same -- those same rules, especially -- Well, average to drier years, the same rationale would exist whether or not there was increased capacity to move water through the Delta or not. We're still going to be protecting the upstream, regardless of the amount of capacity.

I could see where perhaps in the very wettest years, if there was capacity to move additional stored water and not having really any significant effect to the upstream, you know, that would be an instance where -- where we would look at that type of scenario.

MR. COOPER: To the best of your knowledge, are DWR and Reclamation proposing that the State Water Board insert any conditions in their water right permits requiring that once the tunnels are in place, the Central Valley Project and State Water Project may not release any more water from upstream storage than they do now?

WITNESS LEAHIGH: That is not something that we're asking for as part of this Project, no.

MR. COOPER: For the next few questions, I'm going to refer to the Fish and Wildlife agencies.

And when I use that phrase, I mean NBS, U.S. Fish and Wildlife Service, and then the California Department of Fish and Wildlife.

Did you ever have a discussion with the Fish

and Wildlife agencies how you would operate the Project in real-time?

MR. BERLINER: Objection as to vagueness.

This question goes to anytime ever. If he can narrow the timeframe, it might be very helpful.

CO-HEARING OFFICER DODUC: I think Mr. Leahigh did answer that, say, within the last few years.

WITNESS LEAHIGH: I can't -- I can't recall if there was a discussion specifically to the WaterFix. I think that the -- the real-time -- the real-time operations that's referred to -- And this is probably a good place for clarification.

The real-time operations that I talked about today were the type of real-time operations during balanced conditions in meeting flow and water quality objectives, so it's not related -- that related to agricultural uses and M&I uses.

The coordination that takes place in that kind of real-time is really between Reclamation and DWR because we have a joint responsibility in meeting those requirements.

So that's -- that's -- When I was talking about real-time operations, that's the context in which I was talking about it.

As part of the WaterFix, there's a proposal

on -- because there's a range of -- typically a range of different Old and Middle River flows to operate to -- and this is the existing case as well under the BiOps -- there's a real-time engagement with the fishery agencies on where to set that limit on kind of on a week-to-week basis. So that's the real-time operations that is referenced in the WaterFix.

So, to the degree that I had conversations with Fish and Wildlife, it's -- there's -- there's certainly been over the years conversations about the structure of the current process that exists today under the BiOps.

To a large extent, I think that same process is being brought forward in the California WaterFix. And so to the extent that there's overlap there, I guess that would have been my involvement with discussions with the fishery agencies on real-time operations.

MR. COOPER: So it sounds to me, you don't recall at least any specific discussions with representatives of Fish and Wildlife agencies that -- along the lines of, "If the California WaterFix were constructed, this is how it would be operated"?

WITNESS LEAHIGH: I can't recall any -- any specific conversations to the WaterFix real-time Ops.

MR. COOPER: Okay. Let's now change topics, Mr. Leahigh.

And we can pull up -- I'm going to be referencing DWR-61, which is your testimony, and I have a file with some highlighted portions.

(Document displayed on screen.)

MR. COOPER: At Page 8, Lines 3 through 8, you reference the Temporary Urgency Change Petitions, TUCPs, to relax water quality requirements during certain extreme drought conditions.

Do you recall that?

WITNESS LEAHIGH: Yes.

MR. COOPER: Were you involved in the preparation of the 2014 and 2015 TUCPs?

WITNESS LEAHIGH: Yes, I was.

MR. COOPER: Do you believe similar extreme drought conditions may occur in the future in which TUCPs may be necessary?

WITNESS LEAHIGH: I don't know.

MR. COOPER: Is it possible?

WITNESS LEAHIGH: The fact that it's happened, I would say it is possible, yes.

MR. COOPER: Are you aware of the Draft Biological Assessment? And the draft I'm referring to is, I believe, the January 2016 draft.

That Draft Biological Assessment sets forth a proposed future drought procedure.

Are you aware of that?

MR. MIZELL: I'm going to object to the relevance of the January draft of the BA.

The submitted draft has since been submitted to the fish agencies and is the current document for these purposes at this point in time.

CO-HEARING OFFICER DODUC: I'm sorry. What is your objection?

MR. MIZELL: Relevance.

He's referencing an old document that was not ultimately submitted to the fish agencies for consideration.

CO-HEARING OFFICER DODUC: Mr. Cooper.

MR. COOPER: Yes, I'm getting to that actually.

There's been a change when you compare the 2016 draft version to the most recently submitted August 2016 version --

CO-HEARING OFFICER DODUC: All right, then.

MR. COOPER: -- regarding the TUCPs.

CO-HEARING OFFICER DODUC: Go ahead.

MR. COOPER: Would you like me to repeat the question?

WITNESS LEAHIGH: I -- I think I remember the question.

And, yes, I'm somewhat familiar with that

language from the Draft BA of January.

MR. COOPER: Are you also aware that that January 2016 Draft BA states that Reclamation and DWR will prepare TUCPs as needed in future drought years?

WITNESS LEAHIGH: I remember -- I remember some language to that effect.

MR. COOPER: Are you aware that the revised Draft BA submitted on August 2nd, 2016, deletes this explicit reference to the use of TUCPs as needed in future drought years?

WITNESS LEAHIGH: I'm not real familiar with the latest -- or with the final draft that was submitted. I think there were some changes to that section, but I don't recall exactly what those were.

MR. COOPER: So, then, is it safe to say that you were not involved in the decision to delete this reference as to the possible future use of TUCPs?

WITNESS LEAHIGH: That's correct, I was not involved.

MR. COOPER: Do you know who was?

WITNESS LEAHIGH: No, I do not.

MR. COOPER: In your opinion, does this deletion mean that you -- mean to you that DWR/Reclamation would not consider the potential use of TUCPs in future extreme drought conditions?

WITNESS LEAHIGH: No. I -- I would imagine that, regardless of whether California WaterFix were to go forward or not, that there would be potentially certain years that we've -- as we've experienced that would require us to make such a petition to the Board.

MR. COOPER: Do you have any sense for how frequently or infrequently DWR and Reclamation may request TUCPs in the future?

MR. BERLINER: Objection: Calls for speculation.

CO-HEARING OFFICER DODUC: And he may answer if he knows and say -- and answer that he doesn't know if he doesn't know.

WITNESS LEAHIGH: Yeah. I don't know how -- how frequent that would occur.

MR. COOPER: Do you know what DWR may request as terms for any future TUCP?

MR. BERLINER: Same objection.

CO-HEARING OFFICER DODUC: Same answer.

MR. COOPER: Is it your same answer?

WITNESS LEAHIGH: Same answer. I can't say. It would depend on the particulars of that year.

MR. COOPER: Is it possible that the State Water Board, in considering a possible future TUCP, may impose conditions of approval?

WITNESS LEAHIGH: Yes.

MR. COOPER: Do you know specifically what those possible future conditions of approval may be?

MR. BERLINER: Same objection.

WITNESS LEAHIGH: I -- I have -- I do not know.

CO-HEARING OFFICER DODUC: Thank you. I would be very worried if your answer was yes.

(Laughter.)

MR. COOPER: Is it possible the State Water Board may place conditions related to temperature management at Shasta Reservoir?

WITNESS LEAHIGH: I have no idea.

MR. COOPER: Is it possible the State Water Board may place conditions related to minimum carryover storage levels at Folsom Reservoir?

WITNESS LEAHIGH: I have no idea.

MR. COOPER: Is it possible that conditions of approval on one or two Project reservoirs may place additional water supply burdens on the remaining Project reservoirs?

MR. MIZELL: I'm going to object: Asked and answered at this point. I think we've well established, and John can't speculate as to what the Board might impose upon us in a future TUCP.

CO-HEARING OFFICER DODUC: I hear that but this

is a different question that Mr. Cooper just asked.

Repeat that, Mr. Cooper.

MR. COOPER: Sure.

Is it possible that conditions of approval on one or two Project reservoirs may place additional water supply burdens on the remain Project reservoirs?

MR. MIZELL: Then I believe it's a vague question because he's not specifying approval of what he's referring to. Approval of this Project or approval of a future TUCP?

CO-HEARING OFFICER DODUC: Then Mr. Leahigh can answer if he's able to and say no if he can't.

WITNESS LEAHIGH: I can't answer that. It depends on the particulars of whatever the conditions were --

MR. COOPER: Okay.

THE WITNESS: -- for that approval.

MR. COOPER: With respect to DWR and Reclamation's requested 2014 and 2015 TUCPs, are you generally aware of the objections lodged by various entities that Hold Diversion Agreements for water from the Feather River, such as Western Canal Water District and the Joint Water Districts Board?

WITNESS LEAHIGH: Actually, I'm not real familiar with what those would have been.

MR. COOPER: Mr. Baker, would you pull up the file called Order WR 2015-0043?

(Document displayed on screen.)

MR. COOPER: And, if I may have this marked for identification purposes.

I have not established an acronym for my exhibits yet, so why don't we just call this MLF-1, Minasian Law Firm 1, for identification purposes.

(Minasian Law Firm's Exhibit MLF-1 marked for identification)

MR. COOPER: And, Mr. --

CO-HEARING OFFICER DODUC: Are we --

MS. RIDDLE: Hasn't this already been marked previously? If so, I think we would go with your original marking note that someone used, how that did it, in some way. But we'll go can back and check.

MR. COOPER: I have highlighted it, but I'm also not aware of it being marked previously.

MS. RIDDLE: Okay. It may not. I know it's been discussed. I'm not sure if it was marked or not. We'll go back and check.

MR. COOPER: This only contains select pages, as you can see.

Mr. Baker, would you scroll to the next page?

(Document displayed on screen.)

MR. COOPER: Next page.

(Document displayed on screen.)

MR. COOPER: So we're at . . .

If anyone would like, I have hard copies. I should have distributed these right at the outset.

MR. BERLINER: Mr. Cooper, if you could give one to the witness, too, please.

MR. COOPER: Yes.

(Documents distributed.)

CO-HEARING OFFICER DODUC: And, Mr. Cooper, as you're doing that, as a matter of time management, I'd like to take a break pretty soon for the court reporter, so when you finish this line of questioning, we will do so.

MR. COOPER: Okay. Mr. Leahigh, at Page 49 of the document that's been marked as MLF-1 for identification purposes, do you see the highlights where it says (reading):

> "NCWA and the Feather River contractors asserted that, before imposing such a condition, the Executive Director was required to make before findings set forth in Water Code Section 1435, including findings that the TMP would not cause injury to other lawful users of water or have an unreasonable effect on fish and wildlife."

Do you see where it says that?

WITNESS LEAHIGH: Yes, I see that.

MR. COOPER: The next highlighted sentence on the same page says (reading):

"Similarly, the Feather River Settlement Contractors asserted that they could not -- they could" -- excuse me -- "they could be injured by the TMP because restrictions on CVP operations place greater responsibility on Oroville Reservoir to meet Delta water quality requirements and other in-basin uses, thereby reducing the amount of water available from Lake Oroville to meet the needs of DWR's contractors."

Do you see where it says that?

WITNESS LEAHIGH: Yes, I see that.

MR. COOPER: Turning to Page 50 of the same marked document, the highlighted portion there says (reading):

"The argument that Water Code Section 1435 required the Executive Director to make certain findings concerning effects of the TMP also lacks merit. Water Code Section 1435 requires certain findings to be made with respect to the changes proposed by Temporary Urgency Change Petition, not with respect to any conditions of approval."

Do you see where it says that?

WITNESS LEAHIGH: Yes.

MR. COOPER: Were you aware that the State Water Board maintains that its conditions of approval for any TUCP are not subject to the no-injury analysis that is attendant to such requests?

WITNESS LEAHIGH: I'm not familiar with all of the legal requirements, no.

MR. COOPER: Are you familiar with the initial operating criteria and boundary analysis described in Miss Pierre's testimony?

WITNESS LEAHIGH: I'm sorry. Could you repeat the question?

MR. COOPER: Are you familiar with the initial operating criteria and boundary analysis described in Miss Pierre's testimony?

WITNESS LEAHIGH: Yes.

MR. COOPER: Can you say today that any possible future conditions of approval will be confined to the spectrum of operations analyzed in the boundary analysis?

WITNESS LEAHIGH: I'm not sure, no.

MR. COOPER: You're not sure in that you -- you can't answer the question or . . . you don't have enough information?

WITNESS LEAHIGH: Well, I don't think I have enough information.

Maybe you can repeat the question.

MR. COOPER: Sure.

Can you say today that these possible future conditions of approval will be confined to the spectrum of operations analyzed in the boundary analysis?

WITNESS LEAHIGH: I'm sorry. Approval of what?

MR. COOPER: Conditions of approval.

WITNESS LEAHIGH: Conditions of approval for our petition?

MR. COOPER: For a petition for a TUCP.

WITNESS LEAHIGH: For a T -- I'm confused.

CO-HEARING OFFICER DODUC: Hold on.

MS. MORRIS: I have an objection. It's ambiguous what you mean by "the boundary analysis." I think you're referring to the spectrum of operations between boundary --

CO-HEARING OFFICER DODUC: Miss Morris, is your microphone on?

MS. MORRIS: Yes.

CO-HEARING OFFICER DODUC: Okay.

MS. MORRIS: -- between Boundary 1 and Boundary 2.

MR. COOPER: Yes.

CO-HEARING OFFICER DODUC: So that would be between Boundary 1 and Boundary 2, Mr. Leahigh.

WITNESS LEAHIGH: I'm sorry. I don't understand the question.

MR. COOPER: Okay. Let me try to maybe break this up.

You've already testified that, rightfully so, you had no idea what possible conditions of approval there may be on possible future TUCPs.

So the question -- You've already established that you -- you can't predict the future.

Can you say -- The question, again, with that in the back of your mind is, can you say today that possible future conditions of approval will be confined to the spectrum of operations analyzed in the Boundary 1 and Boundary 2 analysis?

WITNESS LEAHIGH: I guess, yeah, I can't say that.

MR. COOPER: To the best of your knowledge, does the modeling for the California WaterFix Project assume any particular use of -- or terms concerning TUCPs?

WITNESS LEAHIGH: No, I don't believe so.

MR. COOPER: Now would be a good time to break. I'm at a point where I'm going to change topics.

CO-HEARING OFFICER DODUC: And since you have about four minutes left, are you expecting needing more time? And if so, for what line of questioning?

MR. COOPER: I am moving to questions about Mr. Leahigh's specific testimony. That's quite a few pages.

CO-HEARING OFFICER DODUC: What aspect of his specific testimony?

MR. COOPER: I have a file with highlighted sections of his testimony, and then I have a series of questions following each highlighted portion.

CO-HEARING OFFICER DODUC: What aspect of his testimony?

MR. COOPER: It spans real-time operations, his use of the phrase "in-basin requirements," his characterization of operations concerning if there's sufficient storage, how the California WaterFix would be operated.

CO-HEARING OFFICER DODUC: All right. And how much additional time do you expect needing?

MR. COOPER: I would request another hour. I'm about halfway through my outline.

I -- I do have nine clients. I'm not requesting nine hours, but -- So that's one point.

The other point is, these questions have been

prepared not just for my specific clients but also as part of Group 7, the Sacramento Valley Water Users. And I'm looking to my colleagues.

But they will have followup questions, but they will be more discrete followup type. I'm covering more general type of questions.

CO-HEARING OFFICER DODUC: "They." My understanding was Mr. Lilly is the only remaining cross-examiner for Group 7.

MR. KELLY: Good afternoon. Dan Kelly with Placer County Water Agency.

I had -- I am relying heavily on the questions posed by Mr. Hitchings and by Mr. Cooper on behalf of my client and intend to only ask a few discrete followup questions as necessary.

And so on behalf of my client, Mr. Cooper is covering a lot of material that we would be asking in the absence of his questions.

CO-HEARING OFFICER DODUC: All right.

Mr. Lilly.

MR. LILLY: And I'm happy to report that, as Mr. Cooper asks his questions, I am crossing some of them off my list.

My questions -- I do have a lot of questions, though. That's the bad news.

But my questions will be focused almost exclusively on Folsom Reservoir, the impacts on my clients.

But Mr. Cooper's questions are shortening the amount of time I will have to ask questions.

CO-HEARING OFFICER DODUC: All right. Mr. Cooper, we'll give you an extra 30 minutes to start with and then we'll see how it goes from there. But I would encourage you to sort of speed up your questions.

MR. COOPER: I will try.

CO-HEARING OFFICER DODUC: All right. With that, we'll take a 15-minute break and we'll continue at -- am I adding right? -- 3:20.

Oops. I cheated the court reporter. 3:25.

(Recess taken at 3:07 p.m.)

(Proceedings resumed at 3:25 p.m.)

CO-HEARING OFFICER DODUC: (Banging gavel.)

All right. It is 3:25 and we will resume with Mr. Cooper.

Just before we do, as a matter of fact planning, I don't believe, given Mr. Cooper's request for additional time, and with Mr. Lilly and potentially Mr. Kelly also onboard, we will get to any other parties today with respect to cross-examination.

MR. COOPER: Thank you.

I have some questions about Mr. Leahigh's testimony, specific portions of it, and Mr. Leahigh's not here.

There he is. I'll go ahead and hand this out while he's getting settled.

(Documents distributed.)

CO-HEARING OFFICER DODUC: Mr. Leahigh is new so he may be forgiven for not recognizing that I start on time.

WITNESS LEAHIGH: I apologize.

MR. COOPER: Okay. Mr. Leahigh, are you ready?

WITNESS LEAHIGH: Yes, I am.

MR. COOPER: Okay. I've handed out -- and on the screen is -- a copy of your testimony labeled as DWR-61.

I've highlighted certain portions, and I just want to walk through those highlighted portions of your testimony. I have questions that correspond with each.

So, first, this isn't necessarily specific to any page or line number, but throughout your testimony, you emphasize real-time operations.

The question for you is: Does DWR and Reclamation's coordinated real-time operations attempt to maximize the export of water from the Delta when possible?

WITNESS LEAHIGH: Yes.

MR. COOPER: Do these real-time operations to maximize Delta exports include the release of water from storage in upstream project reservoirs?

WITNESS LEAHIGH: During some circumstances, it does.

MR. COOPER: Would these operations continue with the California WaterFix in operation?

WITNESS LEAHIGH: Yes, I would presume so.

MR. COOPER: In your opinion, does the California WaterFix afford a greater opportunity to export water from the Delta as compared to current operations?

WITNESS LEAHIGH: It will depend on the permit conditions on which are placed on the -- on the approved project.

MR. COOPER: So it's -- it's possible, but at this point unknown.

WITNESS LEAHIGH: It is possible but unknown, correct.

MR. COOPER: In your opinion, does the California WaterFix Project provide a greater opportunity to export previously stored water from the Delta than under current operations?

WITNESS LEAHIGH: There may be some component

of that. I think it's probably quite limited.

And I think, as I've testified previously, it -- it would very much depend on the type of year. I wouldn't anticipate that that would occur, but in only the wetter years.

MR. COOPER: When you used the term "wetter years," is that defined somewhere that you could direct us to?

WITNESS LEAHIGH: No. It generally is going to depend on a whole host of factors as far as what our capabilities are in meeting our other obligations, storage conditions upstream.

MR. COOPER: Okay. If I can direct your attention to Page 4, Lines 1 through 7 of your testimony.

At this location, you use the phrase "In-Basin Requirements."

When you used that phrase, what higher priority requirements for the water system are you referring to?

WITNESS LEAHIGH: Yes. So, as part of the in-basin requirements, I define those as other legal uses of water downstream, and the Bay-Delta standards.

MR. COOPER: So is it fair to say that in-basin requirements are water quality requirements, and then legal users of water?

WITNESS LEAHIGH: Yes, that's how I've defined

it here.

MR. COOPER: Who do you -- What -- What type of water right holders do you classify as legal users of water?

MR. MIZELL: Objection: Calls for a legal conclusion.

CO-HEARING OFFICER DODUC: I think he can answer that based on his understanding of legal users. And if he doesn't know, he can answer that as well.

WITNESS LEAHIGH: Yeah. I wouldn't know because it is a legal question. I think it's ultimately up to the -- the Water Board as to who is legally diverting water and who's not.

MR. COOPER: Well, at Page 4, Line 4, you say (reading):

". . . In-basin requirements include legal users of water . . ."

I'm not asking for a legal definition. I'm just asking for who you had in mind when you drafted that.

WITNESS LEAHIGH: Well, it would be many of the downstream diverters. I think certainly the settlement contractors, both the Sacramento Valley Settlement Contractors and the Feather River Settlement Contractors are at least two groups that I had in mind when I wrote

that.

MR. COOPER: What about a riparian water right holder downstream?

WITNESS LEAHIGH: Yes.

MR. COOPER: What about a permittee holder with the Standard Term 91?

WITNESS LEAHIGH: Yes. It could be any diverter that was legally diverting.

MR. COOPER: Okay. If we can go down to -- staying on Page 4 -- Lines 19 through 21. The highlighted portion says -- of your testimony says (reading):

"In late spring, summer, and fall, unregulated flows plus SWP/CVP reservoir releases are almost always insufficient to meet all system needs and the SWP/CVP are required to actively manage the system."

Do you see where your testimony says that?

WITNESS LEAHIGH: Yes.

MR. COOPER: What do you mean by the phrase "all system needs"?

WITNESS LEAHIGH: Well, primarily what I mean there is, for one, we have to ensure that there are natural flows being diverted by legal users of water in the system, that those folks are not prevented from diverting that flow.

But it also primarily is talking about the Bay-Delta flow and salinity standards.

MR. COOPER: When you used the phrase "insufficient to meet all system needs," does that include 100 percent of the Table A quantities of the State Water Project contractors?

WITNESS LEAHIGH: No.

MR. COOPER: If we could go to Page 5. Mr. Leahigh, I direct your attention to Lines 18 through 22 of your written testimony --

(Document displayed on screen.)

MR. COOPER: -- which says (reading):

"If unstored flows are insufficient to meet In-Basin Requirements, then the SWP/CVP release previously stored water from upstream reservoirs to meet these demands. If there is sufficient storage, additional releases can be made from SWP and CVP upstream reservoirs into the Delta for re-diversion at the export facilities to meet SWP/CVP water supply contractors' demand south of the Delta."

Do you see where your testimony says that?

WITNESS LEAHIGH: Yes.

MR. COOPER: What, in your opinion, constitutes sufficient storage?

WITNESS LEAHIGH: This -- This would be

generally any additional storage that's not necessary to meet those other in-basin uses in the system, so including the -- and other regulatory requirements.

So this would be, again, the Bay-Delta standards, the storage necessary to meet our contractual obligations, and storage to meet our in-stream -- minimum in-stream flow requirements on the Feather River.

MR. COOPER: Under such circumstances where, you know, in your mind there's sufficient storage, do you consider carryover storage levels before making additional releases from upstream reservoirs for re-diversion in the Delta?

WITNESS LEAHIGH: Yes.

MR. COOPER: What does the phrase "carryover storage" mean to you?

WITNESS LEAHIGH: It's essentially the storage that would remain in the reservoir at the end of the water year and/or calendar year.

MR. COOPER: In the State Water Project operations, to what extent is water maintained in carryover storage to ensure that there's sufficient water to meet some portion of future demands upstream of the Delta?

WITNESS LEAHIGH: I'm sorry. Can you repeat that question?

MR. COOPER: Sure.

In the State Water Project operations, to what extent is water maintained in carryover storage to maintain sufficient water to meet such portions of future demands upstream of the Delta?

WITNESS LEAHIGH: So it's not clear -- The question's not clear in terms of "future demands."

MR. COOPER: Well, the immediately following years' demands, either -- And you mentioned that the carryover storage means to you either end of September or end of calendar year.

So, under either example, in the immediately following period, what, if anything -- How do you factor carryover storage, if at all, into your consideration?

WITNESS LEAHIGH: Well, there's a -- there's a number of things that we're factoring in in addition to the -- So, for example, carryover storage targets in September.

We have to account for the storage that we would need to release to meet in-stream flow requirements, temperature requirements on the Feather River, at the Feather River Hatchery.

We have to ensure that we're leaving a reasonable amount of carryover storage in the -- the reservoir for the following year's needs.

And a lot of these factors can vary from year to year, so we're assessing the watershed on the whole, and there could be a number of factors that could change the decision on what's the reasonable level of carryover storage for the following year.

MR. COOPER: Do you also consider the various contractual obligations, such as the agreements with the various Feather River Service Area Contractors, I believe, is how you referred to them?

WITNESS LEAHIGH: Yes, we do.

MR. COOPER: Do you anticipate that the CVP -- Strike that.

Do you anticipate that the State Water Project will continue to operate this way after the California WaterFix is constructed?

WITNESS LEAHIGH: Yes, we do.

MR. COOPER: If we can return to that first sentence, Line 18 and 19.

Your -- Your statement there is (reading):

"If unstored flows are insufficient to meet In-Basin Requirements, then the SWP/CVP release previously stored water from upstream reservoirs to meet these demands."

Do you see where your testimony says that?

WITNESS LEAHIGH: Yes.

MR. COOPER: As an example, does this mean that DWR will draft storage at Lake Oroville to provide water supplies called for in the various agreements with senior water right holders on the Feather River?

WITNESS LEAHIGH: Yes.

MR. COOPER: Mr. Baker, if you would move to Page 15, and Mr. Leahigh, I'm going to be asking you questions about Line 24 to 26 --

(Document displayed on screen.)

MR. COOPER: -- which states (reading):

"The South Delta export constraints limit diversion of excess flows under excess conditions and the re-diversion of the SWP/CVP's upstream stored water during balanced conditions."

Do you see where your testimony says that?

WITNESS LEAHIGH: Yes.

MR. COOPER: How would the California WaterFix Project reduce the constraints that limit the re-diversion CVP and SWP stored water during balanced conditions?

WITNESS LEAHIGH: Well, as I -- as I stated in the summary of my written testimony, there would be perhaps some periods of time towards the end of the spring where we are currently constrained -- In a year where we have a great amount of upstream storage, there

would be an opportunity to move additional unstored -- sorry -- stored flow from Lake Oroville and re-divert it in, say, the late May-June -- June period. Again, depending on the conditions placed on the WaterFix Project.

MR. COOPER: Can you tell us today how much additional upstream storage the California WaterFix would allow the State Water Project to re-divert from the Delta?

WITNESS LEAHIGH: No. I think -- I think that that release end is -- is very limited. I think the vast majority of the additional supply that's developed as a part of any WaterFix Project would be the additional excess flows that could be captured in the entire winter/spring, early spring/mid-spring period.

I think if you look at the modeling results, they would suggest that there be -- there would be no additional release of stored water in kind of the average to drier years based on the end-of-storage conditions that show up in those modeling results.

MR. COOPER: To the extent of your knowledge, are DWR and Reclamation proposing any Permit conditions to ensure that this possible increase in re-diversion of storage would not negatively impact water supplies upstream of the Delta?

WITNESS LEAHIGH: We are not asking for any Permit conditions of that nature.

MR. COOPER: If we can turn the page to 16 of Exhibit DWR-61.

(Document displayed on screen.)

MR. COOPER: And, Mr. Leahigh, if I can direct your attention to Lines 1 through 4, which state (reading):

"As described below, in years of abundant snowpack and surplus upstream storage, the proposed North Delta Diversion (NDD) will add operational flexibility and allow an alternative diversion location for conveying water supplies and avoid potential effects to listed species associated with diversions from the South Delta."

Do you see where your written testimony says that?

WITNESS LEAHIGH: Yes.

MR. COOPER: What do you mean by use of your phrase, quote, "abundant snowpack and surplus upstream storage"? What do you mean by that?

WITNESS LEAHIGH: Well, again, generally, I'm talking about -- That's a further description of the wetter type years, where there may be an opportunity to move additional stored water.

So, for example, in many of these type of years that I'm referring, we would have to be releasing a large amount of storage during the summer just to get down to our Flood Control storage levels in the following fall, at which time our Flood Control Criteria starts kicking in.

And so it would make sense to release that storage at a time that we could divert it to our customers south of the Delta, and the added flexibility associated with the -- with a new diversion of the WaterFix would make good use of that storage release at that time.

MR. COOPER: What's the last year in which the circumstances you just described occurred?

WITNESS LEAHIGH: 2011 is -- perhaps is a year where that situation that I just described occurred.

MR. COOPER: Are there any other years that you could reference?

WITNESS LEAHIGH: I think the next possible year would probably be 2006. But those are probably the only two years I can think of that we'd be -- storage upstream was so robust that we would -- we would naturally be bringing the storages down for those Flood Control Criteria in the fall. And it would represent an opportunity to move -- divert stored water that we would

be required to release, anyway.

MR. COOPER: What about years when there is not abundant snowpack and surplus storage, which sounds like, under your example, is all years other than -- Well, let's stop there.

Let me just ask you: What about years when there is not abundant snowpack and surplus storage? How would the proposed California WaterFix be operated in those year types?

WITNESS LEAHIGH: In those types of years, most likely we would not be releasing -- seasonally, we would not be releasing the same amount of -- any more storage from upstream than we do without the California WaterFix.

The real advantage during those types of years would be the direct diversion of excess flows in the Delta in the winter and in the spring.

MR. COOPER: Has DWR proposed any conditions on the California WaterFix Project that would require operations to be conducted in the manner you described?

WITNESS LEAHIGH: No. I believe that would be the natural outcome, though, of the criteria on which we have put forth as part of the various California WaterFix scenarios.

MR. COOPER: Do you know if the operational assumptions in the modeling for the California WaterFix

Project reflect the operations you have just described?

WITNESS LEAHIGH: Yes, I believe they do. Yes.

MR. COOPER: Okay. If we can move down, same page, Page 16 of DWR-61, Lines 11 through 15, which states (reading):

"Even with the potential for some variation in operational criteria, the CWF will increase the options available to the SWP/CVP operators to more effectively balance the Bay-Delta system in real-time to protect all beneficial uses of water whether for water supply, water quality, or fishery protection purposes."

Do you see where your written testimony says that?

WITNESS LEAHIGH: Yes.

MR. COOPER: What do you mean by "more effectively balance the Bay-Delta system"?

WITNESS LEAHIGH: Yes. So this -- What I had in mind when I wrote this part of the testimony was essentially part of my summary of my testimony today when I was talking about when the two Projects are operating to salinity objectives in the Western and Central Delta, that depending on where salinity was intruding, if it were up the Lower Sacramento River, we could change our diversions to correspond more heavily to the South Delta

Diversion points.

And in the circumstances where salinity intrusion was greater on the lower San Joaquin River side of the Delta, we could transfer -- we could reduce our diversions from the south and move them to the north diversion.

So that's the type of balancing that I was -- I had in mind when I wrote this in the testimony.

MR. COOPER: So, then, as a consequence, this -- this balancing you're referring to would result in changes in flows in the Bay-Delta system potentially.

Do you agree?

MR. MIZELL: Objection: It's vague and ambiguous.

Where in the Delta are the flows being changed?

CO-HEARING OFFICER DODUC: Mr. Cooper.

MR. COOPER: Anywhere in the Delta.

WITNESS LEAHIGH: Yes. And that would be the point of -- of changing the diversion location, is to allow greater flows on the portion -- in the portion of the Delta where we were experiencing the greater salinity intrusion.

MR. COOPER: When you say that this balancing would more effectively protect water supply, what specific water supplies are you referring to?

WITNESS LEAHIGH: Well, I think that that was fairly generic in talking about both other water supplies within the Delta itself and also for the Project export water supplies.

MR. COOPER: Would that include any water supply for users upstream of the New North Delta Diversion?

WITNESS LEAHIGH: Yeah. I think that the Project on the whole is fairly neutral as -- as it relates to the upstream users.

MR. COOPER: You used the phrase in the same highlighted area of your testimony "variation in operational criteria."

Is the full scope of variation in operational criteria analyzed in the boundary analysis?

WITNESS LEAHIGH: I'm sorry. I'm not sure that I -- I know the answer to that.

MR. COOPER: Okay. If we can move to Page 17.

(Document displayed on screen.)

MR. COOPER: And I've only highlighted Lines 8 through 9, but, Mr. Leahigh, if I can direct your attention to that entire paragraph, starting at Line 5 through 11, where you say (reading):

"Based on my knowledge and experience it is my opinion that the SWP/CVP will continue to meet

existing Delta water quality and fishery objectives and any additional regulatory requirements for the CWF at a similar success rate as demonstrated historically. Increased diversion flexibility afforded through the approval of the Cal -- CWF would only enhance the capabilities of the SWP/CVP to meet existing Bay-Delta requirements. As a result, the proposed CWF operations will continue to be as protective, if not more, of existing beneficial uses as described in D-1641."

Do you see where your testimony says that?

WITNESS LEAHIGH: Yes.

MR. COOPER: When you used the phrase "existing Bay-Delta requirements," are you referring to water quality and fishery objectives only?

WITNESS LEAHIGH: In this particular sentence, I was referring to the -- the set of Bay-Delta requirements in D-1641.

MR. COOPER: So you were not referring to the various upstream settlement contracts and diversion agreements held by upstream senior right holders?

WITNESS LEAHIGH: That's right. That's -- I feel the -- the Project would be neutral with respect to any upstream water users.

MR. COOPER: Given your opinion that it's

neutral with respect to those upstream parties, how could you provide assurances that the, quote, "increased diversion flexibility" will not affect those upstream parties?

MR. BERLINER: Objection: Relevance.

CO-HEARING OFFICER DODUC: I think it's pretty relevant.

Please answer.

WITNESS LEAHIGH: Well, the -- the decisions that we make today, as far as conserving water upstream in order to meet all of those obligations to those users, the same rationale would exist even if California WaterFix were in place. So I don't see that there would be any change in our current thought process there.

MR. COOPER: Okay. If we can move now to Page 19, Lines 23 through 26 of your written testimony, which states (reading):

"CWF would enhance our ability to divert and store water during periods of high excess Delta flows at a location where there is less risk to native fish and fewer effects to Delta water quality. The water supply developed during these periods may be offset in part by reduced pumping at other periods of less favorable hydrology."

Do you see where your testimony says that?

WITNESS LEAHIGH: Yes.

MR. COOPER: Now, there's a slogan I've heard, that the California WaterFix is designed to take a big gulp during high flow events and a little sip during all other periods.

Is that generally what you're describing here?

WITNESS LEAHIGH: Well, I think what I'm describing here is the context for this is the -- the example that I walked through for this past spring of 2016.

And, yes, there would be the ability under that particular scenario to divert much of what was an abundance of excess flow that occurred this past spring.

MR. COOPER: And, potentially, in those other abundant years, as you've described earlier, 2011 and 2006; is that correct?

WITNESS LEAHIGH: Well, these periods of -- of excess flows, they could -- those could occur in almost any type of year.

So, this year, it wasn't particularly that wet. It was about average for the Sacramento Valley, still pretty dry for the San Joaquin. However, there were the periods in my example where flows were very much in excess of -- of those needed to meet the requirements.

So that type of condition could occur in almost

any type of year, probably with the exception of the very dryest years.

MR. COOPER: Okay. If we can change to a different topic, Mr. Leahigh.

I want to ask you questions about the current facility limitation -- I'll call them limitations -- at Lake Oroville. And I'll start with the question:

What are the current physical limitations on releasing water from Lake Oroville at certain water elevations?

WITNESS LEAHIGH: Well, I'm not sure if I need more specificity there.

But generally --

MR. COOPER: Well, let me interrupt you because we're getting tight on time.

I want to talk about the river valve, and I want to talk about the hydroelectric plant if -- if all the units are fully operational.

So maybe can you start by telling us: What's the current operational limitations of the river valve at Lake Oroville?

WITNESS LEAHIGH: So, currently, we are in a period of . . .

There -- There -- We have work going on right now at the river valve. We don't have -- We're not

projecting that we're going to be -- have the need to use it at any time in the near future.

We -- We believe we have the capability of about 2,000 cfs capacity as it -- as it is right now.

MR. COOPER: At what elevation, in your opinion, are you operating solely with the river valve?

WITNESS LEAHIGH: That's not entirely known at this point. We haven't -- We haven't had to test that elevation. We've -- Fortunately, we've been able to run -- make releases through the pumping plant, even in the last couple years.

We haven't reached an elevation in Oroville where we've had to rely on just the river valve.

MR. COOPER: At what elevation does it become a concern to you?

WITNESS LEAHIGH: I don't have the exact -- in terms of elevation -- feet. I don't have that in front of me, and I don't recall offhand exactly what that level is.

MR. COOPER: What about storage acre-feet in the reservoir?

WITNESS LEAHIGH: Well, somewhere in the vicinity of 850 to 900,000 acre-feet is -- that's generally the amount of storage where we would start to have concern about losing our ability to use the

generating plant and have to solely rely on the river valve.

(Timer rings.)

CO-HEARING OFFICER DODUC: I assume you need a few more minutes, Mr. Cooper?

MR. COOPER: I have only one other topic beyond this, so I think I can wrap up in about 15 minutes.

CO-HEARING OFFICER DODUC: All right. We'll give you those 15 minutes.

MR. COOPER: Thank you.

Can you tell us, to the extent of your knowledge, the timeline for the fix to the river valve at Lake Oroville?

MS. MORRIS: Oh, I have an objection. Sorry. I'm getting slow in the afternoon.

CO-HEARING OFFICER DODUC: Miss Morris.

MS. MORRIS: I object to this whole line of questioning as irrelevant.

It's unclear how the river valve operations -- sorry -- how the river valve operations have anything to do with Cal WaterFix. And the witness has already said that the upstream operational criteria aren't changing.

CO-HEARING OFFICER DODUC: Mr. Cooper.

MR. COOPER: Well, there's an elevation in the lake, we believe, where effectively they -- DWR loses the

ability to supply all demands.

And the question is intended to ascertain whether that will be fixed by the time the California WaterFix Project is implemented and that is no longer a concern, or not.

And in which case, maybe there needs to be a condition that the WaterFix Project cannot use stored water to such an extent to put the reservoir near that level.

CO-HEARING OFFICER DODUC: Thank you. I will allow the questions.

WITNESS LEAHIGH: I -- I don't have a schedule.

MR. COOPER: Is it possible that the river valve will not be fully repaired by the time the California WaterFix is operational?

WITNESS LEAHIGH: I'm not sure what you mean by "fix."

MR. COOPER: Well, "fix" in my mind is something greater than the 2,000 cfs limitation.

WITNESS LEAHIGH: Yeah, I -- I don't know.

MR. COOPER: So would you say it is possible that the river valve will not be repaired to a state greater than 2,000 cfs by the time the California WaterFix is operational?

WITNESS LEAHIGH: It's very speculative.

I -- I really don't know. I -- Yeah, I -- I can't say for sure.

MR. COOPER: Okay. When I use the term "irrigation season," do you understand that to be a defined term in the various diversion agreements between the State of California and the water users from the Feather River?

WITNESS LEAHIGH: Yes.

MR. COOPER: I have the same question for the term "drought."

You understand that to be a defined term in those agreements?

WITNESS LEAHIGH: Yes.

MR. COOPER: If Lake Oroville storage was at or below this 850,000 acre-feet to 900,000 acre-feet level during the irrigation season in a non-drought year, would you as the Operator of the State Water Project be able to release enough water from the Lake Oroville facilities to meet all regulatory requirements and in-basin demands?

MR. MIZELL: Objection: Incomplete hypothetical.

CO-HEARING OFFICER DODUC: He may answer to the best of his ability.

WITNESS LEAHIGH: Well, we wouldn't -- First of all, we wouldn't allow it to get to that level.

It depends on what the capacity is of that river valve at the time. It depends on what time of year we're talking, on what the demand is, what the release requirements are on the Feather River.

So I -- Yeah, it's incomplete. I don't have enough information.

MR. COOPER: If you're limited to 2,000 cfs release from Lake Oroville in August of a non-drought year, does that 2,000 cfs give you enough water to meet all regulatory requirements and in-basin demands?

WITNESS LEAHIGH: It's highly unlikely that would be enough.

MR. COOPER: Mr. Baker, would you pull up DWR-515 that I've highlighted.

(Document displayed on screen.)

MR. COOPER: And if you would go to Page 3.

Mr. Leahigh, would you like to see a hard copy of this?

WITNESS LEAHIGH: No, I think I'm okay with the electronic.

MR. COOPER: Okay. So, this is -- this is for the H4 scenario.

Do you understand the Delta outflow requirements for the Alternative 4(a) H4?

WITNESS LEAHIGH: Yes, I believe so.

MR. COOPER: Page 3 there, which I've highlighted, states that, quote (reading):

"This additional spring outflow is not considered as an 'in-basin use' for" purposes of "CVP-SWP Coordinated Operations."

Do you see where it says that?

WITNESS LEAHIGH: Yes.

MR. COOPER: Does that statement comport with your understanding of how the Coordinated Operating Agreement is currently implemented?

WITNESS LEAHIGH: Well, it's not clear exactly how this . . . any new high spring outflow requirement would fit exactly in the existing Coordinating Agreement.

MR. COOPER: So, it -- The question, again, is:

Does that comport with your understanding of how COA is currently implemented?

WITNESS LEAHIGH: Well, so there is no additional outflow requirement in -- in the -- that the current agreement was based.

There is a provision in the Coordinated Operation Agreement that the Projects would review that agreement in terms of additional -- any new project, significant new projects that would come online.

So certainly I think this would rise to that test as far as -- as far -- the California WaterFix as

far as a new Project as it relates to the coordinations of the two Projects.

MR. COOPER: So, the highlighted text says in part that (reading):

"In wetter years with a greater than 50 percent exceedance, if the" -- excuse me -- "less than 50 percent exceedance, if the outflow target is not achieved by export curtailments, then the additional flow needed to meet the outflow target is released from the Oroville Reservoir as long as its projected end-of-May storage is at or above 2,000 feet."

Do you see that?

WITNESS LEAHIGH: Yes.

MR. COOPER: In your opinion, if additional spring outflow was allocated solely as the responsibility of the State Water Project in these year types, what would be the effect on conditions at Lake Oroville?

MR. MIZELL: I'm going to object as assuming facts not in evidence.

This exhibit does not speak to responsibility for outflows so much as it does source of outflows. I think there's a fine distinction to be made there.

CO-HEARING OFFICER DODUC: Mr. Cooper.

MR. COOPER: Well, this line of questioning is just coming off questions concerning limitations on

releasing water from Lake Oroville.

So, with respect, whether -- the fact of the matter is, as proposed, the water's coming from Oroville. So whether that's accounted for as a joint responsibility or it's solely the responsibility of State Water Project, my questions are trying to get at what is the effect on Lake Oroville given the status of the river valve?

CO-HEARING OFFICER DODUC: Mr. Leahigh, please answer.

WITNESS LEAHIGH: So, the modeling assumed in these wetter years, wetter than the -- than average 50 percent exceedance, and with that, at least 2 million acre-feet of storage, that -- that it would be physically impossible to implement this flow requirement in the March through May period.

The . . . The effect on storage initially as modeled would be a reduction in storage during that spring period from what would have been the case otherwise.

However, the -- in these types of years, there would have been ample storage to release for re-diversion south of the Delta. There would -- There would have been op -- There'd be opportunity to recover that storage before getting to the end of the water year by backing off of the storage released from re-diversion to the

South-of-Delta contractors, which the modeling would indicate that we could end the water year with the same storage with or without the Project.

MR. COOPER: Does what you just described reflect current operations; that is, you'll release more water in these earlier spring months and then back off to satisfy a targeted end-of-September storage?

WITNESS LEAHIGH: What we don't have is current requirement.

But if we were having to release a large amount of storage for, let's say, an existing X2 requirement, yes, we would have to back off later in the year on the amount of storage that we would release for re-diversion for our contractors south of the Delta. So, in that respect, it would be the same.

MR. COOPER: The same -- If I understand your question (sic), the same but during a different time of year.

My question is additional releases in the spring, backing off releases in the remainder of the months until September to try to hit sometime -- some type of end-of-September storage level.

Has that -- Is that a current operation that you as the Project Operator have implemented sometime during your tenure?

WITNESS LEAHIGH: Yes.

MR. COOPER: What year was that?

WITNESS LEAHIGH: Well, like I said, generally, if the Projects are having to meet a spring X2 outflow requirement that turns out to be more costly than we had initially projected, we would collectively have to back off -- Well, I'll speak for Oroville. We back off our releases later in the year.

We would have less of that storage available for release and re-diversion to our contractors south of the Delta when we get into the September period.

So, yes, this is actually very common as far as change in release pattern to -- to deal with any type of outflow standard in the spring.

MR. COOPER: Has that happened sometime in the last five years?

WITNESS LEAHIGH: Let's see. I can't -- I can't recall in the pretty dry years, so the outflow requirements have not been specifically that great.

I could -- I know there's at least a couple years within the last 10 years where we've had a significant spring X2 requirement and that that scenario that I just described occurred.

MR. COOPER: Would that be 2006 and 2011?

WITNESS LEAHIGH: No. I -- I don't recall.

I -- I -- I think 2011, there was probably enough natural flow to meet the X2 standards without release from storage to meet it.

I -- I don't recall exactly. I know there have been years where that occurred but I can't tell you which years those were.

MR. COOPER: Fair enough.

I -- We're running short on time, Mr. Leahigh, so two more questions for you.

With the potential for additional Delta outflow requirements, does that mean Term 91 may be implemented more frequently?

WITNESS LEAHIGH: I -- I don't know the answer to that.

MR. COOPER: Okay. I suspect you'll have a similar answer here, but I'll ask the question.

If Term 91 has the potential to be in effect more frequently, does that mean, in your opinion and based on your understanding, that there would be legal injury to the other legal users of water?

MR. BERLINER: Objection: Lacks foundation, because he's also testified he doesn't know if Term 91 would be implemented more often.

CO-HEARING OFFICER DODUC: And he's free to answer that question with an "I don't know."

WITNESS LEAHIGH: Yeah, I don't know.

MR. COOPER: Okay. Thank you, Mr. Leahigh. Thank you Board Members. That concludes my questions.

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

Mr. Lilly, Mr. Kelly, I'll -- I guess Mr. Lilly is coming up.

Mr. Lilly, we will need to adjourn by 5:00 today, so I will ask you to keep that in mind and suggest a good, appropriate time to break in your line of questioning; that is, assuming you don't finish by 5:00.

MR. LILLY: Okay.

CO-HEARING OFFICER DODUC: All right. And since I see Miss Meserve there in the audience, let me say this before I forget:

We have your request that you will not be available to attend tomorrow morning's session. Given the pace of cross-examination, I don't expect we'll get to you tomorrow morning, but if we do, we will defer you to the afternoon.

MR. LILLY: So, Chair Doduc, just for logistics, I have given a flash drive with seven BKS exhibits, which I'm going to use in cross-examination, to staff. And I think Mr. Baker is springing to run that.

I have paper copies of those exhibits which I'd

like to hand to you, and the witness, and the attorney, if I may.

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

(Distributing exhibits.)

CROSS-EXAMINATION BY

MR. LILLY: So, Mr. Milligan and Mr. Leahigh, my name is Alan Lilly and I'm the attorney for Cities of Folsom and Roseville, San Juan Water District and Sacramento Suburban Water District.

I'll start my questions for you, Mr. Milligan.

My questions will generally focus on Folsom Reservoir so obviously that will directed to you.

Ill ask if we can put up Exhibit BKS-7 on the screen.

(Document displayed on screen.)

MR. LILLY: And just for the record, this is a copy of Mr. Milligan's testimony, which is Exhibit DOI-7.

And I've highlighted the sentences where I may ask questions. It just seems like it's a little easier for him to follow if I do that. That's the -- The only changes I've made are to add my exhibit label at the bottom and to do the highlighting.

So, Mr. Milligan, just starting on Page 1 of this Exhibit BKS-7, the second sentence states that you

have responsibilities (reading):

". . . For the day-to-day operations of the Central Valley Project."

Is that correct?

WITNESS MILLIGAN: Yes, it is.

MR. LILLY: And do those responsibilities include operating Folsom Dam and Reservoir?

WITNESS MILLIGAN: The operational decisions, yes.

MR. LILLY: Okay. So now if you can move -- If we can all move to Page 2 and the first full paragraph on that same Exhibit BKS-7.

(Document displayed on screen.)

MR. LILLY: Does this paragraph describe the various statutes that authorize the construction -- authorized the construction, operation and maintenance of the Central Valley Project?

WITNESS MILLIGAN: Which paragraph again?

MR. LILLY: I'm sorry. It's a little confusing. It's the first full paragraph, so there's --

WITNESS MILLIGAN: Okay.

MR. LILLY: -- some carryover text. But, then, I'm talking about the paragraph that I've highlighted there, which starts with (reading):

"There are several other statutes . . ."

WITNESS MILLIGAN: I would look at these as categories, because obviously all the authorizing legislation is not explicitly laid out here in terms of which public laws.

MR. LILLY: Okay. Fair enough.

Are you generally familiar with the statutes that create the authorizations for various elements of the Central Valley Project?

WITNESS MILLIGAN: Generally so. I mean, I've reviewed or seen them and cited and looked through them, but it's been a little while. It's not necessarily a day-to-day activity.

MR. LILLY: Okay. Fair enough.

So I'll ask you to turn to -- and we'll put up on the screen -- Exhibit BKS-4.

(Document displayed on screen.)

MR. LILLY: Which should be in that pile of exhibits -- the paper copies I gave you.

Do you have that one?

WITNESS MILLIGAN: I do.

MR. LILLY: Okay. And this is -- contains a copy of Public Law 356, which was enacted on October 14, 1949, and I have highlighted some paragraphs in that.

So if you could please just read to yourself the highlighted text that begins at the bottom of the

first page of this exhibit and carries over into the first two lines of the second page, and let us know when you finish reading that.

WITNESS LEAHIGH: (Examining document.)

I've at least gotten through the highlighted part.

MR. LILLY: Okay. Fair enough.

And if you have any -- If you need to read anything more, let us know.

WITNESS MILLIGAN: Okay.

MR. LILLY: I don't think you will, but if you do, please let us know.

So, is it your understanding that this is the Act that authorized the construction of Folsom Dam and Reservoir at the capacity of approximately 1 million acre-feet as part of the Central Valley Project?

WITNESS MILLIGAN: Yes, it is.

MR. LILLY: And is this Act one of the CVP authorization acts that Reclamation must comply with when it's operating the CVP?

WITNESS MILLIGAN: Yes, as amended by subsequent acts, obviously.

MR. LILLY: Fair enough.

All right. So now I'll ask you to go to the highlighted text toward the bottom of the second page of

this Exhibit BKS-4 and, please, there's a paragraph I highlighted which starts out "nothing contained in this act" and if you could please just read that to yourself and let us know when you finish.

WITNESS LEAHIGH: (Examining document.)

I have read that paragraph.

MR. LILLY: Okay. Did either Reclamation or DWR, to your knowledge, consider this provision of this Act when they developed the exhibits and testimony that the Petitioners have filed for this proceeding?

WITNESS MILLIGAN: Explicitly? I don't believe anyone probably looked at this section of the text from the Act, but it's not necessarily inconsistent with some of the planning and formulation of the Project, I don't believe.

MR. LILLY: Okay. So let's now go back to Exhibit BKS-7, which is a copy of your testimony.

(Document displayed on screen.)

MR. LILLY: And I'm going to ask to go back to the first page of that.

In the second paragraph, toward the end of that paragraph, there's a sentence that says (reading):

"As Operations Manager, I am responsible for ensuring that Reclamation meets its responsibilities related to Federal requirements (such as ESA, CVPIA,

etc.) as well as State requirements (such as D-1641 and other related water right permit conditions.)"

Do you see that?

WITNESS LEAHIGH: Yes, I do.

MR. LILLY: And now I'm just going to flip to Page 4 of that same exhibit in the first paragraph.

(Document displayed on screen.)

MR. LILLY: And this sentence from your testimony reads (reading):

"As previously stated, Reclamation operates the CVP pursuant to statute, regulations, Permit terms and conditions and contractual obligations that affect the timing and amount of water that may be available for various uses."

Do you see that?

WITNESS MILLIGAN: Yes, I do.

MR. LILLY: So, in your operations of the Central Valley Project, are you responsible for ensuring that the CVP is operated in compliance with all of the terms of Reclamation's Water Right Permits?

WITNESS MILLIGAN: At least the operational components.

MR. LILLY: Okay. All right. Now I'll ask for you to take a look at Exhibit BKS-1.

And just for the record, we previously

submitted this exhibit with some other witnesses and we're using it again. The only difference from what was previously submitted is, I added a label at the bottom.

We didn't have our numbering system before and I've worked with Miss McCue on that. Seemed like it was good to have a copy of this exhibit with the proper label.

(Document displayed on screen.)

MR. LILLY: So, Mr. Milligan, this first page of this exhibit contains a copy of Term 11 of Reclamation's Water Right Permit 11315, which is one of Reclamation's Water Right Permits for Folsom Dam and Reservoir.

So please read this Term 11 to yourself and let us know when you have read it.

WITNESS MILLIGAN: (Examining document.)

I have completed.

MR. LILLY: All right. So as the CVP's Operator, or the person in charge of operations, what do you do to ensure that the CVP operates in compliance with this Permit term?

WITNESS LEAHIGH: In this particular case, I would, you know, probably consult our Rights and Contracting personnel within the Regional Office to understand if, particularly in this particular case, a --

that we fully may have provided -- the agreements that are referenced here have been put into place that would allow us to make delivery of water from Folsom Dam to places beyond the county line.

MR. LILLY: Okay. And have you ever had those conversations as part of your operations?

WITNESS MILLIGAN: I believe this particular term has come up in some discussions in the past, and it's my understanding that we believe that we have the agreements as outlined here in place.

MR. LILLY: Okay. So, is it your view that the agreements are all that you need to do to comply with this Permit term?

WITNESS MILLIGAN: Well, I certainly think that the -- providing the -- the water, meeting the -- meeting the terms of the agreement probably is also important.

Having the agreement in place is the first piece, and the second piece would be to actually perform to the agreement itself.

MR. LILLY: Okay. So those -- Thank you for the clarification. That's obviously very important.

So, is that describing both the agreement and complying with the agreement? Is that your understanding of what Reclamation does to comply with this Permit term?

WITNESS MILLIGAN: As it relates to the

operations, yes.

MR. LILLY: Okay. And I'm going to just quickly ask you to look at the second page of that same Exhibit BKS-1. And this is Term 11 from another Reclamation Water Right Permit for the Folsom Unit Operations, Permit 11316.

And, incidentally, these are excerpts from two State Water Resources Control Board exhibits which I've labeled at the bottom.

This term is -- I think it's verbatim the same, so I'm just going to ask you:

Do you have the same answer regarding what Reclamation does to comply with this Permit term?

WITNESS LEAHIGH: (Examining document.)

My quick read is it is very similar if not the same, and it would be the same answer, yes.

MR. LILLY: Okay. Did Reclamation or DWR consider either of these Permit terms when they were developing the exhibits and testimony that Petitioners have filed in this proceeding?

WITNESS LEAHIGH: I'm sorry. Could you repeat your question? I want to make sure I follow it properly.

MR. LILLY: Sure. No, no problem at all.

Did Reclamation or DWR consider either of these two Permit terms when they developed the exhibits and

testimony that they have submitted in this proceeding?

MS. AUFDEMBERGE: Objection.

CO-HEARING OFFICER DODUC: On what basis?

MS. AUFDEMBERGE: On "Reclamation or DWR."

He hasn't established that he knows what DWR has considered.

CO-HEARING OFFICER DODUC: Well, he may answer that on behalf of Reclamation.

MR. LILLY: And -- And, if necessary, I can read the last sentence of his testimony, which says (reading):

"Reclamation has reviewed DWR testimonies and agrees with their characterizations of the Project operations."

CO-HEARING OFFICER DODUC: I think we covered that one already, Mr. Lilly, but thank you.

MR. LILLY: All right.

Do you want me to repeat the question again?

WITNESS MILLIGAN: No. I think I follow.

As it relates to -- I don't know that anyone specifically looked at this Term 11 as it relates to this, but the concepts behind it I think flow from my answer in operations: That meeting the terms of an agreement that fulfills this requirement would be part and parcel to how we would operate.

MR. LILLY: Okay. So now let's go back to your testimony, and I've got -- This is Exhibit BKS-7 on Page 2.

(Document displayed on screen.)

MR. LILLY: In the second paragraph, I've -- I've highlighted a sentence in the middle of the sentence, which says (reading):

"CVP operations must also meet obligations to those holding State-granted water rights which are senior to CVP rights . . ."

Do you see that?

WITNESS MILLIGAN: Yes, I do.

MR. LILLY: Are you aware of any water users that historically had points of diversion upstream of Folsom Dam with water rights senior to Reclamation's rights and with whom the Board of Reclamation has such contractual obligations?

WITNESS MILLIGAN: Yes.

MR. LILLY: And who are those entities?

WITNESS MILLIGAN: The City of Folsom being one; certainly the question of PCWA. I believe certainly some El Dorado County interests as well.

There's a number of them that aren't quite dealt with in the same fashion as separate Settlement Contractors. When I wrote this, we were thinking much

more globally.

But certainly there are dynamics of potential rights or folks particularly in -- that take their water out of Folsom Lake and just upstream. There's a lot of interaction of previous rights as it relates to the operations of the Folsom.

MR. LILLY: Okay. And you mentioned the City of Folsom, but is San Juan Water District another entity --

WITNESS MILLIGAN: I think it's the --

MR. LILLY: -- of a similar contract?

WITNESS MILLIGAN: -- same one also, has a right that's prior to Folsom coming along.

MR. LILLY: So it, in fact, has a settlement contract with the Bureau that was based on those water rights; am I correct?

WITNESS MILLIGAN: Using that, yes, I would -- That's a looser term. But I don't know if there's a specific term for settlement contract but it probably falls in that category.

MR. LILLY: Okay.

WITNESS MILLIGAN: Different kind of contract that, let's say, as the examples given here by the Sac River select contractors and the exchange contractors.

MR. LILLY: All right. I appreciate the clarification.

So how do you operate the Central Valley Project to ensure that Reclamation can satisfy its obligations under its contracts with the City of Folsom and San Juan Water District?

WITNESS LEAHIGH: In this particular case, certainly close coordination with them and -- and through requests of their schedules in terms of what kinds of water they'll be taking, whether it's contractual amounts under some Water Service Contracts, or -- which are part of the package -- Water Service Contract but still access to their senior rights.

But then, predominantly as an operational point of view, it's maintaining enough water in the lake so that you get access through the devices that have been constructed to -- to get their water to them.

MR. LILLY: Okay. And we will come back to that, that physical limitation --

WITNESS MILLIGAN: Yeah. I had a feeling about that.

MR. LILLY: Well, it's obviously very important for these entities.

So now if you can -- if we can flip back to Exhibit BKS-7, your testimony, and go down to the bottom

of Page 2 where I've highlighted a paragraph that starts on Page 2 and goes on to Page 3 --

(Document displayed on screen.)

MR. LILLY: -- which I will just read here. It says (reading):

"Reclamation and DWR coordinate on a daily basis to determine needed Delta outflow for water quality, reservoir release flows necessary to meet in-basin demands, schedules for Delta pumping and joint use of the San Luis Unit facilities, and for the use of each other's facilities for pumping and conveyance."

Do you see that sentence?

WITNESS MILLIGAN: Yes, I do.

MR. LILLY: So, here, what do you mean by "in-basin demands"?

WITNESS MILLIGAN: In this case -- and this probably has been a theme in some of the questions -- has been that the use of water predominantly downstream of the reservoirs, because it ties back into a lot of what we've talked about as COA accounting, which in essence tries to account for the use of water within the basin downstream the reservoirs.

MR. LILLY: Okay.

WITNESS MILLIGAN: So this context, and the

close coordination with the State Water Project Operators, is to track the in-basin uses downstream from our release points from our major reservoirs to track that use of water and then how much of that gets to the Delta and would be able to manage the Delta -- Delta demands, Delta needs, both outflow, scheduling in terms of our exports at that point.

MR. LILLY: Okay. So, if I hear you right, then, the -- the water deliveries or demands for the Cities of Folsom and San Juan Water District under their contract, it sounds like you do not include those with your definition of in-basin demands, or do you?

WITNESS MILLIGAN: Well, not as it relates to this discussion, but obviously because they're not diverting from the river downstream of the reservoir. We're not making a reservoir release to the river to meet these demands.

These are accounting for those demands as it would draw water from a reservoir. So, not to get too deep into COA accounting, but obviously it would change the reservoir storage on a given day and not necessarily be a -- a release into the river which is a bulk of our work with John's group.

MR. LILLY: All right. So -- And I think you alluded to this point a few minutes ago which obviously

is very important for my clients.

When you operate the CVP, what do you do to maintain sufficient water storage in Folsom Reservoir to ensure that Reclamation can meet its obligations under its contracts with the City of Folsom and San Juan Water District?

WITNESS MILLIGAN: Well, this is a bit of building that John was talking about earlier this afternoon.

Looking at what the forecasted inflows are, what the meets of the Delta and overall operation through the -- through the water year that would allow us to maintain a reasonable lake level at all of our systems, that would be an appropriate, quote, carryover storage into the next water year.

In the case of Folsom, our typical place where we would like to be from one year to the next is well in excess of what would be needed to -- you know, to ensure that we have access to water, just as the contractors we've been talking about.

MR. LILLY: Okay. So I think it would be good if -- It sounds like there's two different numbers that you talked about. It would be good for you specify both of them.

What's -- What's, in your view, the minimum

Folsom storage amount that you need to ensure that you do have access so you can deliver water to these entities?

WITNESS MILLIGAN: Well, regrettably through the drought, we've had a lot of discussion and thought about what is that number and what does it look like.

But we're talking about, you know . . .

It depends on the time of year, obviously. So a lot goes into this, because a lake level that may be needed in the peak summer to meet demands is going to need to be higher to be able to get enough flow out through the pumps and the conduits that can provide the water to these Districts and to the cities.

So that's one number.

But a storage level at, say, later in the fall may be a lower number. So we're talking about things in the, you know, 200,000 acre-feet or below type of numbers --

MR. LILLY: So --

WITNESS MILLIGAN: -- typically for things you would see more in the extreme drought sequence.

MR. LILLY: So, just to clarify, I assume you need a higher storage in the summer because the demands are higher so you have to have more head going into the inlet to be able to meet that demand?

WITNESS MILLIGAN: That's correct. You would

need more because of the head requirements, more pumping, pumps to be able to do that, so that's not beneficent. So that creates a real concern. But, yes, it's because of the head that's required.

MR. LILLY: All right. And you just mentioned a number of 200,000 acre-feet. So -- And please correct me if I misunderstood.

But does -- does -- Were you saying that when the storage at Folsom is less than 200,000 acre-feet, then Reclamation starts to have concerns about its ability to operate these facilities to make these deliveries to Folsom and San Juan Water District?

WITNESS MILLIGAN: It creates some concerns about a number of criteria, particularly if we envision that we'll have an extended period of very dry conditions.

So that is a place that, obviously -- It's a warning sign. So particularly if we're coming into a place for virtually any time within the water year, 200,000 acre-feet does trigger a -- what might be -- has been referred by some as a conference chair, that we should really be thinking about the overall releases of the river and the overall management of storage to deal with this particular concern, as well as maintaining minimum flows in the American River itself.

MR. LILLY: Okay. And -- And we've just used the number 200,000 acre-feet. I think you said it varies on the time of the year.

Is there greater concern or a more heightened concern if you hit 200,000 acre-feet during, let's just say, the summer months versus the fall months?

WITNESS MILLIGAN: I would say 200,000 in the summer, then that's going to probably be much more of a concern than if we have 200,000 acre-feet in December, obviously.

MR. LILLY: Okay. And that's because you know you're almost certainly not going to get any significant inflow until at least late fall or potentially even later.

WITNESS MILLIGAN: Longer before you see some inflows. You probably have demands and river needs for water purity.

MR. LILLY: All right. Now, the other point, or variable, I think you referred to was carryover storage.

And if you could tell us, I think it would be useful for us to have your understanding of what you mean by the term carryover storage and particularly related to Folsom Reservoir.

WITNESS MILLIGAN: I think for Folsom,

particularly in light of the flow management criteria that we've worked with the Water Forum on, I typically think of end of September as that number.

As John indicated, there's a -- there's a utility as to what your storage looks like at the end of December as well.

MR. LILLY: Okay. And what -- what do you believe are the minimum carryover storages that Reclamation should be operating to for -- Again, let's split it up. First of all, for end of September.

WITNESS MILLIGAN: That's hypothetically difficult because I would probably characterize that depending on where are we, and if it's a -- you know, particularly as we come off several severe droughts, drought years.

As in -- It's more prominent in other parts of our system. But when you're in Year 3, 4 or 5 of the drought, you -- it's probably a different number than if you're coming out of a normal year, obviously.

MR. LILLY: Well, and -- and I think you need to explain that, because -- I'm not trying to be difficult here, but I really don't understand that, because on September 30th, we never know what the next water year is going to be; do we?

WITNESS MILLIGAN: We do not.

But what we have seen -- And this is a great year as example. If you're coming off of several dry years, the watershed obviously responds much differently.

And this is a great example of a year where we had maybe near average snowpack in the March-April standpoint but the runoff from that snowpack in -- by the time we got to July, even June, was far less. So, you know, those are things we consider.

Again, if we look at a larger reservoir like Shasta, you're talking about a reservoir that's trying to carry water through to carry through multiple dry years. Folsom is a little bit less of that type of concern.

MR. LILLY: All right. Well, so you've given some caveats.

So, then, what do you consider to be appropriate carryover targets -- carryover storage targets for end of September? And you can state it as a range to take into account the caveats you just mentioned.

WITNESS MILLIGAN: I would think that where we have seen, particularly given Folsom, that if you're in the range of, you know, probably anything above 600,000 is probably water that you're going to end up spilling at some point and feel once -- Once you get below four, you're probably -- there's a concern.

So somewhere between there, I think, is an area where we would feel somewhere comfortable, and this is a place where I think some fine-tuning of -- by CalSim has tried to hone what that range is.

Obviously, in the extreme drought periods, you're going to have to go below that. That 400,000 number is probably a luxury that you can't afford to keep and keep all -- make all your ends meet.

It's certainly something that we give a lot of consideration to.

MR. LILLY: And then you referred a few minutes ago to end-of-December carryover storage.

So please just explain what the differences are between Reclamation's considerations and operations for end-of-December carryover storage versus end-of-September.

WITNESS MILLIGAN: Well, knowing that -- Again, you made the point that we don't know what the hydrology necessarily is going into the season.

If we find that because of a combination of whatever that carryover storage was end of September and a dry fall, if we find ourselves at a lower point at the end of December, then we need to make some decisions about how we're going to handle fishery releases, for example, going through the spring.

And that's a point in time that's probably of interest to the fishery management on the American River.

The spring -- Excuse me.

The fall period is a time where you like to try to keep some stability, and then you may have a chance to true that up at that kind of end-of-the-year timeframe.

MR. LILLY: So is it fair to say that Reclamation would start having some of the concerns you talked about when the December storage is less than the 400,000 acre-feet?

WITNESS MILLIGAN: Probably not.

MR. MIZELL: I'm going to object to this line of questioning.

We've sort of gone through a lot of existing operations at this point in time and I -- Mr. Lilly hasn't yet tied it to this particular Project.

Again, this hearing's, you know, I think, appropriately focused on the Cal WaterFix.

The Operations folks have testified that we're not changing the operational criteria of the upstream reservoirs.

If Mr. Lilly can tie this to the Project that's before the Board, I'm happen to let him -- not object but at this point I haven't seen the connection made.

CO-HEARING OFFICER DODUC: Well, I think it's

very relevant, but I'll allow Mr. Lilly to explain it.

MR. LILLY: Well, one of the reasons we haven't established the connection is, we haven't had our witnesses testify yet. And just -- I will say our witnesses will testify that they believe that the Cal WaterFix could have significant effects on changes in operations.

So I need to establish the foundation of the current risks with low carryover to Folsom storage to be able, then, to have the witness discuss the potential changes in those risks, and there are typically increases in those risks that occur with Cal WaterFix.

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

Mr. Mizell, did you want to use something else?

MR. MIZELL: Well, I just think if he's laying foundation for his own witness, that can be done during his testimony.

These witnesses are here to answer questions relative to the Project as we presented it.

CO-HEARING OFFICER DODUC: These witnesses are here to answer questions that will help this Board in making a decision on your Petition.

And to that end, I'm going to allow Mr. Lilly to ask his questions.

MR. LILLY: All right. So let me repeat the question, Mr. Milligan, or rephrase it.

Is it fair to say that Reclamation will have concerns if the end-of-December storage in Folsom Reservoir is less than 400,000 acre-feet?

WITNESS MILLIGAN: No.

MR. LILLY: Oh, excuse me. I thought you said there'd be -- that that's when you would have to start meeting -- discussing potential changes for fisheries and so forth.

WITNESS MILLIGAN: If that was below 200 --

MR. LILLY: Okay.

WITNESS MILLIGAN: -- by that period of time.

400, actually, under some circumstances, could be right at the Flood Control requirement at Folsom so --

MR. LILLY: Okay. So -- But it's -- Certainly in the 200 range in December, you would have the concerns you just described.

WITNESS MILLIGAN: I think 200,000 acre-feet as we've worked through a great deal of a bit of thinking as it relates to flow management standard and management to fisheries and where the right flow releases.

Anytime we got below 200,000 was a flag that we need to be in a very cautious standpoint in terms of releases out of Folsom.

MR. LILLY: Now, does Reclamation have any plans to change any of its procedures that you've just described for Folsom Reservoir, carryover storage, if the Cal~WaterFix Project is constructed and begins operations?

WITNESS MILLIGAN: No.

MR. LILLY: Okay. Do you envision making plans in the future for any change, or is it your view that you will not need to make any changes?

WITNESS MILLIGAN: Well, we are always looking for ways to optimize, given what we know, particularly after the current drought sequence had to be more affected with the management of Folsom, and in partnership with your clients, as well as others on the American River. But those aren't necessarily and probably are fairly independent of WaterFix.

MR. LILLY: Okay. So, now I'm going to shift over to the --

CO-HEARING OFFICER DODUC: Mr. Lilly, before you do that, I'm looking at the time.

And, again, I -- we have the audiovisual cutoff at 5:00, so I'll leave it up to you.

But is now a good time to break before you go to a new line of questioning?

MR. LILLY: I think it is.

My new line of questioning may take more than 10 minutes and it sounds like we have a pretty darned clear cutoff at 5:00.

I say let's break for the day and we can all come back tomorrow.

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

We will resume at 9 o'clock tomorrow.

(Proceedings adjourned at 4:51 p.m.)

State of California)
)
County of Sacramento)

I, Candace L. Yount, Certified Shorthand Reporter for the State of California, County of Sacramento, do hereby certify:

That I was present at the time of the above proceedings;

That I took down in machine shorthand notes all proceedings had and testimony given;

That I thereafter transcribed said shorthand notes with the aid of a computer;

That the above and foregoing is a full, true, and correct transcription of said shorthand notes, and a full, true and correct transcript of all proceedings had and testimony taken;

That I am not a party to the action or related to a party or counsel;

That I have no financial or other interest in the outcome of the action.

Dated: August 18, 2016

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Candace L. Yount, CSR No. 2737