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BEFORE THE  
CALIFORNIA STATE WATER RESOURCES CONTROL BOARD

CALIFORNIA WATERFIX WATER )  
RIGHT CHANGE PETITION )  
HEARING )

JOE SERNA, JR. BUILDING  
CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY  
SIERRA HEARING ROOM  
1001 I STREET  
SECOND FLOOR  
SACRAMENTO, CALIFORNIA

PART 1 - REBUTTAL

Wednesday, May 10, 2017

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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  
Conny Mitterhofer, Supervising Water Resource Control  
Engineer  
Kyle Ochendusko, Senior Water Resources Control Engineer

PART I

For Petitioners:

California Department of Water Resources:

Thomas M. Berliner  
Robin McGinnis

The U.S. Department of the Interior:

Amy L. Aufdemberge, Esq.

INTERESTED PARTIES:

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

John Herrick, Esq.  
Dean Ruiz, Esq.

For Clifton Court, L.P.:

Suzanne Womack  
Thomas H. Keeling (specially appearing)

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APPEARANCES (Continued)

For North Delta Water Agency & Member Districts:

Rebecca Smith

For The Environmental Justice Coalition for Water, Islands, Inc., Local Agencies of the North Delta, Bogle Vineyards/Delta Watershed Landowner Coalition, Diablo Vineyards and Brad Lange/Delta Watershed Landowner Coalition, Stillwater Orchards/Delta Watershed Landowner Coalition, Brett G. Baker and Daniel Wilson:

Osha Meserve

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

Michael Jackson

For State Water Contractors:

Stefanie Morris

For County of San Joaquin, San Joaquin County Flood Control and Water Conservation District, and Mokelumne River Water and Power Authority:

Thomas H. Keeling

For California Water Research:

Deirdre Des Jardins

For Snug Harbor Resorts, LLC:

Nicole S. Suard, Esq.

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1 Wednesday, May 10, 2017 9:30 a.m.

2 PROCEEDINGS

3 ---000---

4 CO-HEARING OFFICER DODUC: Good morning,  
5 everyone. It is 9:30 a.m.

6 Welcome back to the State Water Board Water  
7 Right Change Petition hearing for the California WaterFix  
8 Project.

9 I am Tam Doduc. With me to my right is Board  
10 Chair and Co-Hearing Officer Felicia Marcus. I believe  
11 we'll be joined by Board Member Dee Dee D'Adamo shortly.  
12 To my left are Dana Heinrich, Conny Mitterhofer and Kyle  
13 Ochenduszk. We're being assisted today by Mr. Long and  
14 Mr. Baker.

15 Before we get to this panel, some quick  
16 announcements:

17 In the event of an alarm, please take the  
18 stairs, not the elevator, down to the first floor, and  
19 our meeting location is in the park. If you're not able  
20 to use the stairs, please flag down one of us and we'll  
21 direct you to a protected area.

22 Second announcement is for the sake of the  
23 recording and the webcasting: Please speak into the  
24 microphone and begin by stating your name and  
25 affiliation.

1           And most importantly, Mr. Herrick, who's phone  
2           has already went off once today, please take a moment and  
3           check to make sure that all your noise-making devices are  
4           on silent, vibrate, do not disturb.

5           All right. With that, then, are there any  
6           housekeeping matter that we need to address before I turn  
7           it over to Petitioners for presentation of their third  
8           panel?

9           All right. I will state something that I --  
10          publicly that I informed Mr. Herrick of earlier today  
11          that made him glowing and happy, and that is, for today,  
12          tomorrow and Friday, we will try to break a little early,  
13          sometime between 4:00 and 4:30.

14          With that, I will turn to you, Miss McGinnis  
15          and Mr. Berliner.

16          Oh, do your witnesses need to take the oath?

17          MS. MCGINNIS: Good morning. Robin McGinnis  
18          for California Department of Water Resources.

19          Yes, thank you, they need to take the oath.

20          CO-HEARING OFFICER DODUC: Please stand and  
21          raise your right hand.

22          ///

23          ///

24          ///

25          ///

1

2

JOEL KIMMELSHUE and CHRISTOPHER THORNBERG

3

called as witnesses for the Petitioners, having been

4

first duly sworn, were examined and testified as follows:

5

CO-HEARING OFFICER DODUC: Thank you. You may

6

begin, Miss McGinnis.

7

MS. MCGINNIS: Thank you.

8

DIRECT EXAMINATION BY

9

MS. MCGINNIS: Dr. Kimmelshue, is DWR-25 a true

10

and correct copy of your statement of qualification?

11

WITNESS KIMMELSHUE: Yes, it is.

12

MS. MCGINNIS: Is DWR-85 a true and correct

13

copy of your testimony?

14

WITNESS KIMMELSHUE: Yes, it is.

15

MS. MCGINNIS: Dr. Thornberg, is DWR-23 a true

16

and correct copy of your Statement of Qualifications?

17

WITNESS THORNBERG: Yes, it is.

18

MS. MCGINNIS: Is DWR-84 a true and correct

19

copy of your testimony?

20

WITNESS THORNBERG: Yes, it is.

21

MS. MCGINNIS: Okay. Dr. Kimmelshue, please

22

summarize your testimony.

23

WITNESS KIMMELSHUE: Thank you. And I'd like

24

to thank the Board for allowing us to be here today. I

25

appreciate the audience.

1           As counsel mentioned, DWR-25 is indeed my  
2   resumé. I like to think that I might bring the trifecta  
3   to what you need here with regards to agricultural  
4   knowledge.

5           I grew up of a farm. I'm the last of five kids  
6   so I got a good education, a lot of it. And then I've  
7   been working recently, in the last -- past 21 years, in  
8   implementing that education with regards to soil science,  
9   soil salinity management, irrigation, drainage  
10  management.

11           My testimony is centered on a review of  
12  previous work performed in the Delta, mostly to establish  
13  leaching fractions.

14           And I want to be clear that the leaching  
15  fractions that are used in -- in this process for the  
16  Delta WaterFix process are exceedingly critical with  
17  regards to how they carry through, through the process of  
18  establishing estimates of potential yield decline and  
19  also estimates of potential economic impacts.

20           In my testimony, DWR-85, I mentioned numerous  
21  past studies, literature and general knowledge that tells  
22  us that the leaching fraction that is currently being  
23  discussed, around 5 percent, is an exceedingly low  
24  leaching fraction even in high-water-table soils.

25           One note that I'd like to make in that



1 additional testimony is that some of the leaching  
2 fractions that were measured in the alfalfa study by  
3 Dr. Leinfelder-Miles in the Delta were in the 20 percent  
4 range.

5 So you can see that there is indeed extreme  
6 variability even if you believe that the leaching  
7 fractions are indeed that low.

8 My main concern is that the formula that were  
9 used to calculate leaching fractions were not  
10 inappropriate. It was indeed an inappropriate  
11 application of the formulas. And those formulas came  
12 from very well-known and commonly-used reference called  
13 Ayers and Westcot. You probably have all heard that for  
14 many time -- many times now.

15 And I'd like to simply quote a couple  
16 statements from Ayers and Westcot when using those  
17 formulas, one quote under site conditions and assumptions  
18 in the guidelines that say (reading):

19 "When using these formulas, drainage is assumed  
20 to be good with no uncontrolled shallow water table  
21 present within 2 meters of the surface."

22 This is very different in many cases in the  
23 South Delta region with high-water-table conditions.

24 Another quote that I'd like to reiterate there  
25 is, it says (reading):

1            "If the source of salt other than irrigation  
2            water, for example, from a high water table, the  
3            concentration relationship between the water  
4            salinity that's applied" -- irrigation water  
5            salinity applied to the surface -- "and that" --  
6            find my place again here -- "and the concentration  
7            of the salinity at depth is erroneous. If a water  
8            table is present, it is an additional salt source  
9            not considered in the fixed relationship between --  
10           between the salinity that's applied to the surface  
11           of the ground and that salinity in the water table."

12           In other words, to establish a leaching  
13           fraction, it's important that the salt at the base of the  
14           root zone, which is a definition by Ayers and Westcot, be  
15           from salt applied at the surface of the soil and not from  
16           other sources such as shallow saline groundwater.

17           That error or questionable low leaching  
18           fraction was carried through to the yield decline impacts  
19           work by Prichard and the other economic work relying on  
20           that data.

21           Concerning that the -- It is concerning that  
22           the scientific work has not been thoroughly peer reviewed  
23           in light of the application and importance in the Delta  
24           WaterFix plan.

25           It would be helpful that all site locations and

1 locations of sampling within the program -- within the  
2 study performed by Dr. Leinfelder-Miles in the alfalfa  
3 study in South Delta were identified in a map or some way  
4 to correlate those locations to waterways, other  
5 potential sources of salt, drainage conditions, as well  
6 as whether the fields were even underdrained or  
7 artificially drained or not. To date, I don't have that  
8 knowledge to make that assessment.

9 In my testimony, I have attempted to correct  
10 for an error that carries through -- carries through the  
11 testimony to Mr. Prichard and the economic testimony, and  
12 that's in my testimony.

13 Other areas of concern that I have include  
14 precipitation, recognizing that we have a -- been through  
15 a severe drought in the period of time in which the  
16 samples were taken for the alfalfa study, as well as the  
17 tomato study and the grape and pear single-sample events.

18 I'm also concerned that the validation of the  
19 results need to be verified against location. I  
20 mentioned that earlier.

21 And one of the key foundational components of  
22 science is that we see repeatability in the science, and  
23 currently we don't see a lot of repeatability in those  
24 studies, and I would like to see that.

25 Of really concern -- Of real importance to me

1 is concerning the . . . the weather conditions that we've  
2 had this last winter. We should absolutely have -- And  
3 the drought that preceded that. We should absolutely see  
4 an increase in salinity during a drought condition.

5           Precipitation effects do not have the -- We had  
6 low precipitation; therefore, less leaching taking place.

7           I'd really like to see some samples of those  
8 soils in those areas following this wintertime rainfall  
9 period.

10           Finally, to reiterate, the importance of  
11 establishing and calculating appropriate leaching  
12 fractions is critical in the decision-making of the  
13 WaterFix program.

14           I'll leave the rest of my time to John.

15           WITNESS THORNBERG: Good afternoon -- Excuse  
16 me.

17           Good morning. My name's Chris Thornberg.

18           WITNESS KIMMELSHUE: I'm sorry.

19           WITNESS THORNBERG: That's okay.

20           Chris Thornberg. I'm a founding partner of  
21 Beacon Economics. I'm also a director of the AC  
22 Oversight Center for Economic Forecasting Development.

23           I am a -- basically a data guy. I see a lot of  
24 policy issues here in the State of California. And I was  
25 asked to review the work of Dr. Jeffrey Michael, Michael

1 Machado and Ed Whitelaw in regards to their estimates of  
2 damages that would be sustained by the Delta agricultural  
3 economy as a result of the construction and operation of  
4 the Delta WaterFix Projects.

5 To put this in context, I just want to throw a  
6 couple numbers out there. One of the numbers that came  
7 out of Michael's testimony was that he expected a loss of  
8 146 jobs and \$11.6 million in income as a result of  
9 increasing salinity levels.

10 Michael Machado, in one part of his analysis,  
11 assumed that there -- estimated that there would be a  
12 loss of \$32 million in agricultural revenues, 389 jobs,  
13 as a result, again, of the creation of the WaterFix  
14 Project.

15 Now, it's worth noting up front that these  
16 numbers are relatively minor compared to the overall size  
17 of the San Joaquin economy. Overall, agriculture in the  
18 area comes in at about \$2 billion a year recently. To  
19 put that in context, Michael Machado's number of  
20 32 million comes in at less than 2 percent by a good  
21 margin.

22 And it's worth noting that the overall economy  
23 of San Joaquin is on the order of 22 billion. Ag is less  
24 than 10 percent of the overall economy.

25 Overall, it's one of the fastest-growing

1 economies in the state. Gross regional product has been  
2 growing by \$46 million per year over the last 15 years.  
3 That's more than one year of damage according to  
4 Mr. Machado's testimony.

5 And, of course, it's also worth pointing out  
6 that the damages they estimate would completely neglect  
7 the other side of the equation, which is the positive  
8 benefits of the construction, both in the short-term,  
9 which is going to have plenty of positive effects because  
10 of all the spending in the region, as well as in the  
11 long-term in the ongoing operations.

12 And, of course, they also neglect the ongoing  
13 value of these tunnels in the WaterFix Project to the  
14 State economy overall. In other words, they really only  
15 presented half the picture to you.

16 But putting all that to one side, those  
17 comments or critiques, if you will, about how small these  
18 numbers are, are based on the idea that these numbers are  
19 actually credible and, unfortunately, I don't think they  
20 are.

21 We studied the analysis of both Dr. Michael and  
22 Mr. Machado and looked at the methodology they used, and  
23 we found flaws at almost every step.

24 To put that in context, these flaws at least  
25 create red flags that put serious doubts on their actual

1 numbers. At worst, the flaws we found seem to skew or  
2 bias their estimates upwards substantially. As such,  
3 it's very hard for me to actually put any kind of  
4 credibility on these numbers themselves.

5 Now, to understand the kind of chain of -- of  
6 logic that these analyses go through, I like to think of  
7 it as kind of a four-step process.

8 The assumptions are: The creation of the  
9 WaterFix will increase salinity in the Delta; the  
10 increased salinity will reduce crop yields; the reduced  
11 crop yields will in turn cause the agricultural community  
12 to turn to growing lower-value crops, so these sort of  
13 multiple chains; and that in turn will harm the  
14 agricultural economy.

15 Well, as Joel has noted, right off the bat,  
16 the -- a lot of this starts with the idea that there will  
17 be an increase in salinity which will in turn hurt crop  
18 yields.

19 So, when we looked at that part of the  
20 equation, we start with the idea that these leaching  
21 tables were used incorrectly. Joel noted these leaching  
22 tales all by themselves are suspect. We found the errors  
23 in how the leaching tables were actually used.

24 And, of course, it's worth pointing out that  
25 the use of these leaching tables actually seems to fly in

1 the face of what the original author,  
2 Dr. Leinfelder-Miles, concluded. In fact, in her own  
3 report, it said, quote (reading):

4 "In this study, alfalfa yields was not  
5 correlated with average root zone salinity,  
6 suggesting that other factors like pest pressure,  
7 stand quality or economic factors were more  
8 influential in yield during these growing seasons."

9 So even Dr. Leinfelder-Miles herself seemed to  
10 suggest that there's not this relationship between  
11 salinity and crop yields the way that it is being assumed  
12 by Dr. Michael and Mr. Machado.

13 Now, in terms of actually looking at this, the  
14 other part of this is not only do we find problems in  
15 their methodology, but we actually found with a brief  
16 examination of the data that the results seem to fly in  
17 the face of what the data would actually tell us.

18 So, let me go through a little bit of the -- of  
19 the issues with just the yield loss. I found out, for  
20 example, that Dr. Michael used a model to estimate the  
21 yield loss but he didn't actually look at the data; in  
22 other words, he didn't try to back up his model with an  
23 actual empirical investigation.

24 Now, it's clear that Dr. Michael's comfortable  
25 with empirical investigation because the second part of



1 his analysis, looking at crop shifts, uses some fairly  
2 sophisticated econometrics. So I was curious why he  
3 didn't apply the same degree of econometric rigor to the  
4 first part of his analysis.

5           And that's important because the Delta provides  
6 us with an actual experiment. Economists, because we  
7 don't tend to have the ability to manipulate the world  
8 the way, say, physicists do to test certain things, we  
9 like to look for natural experiments where there are  
10 changes in the economy or in the environment that allow  
11 us to look at what happens.

12           We have this natural experiment. In fact,  
13 there's been wide-ranging variance in salinity in the  
14 Delta over the last couple decades simply as a result of  
15 changes in the climate. Typically, when we have drought  
16 type conditions, salinity levels go up and, when it  
17 rains, hard salinity levels go down.

18           We looked at the history of -- of the Delta and  
19 we found range -- that the salinity levels in the water  
20 range between 300 ecm up to a high of over 800 ecm over  
21 the past 20 years or so, which is roughly in line with  
22 the ranges allowed by D-1641. This provides us with this  
23 sort of natural experiment.

24           What we did was, we went out and simply asked  
25 the question: In years of high salinity, do we actually

1 see a reduction in crop yield?

2           And, interesting, when -- you know, when you  
3 look at that data, we don't see that relationship. In  
4 fact, if you look towards the end of my actual written  
5 report, you'll see numerous graphs for these supposedly  
6 salinity-sensitive crops. And, for the most part, we  
7 find a positive relationship, a positive correlation;  
8 that is to say, in high-salinity years, there seems to be  
9 better yield per acre rather than lower yield per acre.

10           Now, mind you, I think there's an omitted  
11 variable bias in those simple graphs. I think the fact  
12 is, when you have high-salinity conditions, you also have  
13 a lot of sun which obviously is good for growing crops,  
14 which is why we're finding positive correlations.

15           So, to look a little deeper, we actually did a  
16 series of empirical analyses. What we did was, first,  
17 was, we went crop by crop and we ran a specification  
18 using traditional time series regression analysis. It's  
19 a very well-known statistical technique. It's multiple  
20 regressions, but we use some -- some controls to deal  
21 with a lot of correlation issues and time series.

22           And case after case after case for all these  
23 different crops, we could find no negative correlation  
24 between levels of salinity and crop yield for any of the  
25 crops in our sample and, to be clear, we used 17

1 different crops we looked at. Those 17 different crops  
2 represent almost 90 percent of agricultural value within  
3 the San Joaquin region. Not -- Not one of these crops  
4 did we find any relationship.

5 We then took the data and went the next step  
6 and put it in what's called a panel regression, a  
7 seemingly unrelated regression, and ran the numbers yet  
8 again. And, again, we found no statistically significant  
9 negative relationships between levels of salinity and  
10 overall crop yields.

11 We see no evidence that, within this range of  
12 salinity, this seems to have any impact on the ability  
13 for farmers to grow their product on a year-to-year  
14 basis.

15 Again, this completely contradicts the use of  
16 the model of the leaching fractions in order to estimate  
17 damages. The data doesn't suggest there's any impact at  
18 all.

19 Now, as for the shift in crop choices, at this  
20 point in time, I really could stop because if there's no  
21 evidence that higher salinity levels lead to reduced crop  
22 yields. The entire point about shifting crop uses is  
23 moot. But, nevertheless, we decided to look at it  
24 because, again, within this analysis, we found all sorts  
25 of red flags, things that bothered us.

1           For example, even the concept of a high- or  
2 low-value crop. I'm not sure what that means, what a  
3 high-value crop is. It's clear, for example -- and  
4 Mr. Machado suggests -- that high-value crops are those  
5 that have the greatest revenue per acre.

6           But revenues are different than profits and we  
7 all know that profits are important, not revenues.

8           Equivalently, if you're thinking about the  
9 broader economy, you want to separate crops into those  
10 that have large multiplier effects and those that don't.  
11 And, again, none of that effort was made. Instead, they  
12 just simply assumed that high revenue per acre is an  
13 estimate of value, which I'm not sure about.

14           They also used high aggregations of crops. As  
15 opposed to using, say, the 17 different crops the way we  
16 did, they used six different groups, deciduous, field,  
17 gray, patch or truck, vineyard. I'm not sure what these  
18 groups are meant to be. And I also know, within these  
19 different groups, there's different kind of crops with  
20 different levels of supposed saline sensitivity and,  
21 candidly, different values. We're not sure why these  
22 mixes were made.

23           Even a choice of empirical model, using a  
24 multinomial logit, this is an incredibly sophisticated  
25 empirical technique. It's very sensitive. You need tons

1 of good data. This data does not allow it -- does not  
2 really suggest using this kind of very intensive  
3 regression analysis.

4 For me, you want to use simple analyses with  
5 this kind of data because it's so thin.

6 And even within that -- those choices, there  
7 were not choices being made. For example, when we looked  
8 at the data, we collected easily data from 1991 to 2015.  
9 For reasons unclear to me, Dr. Michael uses the 2002 to  
10 2010 data only and then, again for reasons unclear, he  
11 drops 2005.

12 Well, you're not allowed to simply exclude  
13 years of data without any particular rationale. That  
14 smells to me that you're trying to fix the results;  
15 you're not looking for a real answer.

16 And, of course, last but not least, it flies in  
17 the face of even a basic data analysis.

18 If we are to believe that highly saline  
19 conditions cause farmers to shift towards low-value  
20 crops, let's look at the data.

21 We took -- We did a very simple analysis. We  
22 looked at two periods of time, from 1997 and 2000, which  
23 was a low-salinity period according to the data that I  
24 cited earlier, and then we looked at 2012 to 2015, which,  
25 obviously, because of the drought we had been in, was a

1 period of high salinity.

2 Well, if we thought that salinity was having an  
3 impact on yield, which in turn was having an impact on  
4 farmers' choice of crops, then we should see a distinct  
5 difference between the choices -- the crops being grown  
6 in '97 to 2000, the crops being grown in 2012 to 2015.

7 Well, actually, here's the results: Between  
8 those two periods of time, acres of supposedly  
9 salt-tolerant crops actually dropped by 50-cent --  
10 50 percent in the high-salinity period. And, of course,  
11 acres (sic) is supposedly very salt-sensitive crops,  
12 including beans, almonds, cherries, walnuts, peaches and  
13 pears, they actually increased by 30 percent between  
14 those two periods of time.

15 In other words, farmers were growing far more,  
16 quote-unquote, salinity-sensitive crops in a period of  
17 high salinity relative to what they were doing in a  
18 period of low overall salinity.

19 In other words, the actual data, just looking  
20 at the results, completely contradicts the results of  
21 this very odd model using odd years with very little  
22 tests for robustness.

23 As such, I don't believe the model. I believe  
24 the data. Again, I see no evidence that, within these  
25 ranges of salinity that we've seen in the past, that the

1 salinity either impacts yield or it impacts crop choices.  
2 And as such, I simply cannot believe the estimates of  
3 economic damages that come out of the Michael and the  
4 Machado reports.

5 Thank you very much.

6 CO-HEARING OFFICER DODUC: Does that conclude  
7 this portion, Miss McGinnis?

8 MS. MCGINNIS: Yes, it does.

9 CO-HEARING OFFICER DODUC: All right. If I  
10 could ask the parties who wish to conduct  
11 cross-examination, please come up to the microphone,  
12 identify yourself by Group Number, if possible, and give  
13 me a time estimate.

14 MS. WOMACK: Suzanne -- oh, sorry. Suzanne  
15 Womack, Clifton Court L.P., Number 41.

16 CO-HEARING OFFICER DODUC: 43.

17 MS. WOMACK: Pardon me?

18 CO-HEARING OFFICER DODUC: 43.

19 MS. WOMACK: 43. Darn. Last person.

20 (Laughing.)

21 MS. WOMACK: But a farmer's daughter.

22 Gosh, I might need up to an hour. Thanks.

23 MS. SMITH: Rebecca Smith for North Delta Water  
24 Agency, Group 9.

25 15 minutes.

1           MR. RUIZ: Dean Ruiz for the South Delta Water  
2 Agency parties, Group 21.

3           Together, probably 50 minutes.

4           CO-HEARING OFFICER DODUC: 50?

5           MR. RUIZ: 50, five oh, yes, between  
6 Mr. Herrick and I.

7           MS. MESERVE: Osha Meserve for Land and other  
8 parties, Group 19.

9           I predict an hour.

10          MR. JACKSON: Michael Jackson for the CSPA,  
11 et al., group, Number 31.

12          I would guess 30 minutes.

13          CO-HEARING OFFICER DODUC: So roughly four  
14 hours is the estimated time; okay?

15          With that, North Delta, Group 9, you're up.

16          Any caffeine this morning, Miss Smith?

17          MS. SMITH: Oh, plenty.

18          CO-HEARING OFFICER DODUC: Oh, dear (laughing).

19          MS. SMITH: I'll try and slow down.

20          CO-HEARING OFFICER DODUC: Thank you.

21          MS. SMITH: I've got two little kids at home.  
22 I've got to get my caffeine in.

23          CO-HEARING OFFICER DODUC: Well, in preparation  
24 of you, I will have my caffeine so I can stay up with  
25 you.



1 MS. SMITH: Okay.

2 Good morning. So a brief overview of my  
3 questions. They're going to be focused on Dr. Kimmelshue  
4 and his testimony regarding crop salt tolerances and  
5 salinity, so . . .

6 Good morning. Again, I'm Rebecca Smith with  
7 North Delta Water Agency.

8 CROSS-EXAMINATION BY

9 MS. SMITH: So, Dr. Kimmelshue, my first  
10 question is:

11 Would you agree that, in analyzing the impact  
12 of saline water to -- applying saline water to a crop,  
13 it's necessary to analyze the physical and chemical  
14 properties of the soil at the crop location?

15 WITNESS KIMMELSHUE: Yes.

16 MS. SMITH: How about the type of crop and that  
17 crop salinity tolerance?

18 WITNESS KIMMELSHUE: Yes.

19 MS. SMITH: The existing method of irrigation?

20 WITNESS KIMMELSHUE: Yes.

21 MS. SMITH: And the depth of groundwater?

22 WITNESS DURKIN: Yes.

23 MS. SMITH: How about drainage systems  
24 available at the location?

25 WITNESS KIMMELSHUE: That would be useful

1 information, yes.

2 MS. SMITH: All right.

3 Are you -- And the location from which any soil  
4 samples are drawn. I read your testimony to say that  
5 that matters significantly when you're considering soil  
6 salinity; is that correct?

7 WITNESS KIMMELSHUE: That's correct.

8 MS. SMITH: Are you aware of any analysis  
9 conducted by the Petitioners of crop salt tolerances for  
10 locations within the North Delta Water Agency in  
11 connection with the Proposed Project?

12 WITNESS KIMMELSHUE: Are you referring to the  
13 Ryer Island work?

14 MS. SMITH: Sure.

15 WITNESS KIMMELSHUE: Is that what you're  
16 referring to.

17 MS. SMITH: Yeah. Are you aware of any? So  
18 Ryer Island or anything by the Petitioners.

19 WITNESS KIMMELSHUE: The one that I'm aware of  
20 is the Ryer Island group.

21 CO-HEARING OFFICER DODUC: Mr. Kimmelshue,  
22 could you get the microphone closer.

23 WITNESS KIMMELSHUE: Thank you.

24 MS. SMITH: And you testified that single soil  
25 samples are not enough to identify a salinity impact; is

1 that correct?

2 WITNESS KIMMELSHUE: That's correct.

3 MS. SMITH: Are you aware of any other soil  
4 samples collected in North Delta by Petitioners in  
5 connection with the proposed project?

6 MS. MORRIS: Stefanie Morris, State Water  
7 Contractors.

8 I'm sorry. Just for the record, I think  
9 there's confusion. I'm not sure if this witness  
10 understands Petitioners versus Protestants. And I think  
11 he just testified in response to Miss Smith's question  
12 that the Petitioners did work on Ryer Island. And I  
13 don't think that's what his testimony says.

14 I think there's a miscommunication going on  
15 here.

16 MS. SMITH: Yeah. Are you -- So the Ryer  
17 Island work, are you referring to the work that  
18 Miss Leinfelder-Miles --

19 WITNESS KIMMELSHUE: Yes.

20 MS. SMITH: Okay. So Petitioners would be DWR  
21 Project proponents for --

22 WITNESS KIMMELSHUE: Oh. No, I'm not. Thank  
23 you very much for the clarification.

24 MS. SMITH: That's fine.

25 CO-HEARING OFFICER DODUC: You can thank

1 Miss Morris.

2 MS. SMITH: Yes. Thank you, Stef.

3 WITNESS KIMMELSHUE: So, I'm not aware of  
4 any --

5 MS. SMITH: All right.

6 WITNESS KIMMELSHUE: -- no.

7 MS. SMITH: Thank you.

8 And feel free to stop me if you're not clear on  
9 the terminology if there's anything that's unclear.

10 WITNESS KIMMELSHUE: Thank you.

11 MS. SMITH: So you've testified that irrigation  
12 water quality is only one of several factors to be  
13 considered in soil -- the management of soil salinity;  
14 correct?

15 WITNESS KIMMELSHUE: That's correct.

16 MS. SMITH: And you have some experience in  
17 irrigation management; correct?

18 WITNESS KIMMELSHUE: That's correct.

19 MS. SMITH: Based on that experience, would you  
20 agree that the physical characteristics of a property are  
21 one factor that a grower might consider in making  
22 irrigation management decisions?

23 WITNESS KIMMELSHUE: The physical properties of  
24 the soil profile are important in considering irrigation  
25 management decisions, yes.

1 MS. SMITH: What about environmental  
2 considerations?

3 WITNESS KIMMELSHUE: Yes. Things like  
4 precipitation are very important. Also --

5 MS. SMITH: Go ahead.

6 WITNESS KIMMELSHUE: When that precipitation  
7 occurs, the duration of that precipitation, the frequency  
8 of that precipitation, the intensity of that  
9 precipitation.

10 I'll give you an example: You can have a year  
11 with 15 inches of precipitation and -- I'll call it 12 to  
12 make the math easy. And for the six rainy months in the  
13 year that we have, we get 2 inches every month and zero  
14 in every month therefore -- after in the nonrainy season.

15 What you get there is limited capacity for  
16 leaching because you don't get a large precipitation  
17 event similar to what we've achieved this winter.

18 MS. SMITH: Okay. What about the availability  
19 of irrigation water? Would that impact a management  
20 decision?

21 WITNESS KIMMELSHUE: If a grower didn't have  
22 enough irrigation water to practice leaching fractions,  
23 then that would, yes.

24 MS. SMITH: And would you agree that all of  
25 these factors you've mentioned could impact the

1 availability or cost of a management decision available  
2 to the grower?

3 WITNESS KIMMELSHUE: I'm not an expert in the  
4 cost component.

5 MS. SMITH: Okay.

6 WITNESS KIMMELSHUE: You should probably ask  
7 Chris about that.

8 MS. SMITH: How about the availability?

9 WITNESS KIMMELSHUE: Can you repeat the  
10 question? I think you just asked that question; right?

11 MS. SMITH: Yeah, kind of. Let me try it  
12 another way.

13 So these factors that we've discussed, when a  
14 grower's making a decision about what management practice  
15 to apply, these all could figure into that -- that  
16 consideration; correct?

17 And limitations in those factors could also  
18 figure into that --

19 WITNESS KIMMELSHUE: Sure.

20 MS. SMITH: -- consideration.

21 So your answer is "yes"?

22 WITNESS KIMMELSHUE: Yes.

23 MS. SMITH: Thank you.

24 Isn't it true that Petitioners haven't offered  
25 any study -- and here we're talking about DWR Project

1     proponents -- regarding a particular management decision  
2     that farmers might make to any impacts of the proposed  
3     Project in North Delta?

4             MS. MORRIS:  Objection.

5             MS. MCGINNIS:  Objection:  Scope.

6             Dr. Kimmelshue explained what he reviewed to  
7     prepare his rebuttal testimony --

8             WITNESS KIMMELSHUE:  Right.

9             MS. MCGINNIS:  -- which was the testimony  
10    offered by Protestants.  He did not evaluate the scope of  
11    Petitioners' testimony.

12            CO-HEARING OFFICER DODUC:  Anything to add,  
13    Miss Morris?

14            MS. MORRIS:  I'll just join.  It's outside the  
15    scope of his testimony.

16            CO-HEARING OFFICER DODUC:  Miss Smith.

17            MS. SMITH:  I'm happy to try it another way.  
18    Were you asked to perform any such study?

19            MS. MORRIS:  Objection:  Outside the scope of  
20    his testimony.

21            CO-HEARING OFFICER DODUC:  Sustained.

22            MS. SMITH:  Okay.  I think that's all I have,  
23    then.  Thank you.

24            CO-HEARING OFFICER DODUC:  Thank you,  
25    Miss Smith.

1           Next up is Miss Meserve.

2           MS. MESERVE: I have broken the rule in not  
3 providing the thumb drive in the beginning. I apologize.

4           And there's a folder that says "Land Salinity."

5           MR. BAKER: Thank you.

6           MS. MESERVE: So I have a few questions for  
7 Dr. Kimmelshue regarding his -- his testimony regarding  
8 scientifically valid studies, the duty of users to  
9 mitigate for impacts of the Project, questions about peer  
10 review, and then also . . . drainage, seepage, and  
11 availability of alternative crops.

12           And then for Dr. Thornberg, I have questions  
13 about his qualifications and also about his findings  
14 regarding crop yield productions, crop choice, and  
15 compensatory -- his language regarding compensatory  
16 payments.

17           I should start with Dr. Kimmelshue.

18           CO-HEARING OFFICER DODUC: Thank you.

19           And, Miss Meserve, please bring the microphone  
20 closer.

21           MS. MESERVE: New setup over here. A little  
22 cozier.

23                                   CROSS-EXAMINATION BY

24           MS. MESERVE: So, Dr. Kimmelshue, you discuss  
25 peer review in your testimony with respect to



1 Dr. Leinfelder-Miles' conclusions, and others.

2 Do you have any peer-reviewed papers?

3 WITNESS KIMMELSHUE: Yes, I do.

4 MS. MESERVE: And are those listed in your  
5 qualifications?

6 WITNESS KIMMELSHUE: Yes, they are.

7 MS. MESERVE: And on Page 18, you state that --  
8 of your testimony -- Which maybe we should bring up,  
9 DWR-85.

10 (Document displayed on screen.)

11 MS. MESERVE: You state on Page 18 that one  
12 sample doesn't constitute a scientifically valid study.

13 You had confirmed previously -- correct? --  
14 that DWR didn't do any sampling at all to support its  
15 claim of no injury; right?

16 WITNESS KIMMELSHUE: It is not my knowledge  
17 that DWR has done any sampling for that, no.

18 MS. MESERVE: And if we could go to Page 9 of  
19 the testimony, please, and footnote --

20 WITNESS KIMMELSHUE: Can we back up just a  
21 second? And I want to follow up with you.

22 What specifically were you talking about on  
23 Page 18 of my testimony.

24 MS. MESERVE: Lines 13 through 14.

25 WITNESS KIMMELSHUE: Okay. Let me clarify this

1 for you.

2 This study is the study for the vineyard and  
3 pears -- right? -- that Dr. Leinfelder-Miles presented;  
4 okay?

5 And what I'm saying here is that, in that  
6 study, she went out during August of 2016. That's  
7 critical to understand that. That is the point in time  
8 in which, if you are going to see any salinity buildup or  
9 the maximum salinity buildup in a system, it would have  
10 been in August of 2016 following one of the most worst  
11 droughts that we have seen.

12 It's my understanding also that a single sample  
13 was taken -- single sample in time was taken to assess  
14 what the salinity in the -- in the pear and the -- in the  
15 pear orchard and the vineyard studies were.

16 Scientifically speaking, a single sample does  
17 not in any way -- does not in any way result in any valid  
18 results whatsoever. When you're doing a salinity study,  
19 you need to track things over longer periods of time and  
20 have multiple samples in a study.

21 So it's interesting, nonetheless, that she  
22 showed in those vineyard and pear studies that there was  
23 some elevated -- there was some -- a salinity level, but  
24 you had nothing to compare it to.

25 Do you understand what I'm saying?

1           So when you don't have anything to compare it  
2 to, how do you know if it's high or low?

3           She compared it to literature values that said,  
4 are we in exceedance of a threshold value on vineyards or  
5 are we in exceedance on a threshold value on pears?

6           And I think she determined that the -- that one  
7 sample -- which again is not scientifically valid -- was  
8 in exceedance at that point in time in the vineyard  
9 study.

10           Now, the vineyard study -- To be clear about  
11 how they're irrigating there: In the vineyard study,  
12 they're irrigating with a drip irrigation system, which  
13 is one of the most efficient irrigation systems there is.

14           And I always tell people that it's important to  
15 recognize how efficient you ask agriculture to be because  
16 there's alternating circumstances, such as leaching,  
17 return flows to groundwater, et cetera.

18           So it's not surprising that, in a highly  
19 efficient irrigation system -- that is a grower choice to  
20 irrigate and to irrigate when they choose to -- that  
21 salinity levels are, at least at that point in time at  
22 the most extreme condition at the end of the drought, are  
23 elevated.

24           In the pear study, which is irrigated with a  
25 sprinkler system -- which is a somewhat lower efficiency

1 irrigation system in general which results in a greater  
2 leaching fraction -- there was not an excess according to  
3 the threshold values for pears.

4 So I hope I answered your question or clarified  
5 that.

6 MS. MESERVE: Have you provided a  
7 recommendation to Petitioners regarding what you believe  
8 a supportable study would be?

9 You just mentioned that you don't think this  
10 study -- This is within the scope of his testimony that  
11 he just gave.

12 CO-HEARING OFFICER DODUC: I assume --

13 MS. MCGINNIS: Objection --

14 CO-HEARING OFFICER DODUC: -- there's an  
15 objection coming.

16 MS. MCGINNIS: -- it's not within the scope of  
17 the testimony he just gave.

18 MS. MESERVE: He just discussed how  
19 Miss Leinfelder-Miles' study was not a complete study,  
20 and I believe she never intended for it to be a complete  
21 study in the first place.

22 However, he's discussed what the different  
23 elements of a complete study might be, and so I'm simply  
24 asking him whether he's made a recommendation to  
25 Petitioners, based on these opinions, about the study

1 they might ultimately perform.

2 CO-HEARING OFFICER DODUC: Let's change that  
3 to: Are you aware of any study that meets the parameter  
4 that you described?

5 WITNESS KIMMELSHUE: Not that I reviewed.

6 CO-HEARING OFFICER DODUC: Thank you.

7 MS. MESERVE: I believe Mr. Herrick had a --

8 MR. HERRICK: (Shaking head.)

9 MS. MESERVE: Now, going back to the  
10 single-point-in-time study on Ryer that you mentioned.

11 That would -- could potentially provide useful  
12 baseline information, however, to have sampled in those  
13 areas; right?

14 WITNESS KIMMELSHUE: I would say that that --  
15 that sample would -- would not necessarily provide  
16 baseline information; rather, as I mentioned, due to the  
17 environmental conditions associated with that period of  
18 time, it would provide an extreme condition.

19 MS. MESERVE: However, you're aware that the  
20 Proposed Project would remove fresh water from the system  
21 which might be similar to a drought condition; correct?

22 WITNESS KIMMELSHUE: I'm not aware of that. I  
23 did not study the water supply system.

24 MS. MESERVE: Are you aware that the water --  
25 that the Project proposed would divert 9,000 cfs from the

1 Sacramento River at the northern tip of the Delta before  
2 that fresh water enters the Delta?

3 WITNESS KIMMELSHUE: I am not aware of --

4 MS. MORRIS: Objection -- Stefanie Morris --  
5 incomplete hypothetical.

6 If you want to ask him a question about  
7 salinity, you should not say -- you need to say what's in  
8 the river after, not just they're diverting 9,000.  
9 What's the flow in the river?

10 There's not enough facts to answer the question  
11 that you were asking.

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

14 Miss Meserve, let's please focus your question  
15 not on the Project but on the studies, and specifically  
16 Mr. Kimmelshue's analysis of, first of all, Protestant's  
17 studies, but also his expertise in terms of conducting  
18 those analyses.

19 Keep your questions, please, focused on his  
20 rebuttal testimony.

21 MS. MESERVE: On Page 6 on Lines 7 through 9 of  
22 your testimony, you cite one of the failures, in your  
23 opinion, of Dr. Leinfelder-Miles' work, that it, quote,  
24 does not (reading):

25 ". . . Propose any grower management options

1           to" increase salinity -- "to mitigate any increase  
2           in salinity . . ."

3           Now, do you believe that new crop varieties are  
4           more tolerant to increases in salinity, which you  
5           mentioned later in that page, on Line 22?

6           WITNESS KIMMELSHUE: New crop varieties have  
7           indeed been developed for drought conditions and have  
8           been developed for higher salinity tolerances, yes.

9           And the levels -- I'm glad you brought that up.

10          The -- The number that we have been -- that  
11          Dr. Leinfelder-Miles and others have been using comes  
12          from Ayers and Westcot, very prominent reference, and the  
13          number is two decisiemens per meter of salinity in the  
14          root zone. Anything -- Anything in excess of that,  
15          according to Ayers and Westcot, begins to incur a yield  
16          damage.

17          That publication was developed in 1985 and, if  
18          my math is correct, that's about 32 years ago.

19          Since that time, new varieties have been  
20          developed that are much more saline tolerant with greater  
21          yields, and they are used in a number of different  
22          places.

23          I can give you an example. Right now, we have  
24          a Project in Arizona where we take mined water from the  
25          bottom of a mine that is high in saline, TDS of 12,000.

1 And we blend that water with Central Arizona Project  
2 water to a level that allows for suitability of  
3 irrigation intolerances of the crops that are grown.

4 And this is in New Magma Irrigation and  
5 Drainage District. It grows predominantly alfalfa.

6 That ob -- Those thresholds we're targeting  
7 right now are about two decisiemens per meter, not  
8 because that is what we believe to be the threshold of  
9 the crop; it's a very, very conservative estimate.

10 And we've been running that study and soil  
11 sampling four times a year to begin with, two times a  
12 year since then, for the last 10 years.

13 With that water quality, I have seen absolutely  
14 no yield decline, even at soil salinity levels in excess  
15 of two decisiemens per meter. And the reason is because  
16 the growers have implemented new varietal differences --  
17 new varieties -- I'm sorry -- new varieties in their  
18 program that are always being developed to account for  
19 things like drought resistance and salinity resistance.

20 MS. MESERVE: And is this a cited reference in  
21 your resumé regarding -- And this is in New Mexico,  
22 you're saying.

23 WITNESS KIMMELSHUE: This is in Arizona and  
24 should be in my resumé, yes.

25 MS. MESERVE: You also note at the top of



1 Page 7 that farmers can manage salinity by adding more  
2 water than the crops actually need; correct?

3 WITNESS KIMMELSHUE: Correct.

4 MS. MESERVE: And by mentioning these  
5 possibilities, are you suggesting that farmers could make  
6 changes to their activities to avoid salinity impacts  
7 from this Proposed Project?

8 WITNESS KIMMELSHUE: A classic and understood  
9 method for managing salinity is to implement a leaching  
10 fraction. That can be done at any time of the year.

11 A lot of the testimony that was prepared in  
12 Dr. Leinfelder-Miles' work and previous testimony in this  
13 hearing has stated that the excuse that the growers in  
14 the South Delta use is that, "Look, we can't -- we can't  
15 put water on during the growing season because we've got  
16 to get our equipment in there, we've got to get it cut,  
17 we've got to get it bailed, we've got to get it picked  
18 up."

19 I get it. I grew up on a farm. I know all  
20 about that.

21 But in other testimony -- I think it was . . .  
22 I can't remember. It was a vineyard grower that said, "I  
23 like to couple my leaching fraction in my system with  
24 rainfall. That way, I don't have to apply as much water  
25 because rainfall helps me out, and I can just add on top

1 of that."

2 So, back to your question: The ability to  
3 leach, that is the traditional and classic methodology of  
4 removing salts from a salt profile. It's been done for a  
5 hundred years.

6 The United States Bureau of Reclamation was  
7 developed for that reclaiming soils that were saline, and  
8 they -- that is a classic method to do that, yes.

9 MS. MESERVE: So are you suggesting that Delta  
10 farmers should simply increase their water use levels to  
11 prevent injury from this Project?

12 WITNESS KIMMELSHUE: I'm not --

13 MS. MORRIS: Objection: Outside the scope of  
14 his testimony.

15 MS. MESERVE: I believe it's well within his  
16 testimony. He said --

17 CO-HEARING OFFICER DODUC: Actually, you are --  
18 Sustained.

19 The way that you're asking the question takes  
20 it outside of his testimony to address the issue of  
21 injury.

22 Mr. Kimmelshue, what is your intent in -- with  
23 that statement in your testimony?

24 WITNESS KIMMELSHUE: Can you please repeat my  
25 statement? I'm not following you directly. I'm sorry.

1 CO-HEARING OFFICER DODUC: The statement to  
2 which Miss Meserve has been questioning you --

3 WITNESS KIMMELSHUE: Um-hmm.

4 CO-HEARING OFFICER DODUC: -- with respect to  
5 applying more water, did you intend for that to be -- to,  
6 as Miss -- Well, I don't know, Miss Meserve.

7 You're trying to link his technical testimony  
8 into a legal determination, and I would agree that is  
9 outside of his scope.

10 Would you like to rephrase your question?

11 MS. MESERVE: Are you suggesting that Delta  
12 farmers use more water than they do now in order to  
13 prevent the damages to their crops?

14 MS. MORRIS: Stefanie Morris, State Water  
15 Contractors.

16 Outside the scope and incomplete hypothetical.

17 MS. MCGINNIS: I'll join the objection.

18 The scope of Dr. Shimmelshue's (sic) --  
19 Kimmelshue, sorry -- Kimmelshue's testimony is not what  
20 Delta farmers should do. It's about the studies that  
21 Dr. Leinfelder-Miles conducted and the existing studies  
22 and state of the science in the field.

23 CO-HEARING OFFICER DODUC: So,  
24 Dr. Kimmelshue -- Is it Doctor or Mister?

25 WITNESS KIMMELSHUE: Doctor.

1 CO-HEARING OFFICER DODUC: Doctor.

2 When you include that statement about excess  
3 irrigation water, did you intend for it to be an option  
4 available?

5 WITNESS KIMMELSHUE: When managing salinity in  
6 any field, it is a preferred method of managing salinity.

7 CO-HEARING OFFICER DODUC: Regardless of  
8 whether or not there is any Project associated with it.

9 WITNESS KIMMELSHUE: Correct.

10 CO-HEARING OFFICER DODUC: Thank you.

11 MS. MESERVE: Are you aware of Petitioners'  
12 burden of proof in this hearing?

13 MS. MCGINNIS: Objection: Relevance; and calls  
14 for a legal conclusion.

15 CO-HEARING OFFICER DODUC: Sustained.

16 MS. MESERVE: Are you aware that Petitioners'  
17 burden is that they would not injure any legal user of  
18 water in --

19 MS. MCGINNIS: Same objection.

20 CO-HEARING OFFICER DODUC: Same ruling,  
21 Miss Meserve.

22 MS. MESERVE: Is it your position that the work  
23 of Leinfelder-Miles does not demonstrate injury to water  
24 users because it does not adequately analyze how those  
25 users could mitigate the impacts?

1 MS. MCGINNIS: Objection: Calls for a legal  
2 conclusion.

3 MS. MORRIS: Objection: Outside the scope.

4 CO-HEARING OFFICER DODUC: Sustaining all that.  
5 Miss Meserve.

6 MS. MESERVE: You testified that there are  
7 other options available. Is it your opinion that  
8 Ms. Leinfelder-Miles should have discussed those options  
9 in her report?

10 WITNESS KIMMELSHUE: Well --

11 MS. MCGINNIS: Objection: Vague.

12 CO-HEARING OFFICER DODUC: No. Overruled.

13 WITNESS KIMMELSHUE: What options are you  
14 referring to? Can you point to that in my testimony?

15 MS. MESERVE: Well, going back to new crop  
16 varieties and application of water, to name two.

17 WITNESS KIMMELSHUE: What page are you on?

18 MS. MESERVE: Six and seven.

19 WITNESS KIMMELSHUE: What lines?

20 MS. MESERVE: Six, Line 22 to the end of the  
21 page, as well as the top of Page 7. These are the things  
22 you're suggesting, so, yes.

23 WITNESS KIMMELSHUE: Can you restate the  
24 question again, please?

25 MS. MESERVE: Is it your position that because

1 Ms. Leinfelder-Miles does not discuss the means by which  
2 salinity could be lessened through application of water  
3 and different crops, that that makes the testimony  
4 erroneous?

5 WITNESS KIMMELSHUE: In fact,  
6 Dr. Leinfelder-Miles does mention the same thing that I  
7 mentioned as an extensive component of her testimony that  
8 talks about leaching fractions and management decisions  
9 on how you -- and management -- that's intuitively a  
10 management approach, and she does mention those things,  
11 just like I do.

12 MS. MESERVE: However, would you agree that the  
13 ability to use those methods may be limited depending on  
14 the geographic location?

15 MS. MORRIS: Objection -- Stefanie Morris,  
16 State Water Contractors.

17 Objection: Outside the scope.

18 Furthermore, Miss Leinfelder-Miles' study  
19 didn't identify the locations of the fields, so he can't  
20 answer that question.

21 CO-HEARING OFFICER DODUC: Overruled.

22 Can you answer the question, Mr. Kimmelshue?

23 WITNESS KIMMELSHUE: Can you state the question  
24 again, please?

25 MS. MESERVE: All right. I think I'm going to

1 say it different another time because I've changed it  
2 quite a bit from what I had in my notes.

3 I think we should just move on.

4 Are you suggesting that if there is degradation  
5 of water quality from the Proposed Project, that it would  
6 be the responsibility of the local water users to make  
7 changes to avoid these problems?

8 CO-HEARING OFFICER DODUC: Objection?

9 MS. MORRIS: Outside the scope.

10 CO-HEARING OFFICER DODUC: Miss Meserve.

11 MS. MESERVE: He's very clear that he's --

12 CO-HEARING OFFICER DODUC: But --

13 MS. MESERVE: He's suggesting these means,  
14 and --

15 CO-HEARING OFFICER DODUC: He's suggesting the  
16 mean, but his testimony makes no reference whatsoever to  
17 injury and so I would caution you to stick with the  
18 technical aspect, which is what he is focusing on.

19 MS. MESERVE: Are you aware that new seed  
20 varieties would likely cost more than the seed varieties  
21 in use today?

22 MR. BERLINER: Objection: Assumes facts not in  
23 evidence.

24 MS. MESERVE: He's suggest --

25 CO-HEARING OFFICER DODUC: Are new seed

1 varieties more expensive?

2 MS. MESERVE: Answer the question.

3 WITNESS KIMMELSHUE: It depends on the seed  
4 variety. It depends on the availability of that seed  
5 variety. It depends on the grower's decision on whether  
6 he wants -- or he or she wants to purchase a slightly  
7 more expensive seed variety, if it were to exist,  
8 availability of that to in turn increase yields because  
9 they might be more drought or salinity tolerant -- saline  
10 tolerant to create a net margin that's greater.

11 So there's all sorts of alfalfa seed varieties  
12 out there, and I'm pretty certain that not every one  
13 costs the same.

14 MS. MESERVE: Have you considered whether  
15 switching to different varieties would require  
16 modifications to farming practices such as purchase of  
17 new equipment?

18 MR. BERLINER: Objection: Outside the scope.

19 CO-HEARING OFFICER DODUC: Miss Meserve, please  
20 repeat the question.

21 MS. MESERVE: Are you aware whether changing to  
22 new varieties would require modifications to farming  
23 practices such as purchase of new equipment?

24 CO-HEARING OFFICER DODUC: Overruled. It's a  
25 logical question.



1                   WITNESS KIMMELSHUE: So what new equipment are  
2 you referring to?

3                   MS. MESERVE: You've opined that new seed  
4 varieties are available, and I'm asking you whether you  
5 believe those seed varieties that you were thinking of  
6 might require purchase of new equipment or other outlays  
7 of capital.

8                   WITNESS KIMMELSHUE: Even though I didn't  
9 testify to that, I'll give you a personal example, if  
10 that's okay.

11                   So my father grew dry edible beans for many  
12 years. I irrigated those beans for 13 summers.

13                   And he chose to use different varieties based  
14 on market conditions, that he can make a better margin  
15 off of canario beans versus blood red kidney beans or  
16 something like that. I mean, it's a business decision.  
17 We did not change equipment for planting the beans.

18                   And I would suspect that if I were a plant  
19 breeder and I were developing new varieties, it probably  
20 wouldn't be a good business decision on my part to create  
21 a variety that forced the grower to buy new equipment  
22 that costs a lot of money to buy my seed.

23                   So that may be true in some places, but my  
24 personal experience, that's not true.

25                   MS. MESERVE: Is it fair to say you did not

1 study this issue in the particular context in the Delta?

2 WITNESS KIMMELSHUE: I did not study this issue  
3 in the particular context in the Delta. That's not my  
4 testimony.

5 MS. MESERVE: Okay. You -- Regarding peer  
6 review.

7 You're critical of the work of  
8 Dr. Leinfelder-Miles because it was not peer reviewed.

9 This is on Page 17, Line 1, of your testimony.

10 Do you know whether Dr. Leinfelder-Miles  
11 intends to eventually have her South Delta study peer  
12 reviewed?

13 MS. MORRIS: Objection -- Stefanie Morris --  
14 calls for speculation; outside the scope.

15 CO-HEARING OFFICER DODUC: He's familiar with  
16 the study.

17 Overruled.

18 Do you have that knowledge? If you don't, you  
19 don't.

20 WITNESS KIMMELSHUE: I have no knowledge of  
21 that.

22 MS. MESERVE: It is a recent study; correct?  
23 So it would be common that it would take years in order  
24 to conduct the type of peer review that you're  
25 discussing.

1                   WITNESS KIMMELSHUE: In my educational  
2 background, peer review of studies of significance like  
3 this to use for conclusions as bold and broad and  
4 economically impactful, potentially, for agricultural  
5 systems should absolutely be peer reviewed and published  
6 in a scientific refereed journal.

7                   Or what we also like to see in the scientific  
8 community is repeatability of results. And the studies  
9 that were performed, as I mentioned earlier, like the  
10 vineyard and the pear study, because it was a  
11 one-sampling event, there's absolutely no repeatability  
12 in that.

13                   The alfalfa study ran for two or three years,  
14 if I'm not mistaken. But in a recent report that was  
15 developed -- updated report that was developed by  
16 Dr. Leinfelder-Miles, she indicated in that report there  
17 was no replication in the study.

18                   Any study that's going to be accepted for any  
19 scientific journal or any -- any ways to -- to make  
20 decisions that are as impactful as the one that's here,  
21 certainly should be peer reviewed to the utmost of  
22 scientific rigor and also should employ things like  
23 repeatability, also in -- and replication in the study  
24 itself.

25                   Another -- I want to make another point about

1 that, too, while we're pausing.

2 Any study -- And in my review of that study,  
3 I -- the question that kept coming back to my mind was,  
4 where are these fields? Where did she take these samples  
5 within these fields? How do these fields relate to  
6 waterways that might be -- have shallow saline water that  
7 are impacting the yields of these fields.

8 MS. MESERVE: If we could get back to my  
9 questions. I will get to what you want to talk about but  
10 I would like to do it in my order, if you don't mind.

11 WITNESS KIMMELSHUE: Yes.

12 CO-HEARING OFFICER DODUC: Mr. Keeling.

13 MR. KEELING: Tom Keeling for the San Joaquin  
14 County Protestants.

15 I was just going to move to strike the last  
16 self-serving monologue as being nonresponsive. There was  
17 no question pending.

18 Thank you.

19 MS. MESERVE: So, back to --

20 CO-HEARING OFFICER DODUC: So noted.

21 Please continue, Miss Meserve. You said you  
22 would get there.

23 MS. MESERVE: I apparently paused too long, and  
24 I apologize.

25 How many peers should review a paper before

1 you'd think it was adequately peer reviewed?

2 WITNESS KIMMELSHUE: That depends on the  
3 journal they're submitting it to.

4 MS. MESERVE: Okay. Could we put up LAND-96,  
5 please.

6 And this is the California Agriculture  
7 peer-review system.

8 (Document displayed on screen.)

9 MS. MESERVE: Are you familiar with this  
10 publication, California Agriculture?

11 WITNESS KIMMELSHUE: I am.

12 MS. MESERVE: And we're going to look -- I  
13 think it's on the next page down, the peer review  
14 policies.

15 (Scrolling down document.)

16 MS. MESERVE: And you have recently submitted a  
17 paper to this journal; right?

18 WITNESS KIMMELSHUE: I did, yes.

19 MS. MESERVE: And in the peer-review policy for  
20 submission, they mention double-blind and anonymous.

21 Is that something that you think should be in  
22 any peer review?

23 WITNESS KIMMELSHUE: At least that, yes.

24 MS. MESERVE: And at least two peers.

25 Does that sound appropriate.

1 MS. MORRIS: Objection: Relevance.

2 MS. MESERVE: Mr. -- Dr. Kimmelshue's testimony  
3 talks quite a bit about peer review. It talks about how  
4 Dr. Leinfelder-Miles' testimony was not peer-reviewed,  
5 and it also points to Dr. Hoffman's Report from 2010 for  
6 various conclusions, and I'm simply digging into what  
7 "peer review" means.

8 MS. MORRIS: Can I respond?

9 CO-HEARING OFFICER DODUC: Yes.

10 MS. MORRIS: Mr. Kimmelshue has already --  
11 Dr. Kimmelshue's already said that it depends from  
12 journal to journal. So what this one is or what another  
13 one is, it doesn't really matter. We're not submitting a  
14 paper for peer review. It's clear this paper hasn't.

15 So I still don't think it's relevant.

16 CO-HEARING OFFICER DODUC: Thank you,  
17 Miss Morris. I'll note that but overrule for now.

18 I'll give Miss Meserve a little bit more leeway  
19 on this --

20 MS. MESERVE: Thank you.

21 CO-HEARING OFFICER DODUC: -- because it was an  
22 important component of Dr. Kimmelshue's testimony.

23 MS. MESERVE: Correct.

24 And in your testimony, you refer repeatedly to  
25 the 2010 Hoffman work, which Dr. Leinfelder-Miles also

1 relies on to some extent on Pages 8 through 10, 21 and  
2 28.

3 Do you know if the 2010 Hoffman Report called  
4 salt tolerance of crops in the southern  
5 Sacramento-San Joaquin Delta has been peer reviewed.

6 WITNESS KIMMELSHUE: I understand it's been  
7 peer reviewed by some of his colleagues.

8 MS. MESERVE: And, for the record, the Hoffman  
9 Report is are DWR-580.

10 Could we put up LAND-97, please.

11 (Document displayed on screen.)

12 MS. MESERVE: This is the Appendix C of the --  
13 which is the Technical Report on the Scientific Basis for  
14 the Supplemental -- for the Substitute Environmental  
15 Document prepared for the Water Board, and this includes  
16 peer review.

17 Are you familiar with the peer review in here  
18 of Dr. Hoffman's work?

19 WITNESS KIMMELSHUE: I am not.

20 MS. MESERVE: Could we go to LAND-98, please.

21 (Document displayed on screen.)

22 MS. MESERVE: This is one of the -- This is  
23 just an excerpt from that same document I just showed you  
24 that was LAND-87. And this is one of the peer reviewers,  
25 of which there were five.

1                   And if we could scroll down to the highlighted  
2                   text on Page 5 from Dr. Dracup's review, we could please  
3                   review the . . .

4                   (Document displayed on screen.)

5                   MS. MORRIS:   Stefanie Morris, State Water  
6                   Contractors.

7                   CO-HEARING OFFICER DODUC:   Hold on.   Hold on.  
8                   Miss Morris.

9                   MS. MORRIS:   I think we need to understand, was  
10                  this a comment submitted to that -- This appears to be  
11                  part of the Phase I Water Quality Control Plan, and I'm  
12                  unclear if this was submitted, or who submitted it, and  
13                  where it appears in that document.

14                  So I think it's unfair to ask the witness  
15                  questions to elicit testimony that may be misleading  
16                  without having the full context of this document.

17                  CO-HEARING OFFICER DODUC:   Let's give  
18                  Miss Meserve a chance to ask her question and, hopefully,  
19                  in doing so, she will address that and make a linkage  
20                  that's necessary to his -- the scope of his rebuttal  
21                  testimony.

22                  MS. MESERVE:   Certainly.

23                  This is the peer review, again, excerpted from  
24                  the first document I showed, which is a complete  
25                  Appendix C Attachment 1.



1           And each of these letters that I'm going to go  
2 through has -- is the peer review of the entire SED. And  
3 Item Number 9 --

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

5           To what extent are you familiar with these peer  
6 reviews?

7           WITNESS KIMMELSHUE: None.

8           CO-HEARING OFFICER DODUC: So because he is not  
9 familiar with these peer reviews, where are you going  
10 with this?

11          MS. MESERVE: Could we scroll to the next page,  
12 please, and it should give you an example.

13                         (Scrolling down document.)

14          MS. MESERVE: Question 9 of the peer review for  
15 this document pertain directly to the Hoffman Report and  
16 regarding what the acceptable levels of irrigation for  
17 the South Delta are.

18           And so, to the extent, as far as I'm aware,  
19 this is the peer review that -- to the extent it has been  
20 done, of Dr. Hoffman's work, which Dr. Kimmelshue is  
21 relying heavily upon, and so I'm simply reviewing with  
22 him what the, quote, "peer review" is.

23          CO-HEARING OFFICER DODUC: And, again, are you  
24 familiar with these peer reviews?

25          WITNESS KIMMELSHUE: I cannot speak to what the

1 peer reviews are. I have not reviewed them myself. And  
2 so I would be speculating at best. And I would have to  
3 study them to understand the rigor of the peer review.

4 MS. MORRIS: Stefanie Morris, State --

5 MS. MESERVE: Well, if I can --

6 MS. MORRIS: -- Water Contractors.

7 MS. MESERVE: -- state my questions, we will  
8 get to that.

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

11 MS. MORRIS: Stefanie Morris, State Water  
12 Contractors.

13 In addition, it's -- it's -- This is a peer  
14 review of the Phase I SED. That's what you showed. This  
15 is not a peer review of the Hoffman.

16 Now, to the extent that the Hoffman Report may  
17 be relied upon by a State Water Board staff, I think we  
18 need to be clear that this is not a peer review of the  
19 2010 Hoffman.

20 MS. MESERVE: Item 9 is a peer review of the  
21 2010 Hoffman as I've shown right here on this screen.

22 MS. MCGINNIS: It --

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

24 No, that is not the case, Miss Meserve. That  
25 is not the case. That is not a review of the Hoffman

1 Report.

2 MS. MESERVE: It says, "Determination by State  
3 Water Board staff" --

4 CO-HEARING OFFICER DODUC: This is a review of  
5 the determination of the staff of the methodology used.

6 MS. MESERVE: I believe it is close enough to a  
7 peer review to call it that in this -- This letter --

8 CO-HEARING OFFICER DODUC: None --

9 MS. MESERVE: -- came in from --

10 CO-HEARING OFFICER DODUC: Nonetheless, he is  
11 not familiar with this peer review.

12 I will sustain the objection and ask you to  
13 move on.

14 MS. MESERVE: I think it is highly relevant to  
15 this hearing what scientists had or -- had to say or  
16 could not say about Dr. Hoffman's Report if Dr. Hoffman's  
17 Report is being used by this particular witness to try to  
18 say that it is a good example of a peer-reviewed document  
19 and contrasting it with the evidence put forth by the  
20 Protestants.

21 And so I'm simply trying to provide some  
22 examples of why Dr. Hoffman's Report actually was not  
23 subject to peer-review as -- and these documents show  
24 that quite clearly.

25 CO-HEARING OFFICER DODUC: You are asserting

1 that the Hoffman Report was not subject to peer-review  
2 and, therefore, should not be relied upon? If so, you  
3 may make that case in your rebuttal.

4 This witness has already said that he is not  
5 familiar with these peer reviews.

6 MS. MESERVE: Okay. So, to clarify: You  
7 believe that the Hoffman Report was peer reviewed.  
8 However, you're not aware of any actual peer review.

9 MS. MCGINNIS: Objection: Misstates the  
10 witness' testimony; and asked and answered.

11 Dr. Kimmelshue said that --

12 CO-HEARING OFFICER DODUC: Let  
13 Dr. Kimmelshue -- Please answer it again for me, please.

14 WITNESS KIMMELSHUE: It was my understanding  
15 that colleagues reviewed his work to that level. That is  
16 a level of peer review; okay?

17 MS. MESERVE: Stop you right there.

18 We looked at the Agronomy Journal. Would it be  
19 your understanding that the Hoffman Report was peer  
20 reviewed in that manner?

21 WITNESS KIMMELSHUE: I cannot answer that  
22 question.

23 CO-HEARING OFFICER DODUC: You do not have any  
24 familiarity with how the Hoffman Report was peer  
25 reviewed.

1 WITNESS KIMMELSHUE: No, I don't.

2 CO-HEARING OFFICER DODUC: Okay. That's  
3 enough. Let's move on.

4 MS. MESERVE: I would move to strike the  
5 portions of the testimony that characterize Dr. Hoffman's  
6 Report as being peer reviewed as the witness has just  
7 admitted that he has no knowledge of such peer review.

8 MS. MCGINNIS: I would respond that he twice  
9 has said he understands that the Hoffman Report 2010  
10 was -- underwent some level of peer review by his  
11 colleagues -- Dr. Hoffman's colleagues. That's what the  
12 testimony says.

13 MS. MESERVE: And he's unaware of any  
14 specific --

15 CO-HEARING OFFICER DODUC: Hold on.

16 Any other -- Any joinders and additional  
17 comments?

18 MR. JACKSON: CSPA, et al., would join in the  
19 motion to strike that was just made on the grounds that  
20 the testimony was based upon a -- what has clearly been  
21 shown to be incorrect information at this point and,  
22 therefore, his testimony in this regard should be  
23 stricken.

24 CO-HEARING OFFICER DODUC: Let me -- Before  
25 Miss Morris speaks, let me ask Miss Meserve to be clear

1 or at least to make clear to me.

2 Your motion to strike pertains to the portion  
3 of Dr. Kimmelshue's testimony that refers to the peer  
4 review of the Hoffman study.

5 MS. MESERVE: Yes. And I would have to look  
6 for those -- I did not expect him to be so unfamiliar  
7 with this information, so I did not make a list of these  
8 citations, and I will do so for you immediately after I  
9 finish.

10 CO-HEARING OFFICER DODUC: Thank you.

11 Now, Miss Morris.

12 MS. MORRIS: Stefanie Morris, State Water  
13 Contractors.

14 Just -- I think that the 2010 Hoffman Report  
15 has been relied upon by the State Water Resources Control  
16 Board. It was developed for the State Water Resources  
17 Control Board.

18 So the fact, if it's -- Whether it's been  
19 technically peer reviewed by a journal, it was developed  
20 in a public process with lots of input and feedback from  
21 several parties in this room. So, to some extent, I  
22 think we have to be able to rely on the Hoffman Report  
23 since the Water Quality Control Plan in D-1641 does.

24 CO-HEARING OFFICER DODUC: Thank you.

25 MS. MESERVE: I would --

1 CO-HEARING OFFICER DODUC: Hold on.

2 MS. MESERVE: I would just note peer review is  
3 not by a journal. It is by other scientists.

4 CO-HEARING OFFICER DODUC: Mr. Herrick.

5 MR. HERRICK: Thank you. John Herrick for  
6 South Delta parties.

7 What any particular attorney thinks about what  
8 we should rely upon is irrelevant. The issue is -- and I  
9 think appropriately being probed, is -- one of the main  
10 complaints in Dr. Kimmelshue's critique is that the  
11 water -- Miss Leinfelder-Miles' studies were not peer  
12 reviewed. He also cites to the Hoffman Report.

13 So I would think it highly appropriate to  
14 explore why one study that may or may not have been peer  
15 reviewed is relied upon and another one is. Whether that  
16 results in anything productive, I don't know, but it  
17 seems a perfectly appropriate line of question.

18 Thank you.

19 CO-HEARING OFFICER DODUC: So was that a  
20 joinder of Miss Meserve's motion or . . .

21 MR. HERRICK: Yes.

22 CO-HEARING OFFICER DODUC: Thank you.

23 Miss Des Jardins.

24 MS. DES JARDINS: I also join in the motion to  
25 strike.

1                   And I note that Health and Safety Code Section

2           5 --

3                   CO-HEARING OFFICER DODUC:   57004 --

4                   MS. DES JARDINS:   -- 7004 has very --

5                   CO-HEARING OFFICER DODUC:   -- yes.  I'm well

6           aware of it.

7                   MS. DES JARDINS:   -- clear provisions for peer

8           review by the California --

9                   CO-HEARING OFFICER DODUC:   And --

10                   MS. DES JARDINS:   -- State University, and

11           there is a question as to whether this had been publicly

12           peer reviewed.

13                   CO-HEARING OFFICER DODUC:   Yes.  57004,

14           however, applies to the scientific basis for undertaking

15           taken by CalePA organizations.

16                   MS. DES JARDINS:   Yes.

17                   CO-HEARING OFFICER DODUC:   Thank you.

18                   Objection -- I'm sorry.  Motion to strike

19           noted, as well as all the responses.

20                   Miss McGinnis, do you wish to add anything

21           before we move on?

22                   MS. MCGINNIS:   No, thank you.

23                   CO-HEARING OFFICER DODUC:   All right.

24                   MS. MESERVE:   And so, given the situation, I

25           will skip over the additional questions and exhibits I



1 had regarding the alleged peer review of Hoffman;  
2 however, I want to note my objection to not being able to  
3 ask those questions.

4 CO-HEARING OFFICER DODUC: All right.

5 MS. MESERVE: I believe I should be able to  
6 show that information.

7 CO-HEARING OFFICER DODUC: Move on, please.

8 MS. MESERVE: Okay. Now, looking at your  
9 reliance on Hoffman on Page 9 of your report at Pages --  
10 Lines 17 through 21.

11 If we could go back to DWR-85.

12 (Document displayed on screen.)

13 MS. MESERVE: The first bullet of the list of  
14 concerns that you have there says -- I believe we're  
15 referring to Page 9, Line 17.

16 (Document displayed on screen.)

17 MS. MESERVE: Okay. So this is a bullet  
18 list -- correct? -- of your overarching concerns which  
19 you go into in more detail in a later part of the  
20 testimony; right?

21 WITNESS KIMMELSHUE: These are bullet points  
22 taken directly from Hoffman's Report.

23 For the most part. That first one is, yes.

24 That's why I gave a reference to every one of  
25 the bullet points from his report.

1 MS. MESERVE: Okay. Well, let's just look  
2 at --

3 WITNESS KIMMELSHUE: The third one is not.  
4 Anything you see a reference there is -- "Hoffman" after  
5 every bullet point, by and large, those were taken  
6 directly from his report.

7 MS. MESERVE: Okay. So let's -- If we could  
8 look at DWR-580, Page 98, then. That is the Hoffman  
9 Report and we'll need to scroll down -- It's 580, and  
10 then Page 98.

11 (Document displayed on screen.)

12 MS. MESERVE: And the -- If you would keep in  
13 mind, please, Dr. Kimmelshue, the bullet point that you  
14 used, which says there's (reading):

15 ". . . No impact on any crop production  
16 systems . . . expected.

17 Where do you get that conclusion from Page 98  
18 of the Hoffman Report?

19 I believe this is not the right page yet.  
20 That's 89.

21 (Scrolling up document.)

22 MS. MESERVE: That's it there.

23 Where does it say, Dr. Kimmelshue, this first  
24 bullet?

25 WITNESS KIMMELSHUE: So the bullet in my

1 testimony says (reading):

2 "Based on the analysis of a range of water  
3 quality (.1 to 1.4 decisiemens per meter) from 1990  
4 to 2006, no impact on any crop production systems is  
5 expected . . ."

6 If you go to the sections -- in the section  
7 that you're referencing under 6.1 on Page 98, you'll find  
8 the -- the text reads (reading):

9 "The quality of the (sic) water in the  
10 San Joaquin River from 1990 to 2006 as measured at  
11 Vernalis and the quality" of the "Old -- South Old  
12 River at Tracy bridge over the same time period  
13 averages .7 decisiemens per meter and ranges from .1  
14 to 1.4 decisiemens per meter."

15 The next sentence says (reading):

16 "The average level of salinity in the  
17 irrigation water is suitable for all agriculture  
18 crops."

19 MS. MESERVE: Where does it say no impact at  
20 all?

21 WITNESS KIMMELSHUE: I equate no impact at all  
22 to "suitable for all agricultural crops."

23 MS. MESERVE: Let's go to -- With regard to  
24 your second bullet point -- And I'm only going to go  
25 through two of these.

1 CO-HEARING OFFICER DODUC: Thank you.

2 MS. MESERVE: On Page 101 of the Hoffman  
3 Report, you indicate there wouldn't be any adverse  
4 effects on yields, according to Hoffman.

5 WITNESS KIMMELSHUE: Which -- Which text are  
6 you talking about on that page?

7 MS. MESERVE: So on 101, I -- this is what you  
8 cited.

9 WITNESS KIMMELSHUE: Right.

10 MS. MESERVE: So where does it say "no adverse  
11 effect on yields"?

12 WITNESS KIMMELSHUE: (Examining document.)

13 Well, in the first sentence of the second  
14 paragraph, it says (reading):

15 "All of the models presented in this report  
16 predict that the water quality standard could be  
17 increased to as high as .9 to 1.1 decisiemens per  
18 meter and all of the crops grown in the South Delta  
19 would be protected."

20 MS. MESERVE: Is that the very same as "no  
21 decrease in yields"?

22 WITNESS KIMMELSHUE: I equate those to be  
23 true --

24 MS. MESERVE: You thought --

25 WITNESS KIMMELSHUE: -- to be the same.

1 MS. MESERVE: -- they were the same.

2 WITNESS KIMMELSHUE: Yeah.

3 MS. MESERVE: Okay.

4 WITNESS KIMMELSHUE: "Protected" means I'm  
5 not -- "Protected" to me means there is no impact on  
6 yields.

7 MS. MESERVE: Okay. So let's move on to some  
8 other of the area of concern.

9 If we could go back, please, to DWR-85,  
10 Pages 16 and 17.

11 (Document displayed on screen.)

12 MS. MESERVE: You mentioned earlier -- And if  
13 we can go back to the idea that the -- that the --  
14 Dr. Leinfelder-Miles' study didn't present the specifics  
15 on actual drainage systems for operational parameters.

16 And then you also criticize that the exact  
17 locations . . .

18 Let's see. Sorry.

19 On the drainage systems --

20 WITNESS KIMMELSHUE: Can you refer --

21 MS. MESERVE: -- are you aware --

22 WITNESS KIMMELSHUE: -- to what lines you're  
23 referring to?

24 MS. MESERVE: Yes, okay.

25 On Pages 16 and 17, you discuss some of the

1 issues you had with Dr. Leinfelder-Miles' testimony.

2 And were the -- Are you aware of whether  
3 drainage systems were present in her studies?

4 WITNESS KIMMELSHUE: I am not. And that's one  
5 of my major concerns, whether that be surface or  
6 subsurface drainage systems.

7 MS. MESERVE: And you were also critical of the  
8 exact field locations not being provided, which you  
9 mention on Page 17 and Page 6; right?

10 WITNESS KIMMELSHUE: I am.

11 MS. MESERVE: Could we look at LAND-103,  
12 please, which is the Sreenivas and Reddy study which is  
13 cited in your testimony.

14 (Document displayed on screen.)

15 MS. MESERVE: Are you familiar with this paper?

16 WITNESS KIMMELSHUE: I am.

17 MS. MESERVE: And if we could go to Page 2 of  
18 this study.

19 (Document displayed on screen.)

20 MS. MESERVE: This study does not provide the  
21 exact locations, either; does it?

22 WITNESS KIMMELSHUE: Go to the next page.  
23 There's a map.

24 (Document displayed on screen.)

25 WITNESS KIMMELSHUE: To me, that map says I'm

1 in the country of India, I'm in a Delta region, and  
2 within that region in a certain area, an even smaller  
3 area. And then now I'm in a pilot area which has road  
4 names, and that would allow me to look at where exactly  
5 these fields were. Those are -- That's a field scale  
6 level map.

7 That's the type of map that I would expect in  
8 any scientific study as a background index map and a map  
9 that would tell me where I -- where the study actually  
10 took place.

11 MS. MESERVE: Have you ever in your field  
12 work -- You do mapping and things like that as part of  
13 your work; right?

14 WITNESS KIMMELSHUE: Yeah.

15 MS. MESERVE: And then have you ever  
16 encountered landowners with privacy concerns who are  
17 willing to participate in a study but don't want to  
18 disclose the exact location?

19 WITNESS KIMMELSHUE: The work that my firm  
20 does -- people are comfortable with it or not -- is that  
21 we look at things from the sky.

22 And recently, we delivered to the California  
23 Department of Water Resources every single irrigated  
24 field in the State of California from the border of  
25 Mexico to Oregon. And that information amounts to

1 372,000 polygons, 42 different crops, includes managed  
2 wetlands, it includes urban areas, it includes every  
3 single irrigated field boundary --

4 MS. MESERVE: I'm sorry.

5 WITNESS KIMMELSHUE: -- that --

6 MS. MESERVE: There is a question there that  
7 I'm asking.

8 WITNESS KIMMELSHUE: So the technology that we  
9 use for the purposes of -- of not having to address  
10 access issues is -- is a remote sensing methodology  
11 that -- whereby we don't have to deal with that issue.

12 CO-HEARING OFFICER DODUC: What was your  
13 question, Miss Meserve?

14 MS. MESERVE: My question was: Have you ever  
15 done field work where you encountered land owners with  
16 privacy concerns?

17 CO-HEARING OFFICER DODUC: That is the  
18 question.

19 WITNESS KIMMELSHUE: Yeah, I have. And if they  
20 don't let us on their land to do field work, we find  
21 another cooperative that will.

22 MS. MESERVE: However, if the pertinent facts  
23 about the location is disclosed, such as the soil types,  
24 the source water, and other parameters that are actually  
25 being studied, wouldn't that obviate the need for the



1 exact location to be disclosed?

2 WITNESS KIMMELSHUE: Not in my opinion, no.

3 MS. MESERVE: Now, is one of your concerns that  
4 there would be another source of salinity to these crops  
5 other than the applied water?

6 WITNESS KIMMELSHUE: Yes.

7 MS. MESERVE: And on a small island, what would  
8 be the other possible sources of salinity other than  
9 irrigation water?

10 WITNESS KIMMELSHUE: Another source of possible  
11 salinity is saline groundwater coming from waterways  
12 surrounding that island.

13 MS. MESERVE: And so if the salinity was higher  
14 in those surrounding waterways as a result of this  
15 Project, wouldn't that also be an impact from this  
16 Project, regardless of the pathway?

17 MR. BERLINER: Objection: Assumes facts not in  
18 evidence.

19 She's not presented any evidence to this  
20 witness as to whether there's any change in water quality  
21 associated with any island she might be referring to.

22 CO-HEARING OFFICER DODUC: Miss Meserve.

23 MS. MESERVE: He's testifying, and right even  
24 now, that he believes that the Leinfelder-Miles study was  
25 somehow flawed because there could be other sources of

1 water.

2 I'm simply talking to him about what those  
3 other sources of water might be and whether that would  
4 really even make a difference.

5 CO-HEARING OFFICER DODUC: Dr. Kimmelshue, did  
6 you -- I'm trying to remember your testimony -- refer to  
7 other sources of water?

8 WITNESS KIMMELSHUE: I -- I didn't really refer  
9 to any sources of water.

10 My -- My concern with shallow groundwater that  
11 is saline is that, in utilizing a formula to calculate  
12 leaching fractions, you're dividing through by an  
13 elevated salinity.

14 (Cell phone rings.)

15 WITNESS KIMMELSHUE: Which is not applicable --

16 CO-HEARING OFFICER DODUC: Hold on a second.

17 Someone did not adhere to my third directive.  
18 Hopefully, that's when she was out getting the bottle of  
19 water.

20 All right.

21 WITNESS KIMMELSHUE: Okay. Let me start over.

22 My concern is that, as I mentioned in my  
23 opening remarks, the Ayers and Westcot formula that was  
24 used to develop the leaching fractions --

25 CO-HEARING OFFICER DODUC: So hold on.

1           But to answer her question, you did not explore  
2 other sources of water.

3           WITNESS KIMMELSHUE: No.

4           I should -- I should ask a clarifying question:  
5           What sources of water are you alluding to?

6           MS. MESERVE: I believe your testimony states  
7 that you believe that Leinfelder-Miles did not provide --  
8 This goes still to the exact location issue, and you  
9 presented a sort of a whodunnit scenario in which the  
10 salty water is coming from somewhere else.

11           And so my question is: If the salty water was  
12 coming through groundwater seepage as opposed to applied  
13 irrigation water, wouldn't that still be a concern  
14 that -- if the water salinity was going to go up from  
15 that source?

16           MS. MORRIS: Ob -- Stefanie Morris, State Water  
17 Contractors.

18           Objection: The question misstates  
19 Dr. Kimmelshue's testimony.

20           He doesn't talk about sources of water. He  
21 talks about sources of salinity.

22           CO-HEARING OFFICER DODUC: And, Miss Morris --  
23 I'm sorry.

24           Miss Meserve, was your question intended to  
25 identify another source of salinity?

1 MS. MESERVE: Yes.

2 WITNESS KIMMELSHUE: Okay. That's different.  
3 That's different.

4 So, you bring up different sources of salinity,  
5 even salinity that comes in irrigation water that's  
6 applied on the surface of the ground.

7 You can have sources of salinity in some  
8 environs that actually come from rainfall.

9 You can have sources of salinity that come from  
10 weathering of minerals in the soil immediately below the  
11 soil profile.

12 And you can also have sources of salinity from  
13 brackish water in shallow groundwater in -- in -- in  
14 high-water-table soils. That's what I was alluding to in  
15 my testimony.

16 MS. MESERVE: And so you believe that having  
17 that information about the specific location would allow  
18 you, for instance, to know whether the -- there was  
19 brackish water beneath these crops?

20 WITNESS KIMMELSHUE: Absolutely.

21 MS. MESERVE: But the report does -- does  
22 identify the depth to groundwater and the quality of that  
23 groundwater; doesn't it?

24 WITNESS KIMMELSHUE: It doesn't tell me where  
25 the source of the salinity came from.

1 MS. MESERVE: Back to my other question:

2 On a small island, where would this salinity  
3 come from?

4 WITNESS KIMMELSHUE: I just mentioned it could  
5 come from a variety of places.

6 But I would like to know where the samples were  
7 taken in proximity to perhaps a surrounding water body  
8 that may be saline. Were they taken in the center of the  
9 field where that water body may not laterally come into  
10 play in the center of the field?

11 It's a -- It's a -- It's a geographical  
12 orientation approach. I -- It provides so much more  
13 information and validity in the analysis to understand  
14 the spatial representation of those fields where samples  
15 were taken, where are they in relation in the Delta  
16 itself --

17 MS. MESERVE: It was identified --

18 WITNESS KIMMELSHUE: -- downstream, upstream,  
19 all of that.

20 MS. MESERVE: We know the prob -- the location  
21 area for the alfalfa study in general is in the South  
22 Delta; correct?

23 WITNESS KIMMELSHUE: That's not nearly --  
24 That's not nearly appropriate enough for the level of  
25 scien -- scientific analysis I would prefer.

1 MS. MESERVE: And going back to your water body  
2 example.

3 If the salinity levels in adjacent water body  
4 were elevated as a result of this Project, wouldn't that  
5 be a concern regardless of whether the water came via  
6 irrigation directly or seepage?

7 MS. MORRIS: Objection -- Stefanie Morris,  
8 State Water Contractors.

9 Objection: Incomplete hypothetical.

10 MS. MESERVE: Dr. Kimmelshue mentioned this is  
11 a possible source and I'm simply asking about it.

12 MS. MCGINNIS: I join in the objection.

13 If you could just add some information to the  
14 question you're asking, it would help.

15 CO-HEARING OFFICER DODUC: What information in  
16 particular would help?

17 MS. MCGINNIS: The . . . Well, proximity. We  
18 already talked about that. Dr. Kimmelshue said he would  
19 need that.

20 CO-HEARING OFFICER DODUC: Actually, I don't  
21 believe that he can answer the question.

22 Dr. Kimmelshue?

23 WITNESS KIMMELSHUE: I cannot answer that  
24 question.

25 MS. MESERVE: As long as the higher water

1 salinity was caused by changes from the Proposed Project  
2 to surface water salinity, it shouldn't matter what the  
3 pathway for plant exposure uptake is; should it?

4 CO-HEARING OFFICER DODUC: I think you're going  
5 to get some objections to the way that question is  
6 phrased, Miss Meserve.

7 MR. BERLINER: Correct.

8 MS. MESERVE: If -- You want me to say -- I  
9 mean, he is --

10 CO-HEARING OFFICER DODUC: Ask your question  
11 without casting aspersions on the Proposed Project.

12 MS. MESERVE: If there was higher salinity in  
13 the surface water surrounding a small island, it would  
14 not matter what the pathway for plant exposure was if we  
15 were trying to look at what the effect on the plant  
16 growth was.

17 CO-HEARING OFFICER DODUC: If the salinity  
18 level is higher from any water source, then it would  
19 contribute.

20 Is that what you're trying to ask?

21 MS. MESERVE: Yes.

22 CO-HEARING OFFICER DODUC: If salinity is  
23 higher, then salinity is higher.

24 Is that what you're asking, Miss Meserve?

25 MS. MESERVE: Yes. He's pointed to these

1 mis -- what he's called missing variables and I'm simply  
2 zeroing in on the issue that the missing variable isn't  
3 missing.

4 CO-HEARING OFFICER DODUC: Well, yes, because  
5 you have not -- You're presuming there will be a rise in  
6 salinity.

7 MS. MESERVE: Well, the whole analysis is about  
8 a rise in salinity. And it appears that Dr. Kimmelshue  
9 is trying to pick through and say if -- the salinity may  
10 come from other sources, and the only other real source  
11 is identified as surface water through seepage.

12 And so I'm asking him about why that would make  
13 any difference.

14 MS. MCGINNIS: That misstates his testimony.  
15 He didn't say the only possible source could be surface  
16 water through seepage. He listed various factors and  
17 sources of salinity.

18 MS. MESERVE: Zeroing in on the surface water  
19 example, then.

20 MS. MCGINNIS: I'm sorry. I don't understand.

21 MS. MESERVE: I am simply asking about one of  
22 the alternative sources that he suggested in addition  
23 to -- I believe rain was one.

24 MS. MCGINNIS: Salinity is salinity. I mean,  
25 they're obviously listed in his written testimony.



1 Sorry.

2 CO-HEARING OFFICER DODUC: All right. All  
3 right. Miss Meserve, your line of questioning is a bit  
4 unclear to me, and you are about to use up one entire  
5 hour already.

6 MS. MESERVE: Yes. I will need some additional  
7 time. I will move on beyond this issue.

8 I do need additional time in order to ask the  
9 questions that I have, and due to all the objections and  
10 discussion, I believe that took a large portion of time  
11 that I was planning on taking through questions.

12 CO-HEARING OFFICER DODUC: What additional  
13 topic remains for Dr. Kimmelshue?

14 You've addressed peer review, you've addressed  
15 alternative crops, you've addressed . . . Well, one  
16 issue about user mitigation, which I don't think . . .  
17 And you've addressed study.

18 What remains for Dr. Kimmelshue from your list  
19 of questions, Miss Meserve?

20 MS. MESERVE: I have questions regarding the  
21 alfalfa varieties that he has suggested. I have  
22 questions regarding his citations to personal  
23 communications. And . . . I have some questions about  
24 the salinity levels he's predicting in the -- that he  
25 mentions on Page 10, and also about his repeatable

1 conclusions statements.

2 In addition, I do have questions for  
3 Dr. Thornberg, so I believe I may need another hour.

4 I apologize, but this is very important we be  
5 able to ask the questions of these witnesses while  
6 they're here.

7 And we may take a break if that --

8 CO-HEARING OFFICER DODUC: I'll give you a  
9 little bit more time but we do need to take a break for  
10 the court reporter.

11 Miss Morris.

12 MS. MORRIS: Before the break, I wanted to note  
13 on the motion to strike, the peer review of the Hoffman,  
14 that the written testimony by Dr. Kimmelshue nowhere says  
15 that it's peer reviewed. Rather, it says it was prepared  
16 for the State Water Resources Control Board and then it's  
17 repeatable and objective.

18 CO-HEARING OFFICER DODUC: I actually did a  
19 word search as well, and he did not say that in his  
20 testimony. He did not claim that the Hoffman Report was  
21 peer reviewed.

22 MS. MESERVE: I will take a look at that and  
23 get back to you if I disagree. It perhaps was an  
24 inference.

25 CO-HEARING OFFICER DODUC: I'm sorry?

1 MS. MESERVE: Perhaps it was only an inference  
2 not written in the paper.

3 CO-HEARING OFFICER DODUC: And so --

4 MS. MESERVE: I believe there's a fairly strong  
5 inference. So I'll have to think about what I can move  
6 to strike based on that.

7 CO-HEARING OFFICER DODUC: And you are moving  
8 to strike, potentially, an inference?

9 MS. MESERVE: Let me think on that before I  
10 come back to you, please.

11 CO-HEARING OFFICER DODUC: Thank you.

12 MR. BERLINER: Just for the Board's  
13 convenience, the referenced sentence is on Page 10,  
14 Line 22 and 23 and reads(reading):

15 "Repetitive and objective conclusions  
16 throughout the Hoffman study support this  
17 overarching conclusion."

18 That's the entirety of the statement.

19 CO-HEARING OFFICER DODUC: Okay. That did not  
20 help, but thank you.

21 With that, we will take a 15-minute break and  
22 we will return at 11:20.

23 (Recess taken at 11:05 a.m.)

24 (Proceedings resumed at 11:20 p.m.)

25 CO-HEARING OFFICER DODUC: All right. It is

1 11:20. We are back in session.

2 Miss Meserve, I will give you until noon at the  
3 latest to wrap up your cross-examination. And at some  
4 point -- Actually, right now, are you -- are you able to  
5 clarify your objection?

6 MS. MESERVE: I think I need to run the word  
7 search that you did and make sure I have the same as you  
8 have it, but I wasn't able to get on my computer during  
9 the break, so I would ask to get back to you after our  
10 lunch break if I have any further information.

11 CO-HEARING OFFICER DODUC: But is your  
12 objection, is it -- is it focused on his reference -- his  
13 reliance on Hoffman, because it was not peer reviewed?

14 MS. MESERVE: Yes. My objection and the line  
15 of questions was designed around the issue of an  
16 assumption, I believe, that the witness made that peer  
17 reviewed studies are the ones that can be relied upon  
18 and --

19 CO-HEARING OFFICER DODUC: And, therefore, your  
20 objection, if it is true, that the Hoffman report is not  
21 peer-reviewed, then your objection goes to his reliance  
22 on a, to your mind, non-peer-reviewed report, even though  
23 he criticized the -- the one that --

24 MS. MESERVE: Yes.

25 CO-HEARING OFFICER DODUC: Yes. For not being

1 peer reviewed.

2 MS. MESERVE: And this is likely an issue that  
3 can be explicated further, hopefully, on the surrebuttal.  
4 It's probably appropriate for that.

5 CO-HEARING OFFICER DODUC: I will leave that to  
6 you.

7 But for now, I am going to overrule your  
8 objection because it goes to weight of evidence. And so  
9 we will -- That's a -- That's an objection that -- the  
10 standard objection that we've ruled on with respect to  
11 admissibility, and that is its own rule and will go to  
12 weight.

13 I also have an outstanding objection from  
14 Mr. Keeling to what he referred to as a monologue by  
15 Dr. Kimmelshue in response to a question from  
16 Miss Meserve.

17 I am also overruling that objection but I am  
18 directing the witness to be more focused and more concise  
19 in answering directly the questions that are posed to  
20 you.

21 Okay. Now we'll turn back to you,  
22 Miss Meserve, to complete your cross-examination before  
23 we take our lunch break.

24 LEFT1: Thank you.

25 On Page 17 of your report, Dr. Kimmelshue,

1 Lines 14 through 17 --

2 If we could look at the DWR-85 again, please.

3 -- you cite the Benes study, noting that it  
4 shows there are new alfalfa varieties that are more salt  
5 tolerant; is that correct?

6 WITNESS KIMMELSHUE: I do.

7 MS. MESERVE: And then, actually -- Sorry to  
8 ask you to put up, please, LAND-104, which is the Benes  
9 study that is referenced in Dr. Kimmelshue's testimony.

10 (Document displayed on screen.)

11 MS. MESERVE: This is the study to which you're  
12 referring; correct?

13 WITNESS KIMMELSHUE: I believe it is, yes.

14 MS. MESERVE: If we could go to Page 9 of that  
15 study.

16 It's -- There's a table here regarding the fall  
17 dormancy regarding the different alfalfa varieties.

18 And can you tell me what the fall dormancy of  
19 the alfalfa varieties tested by Benes is, based on this  
20 table?

21 CO-HEARING OFFICER DODUC: Miss Meserve, since  
22 the pages are not numbered, could you please identify the  
23 table for the record.

24 MS. MESERVE: Yes. We're looking at Table 5.

25 (Document displayed on screen.)

1                   WITNESS KIMMELSHUE: Can you restate your  
2 question, please?

3                   MS. MESERVE: Can you tell me what the fall  
4 dormancy is of the alfalfa varieties that were tested by  
5 Benes which you referred to in your testimony?

6                   WITNESS KIMMELSHUE: It appears to be labeled  
7 as col -- the second column in that table.

8                   MS. MESERVE: And are they non-dormant  
9 varieties?

10                  WITNESS KIMMELSHUE: You know, I'm going to be  
11 honest with you. I'd have to go back and look at this  
12 document again -- it's been a long time since I've looked  
13 at it -- to answer that question. I'm sorry.

14                  MS. MESERVE: Are you aware that farmers in the  
15 Delta do not grow non-dormant varieties of alfalfa due to  
16 the conditions there?

17                  WITNESS KIMMELSHUE: No, I am not aware of  
18 that.

19                  MS. MESERVE: Do you know whether growers are  
20 paid different amounts for the quality of alfalfa and  
21 other products?

22                  WITNESS KIMMELSHUE: Yes.

23                  MS. MESERVE: So if Delta growers would need to  
24 change to non-dormant varieties because we had some new  
25 level of salinity tolerance, and they are paid less for

1 their alfalfa, wouldn't you think that would be some kind  
2 of adverse effect on those growers?

3 WITNESS KIMMELSHUE: Again, I'd have to look  
4 back at this document to be sure to answer your question.  
5 I'm sorry.

6 MS. MESERVE: Could we look at LAND-108,  
7 please.

8 This is a paper by Putnam.

9 (Document displayed on screen.)

10 MS. MESERVE: And it is regarding alfalfa  
11 quality.

12 Is this -- Are you familiar with this paper?

13 WITNESS KIMMELSHUE: Vaguely.

14 MS. MESERVE: If we could look at the  
15 highlighted language.

16 (Scrolling down document.)

17 MS. MESERVE: Are you aware that lower-value  
18 crops may not sell as indicated in this paper summary?

19 MS. MORRIS: Stefanie --

20 CO-HEARING OFFICER DODUC: Miss Morris.

21 MS. MORRIS: Outside the scope of his  
22 testimony.

23 WITNESS KIMMELSHUE: I was going to refer it to  
24 my neighbor.

25 CO-HEARING OFFICER DODUC: Yeah.



1 WITNESS KIMMELSHUE: Not John but Chris.

2 MS. MESERVE: I guess I could ask the same  
3 question of Dr. Thornberg.

4 Are you aware that there may be a problem  
5 selling lower -- lower-valued alfalfa crops for growers  
6 in the Delta?

7 WITNESS THORNBERG: I -- I'm sorry, but that  
8 falls largely outside of my testimony as well. I'm not  
9 even sure what that means, they have a problem selling.

10 My analysis looked at revenues earned in terms  
11 of selling crops; in other words, the product was, in  
12 fact, sold.

13 MS. MESERVE: So when -- In both of your  
14 testimonies, I believe you've said that perhaps growers  
15 should move to different crops, but is it fair to say you  
16 didn't look at whether those different crops would sell?

17 WITNESS THORNBERG: I'm sorry. I --

18 CO-HEARING OFFICER DODUC: Hold on.

19 MS. MORRIS: Objection.

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

22 Miss Morris.

23 MS. MORRIS: Misstates the witness' testimony.

24 WITNESS THORNBERG: I never stated any such  
25 thing in my testimony. My testimony all wrapped around

1 the basic comparable analysis that there didn't seem to  
2 be an impact of salinity within historic levels on yield.

3 CO-HEARING OFFICER DODUC: And Dr. Kimmelshue.

4 WITNESS KIMMELSHUE: I have to look back at my  
5 testimony, but I don't think I used the exact words that  
6 growers should shift to other crops.

7 CO-HEARING OFFICER DODUC: And the objection is  
8 sustained.

9 So Miss Meserve, would you like to rephrase or  
10 move on?

11 MS. MESERVE: We already reviewed with  
12 Dr. Kimmelshue that, on Page 17, he says there are new  
13 alfalfa varieties that are more salt-tolerant and I  
14 believe in both testimonies it indicates that.

15 So I have to disagree with Miss Morris that  
16 these testimonies don't re -- say that other crops could  
17 be selected to avoid injury.

18 WITNESS KIMMELSHUE: I --

19 MS. MCGINNIS: Robin McGinnis, Department of  
20 Water Resources.

21 I'll go ahead and join the objection.

22 The testimonies do say that there are other  
23 varieties, but they don't say that the farmers need to  
24 shift their crops, so I believe you misstated -- I  
25 believe Ms. Meserve misstates the testimony.

1 CO-HEARING OFFICER DODUC: And in any case, you  
2 did not do any sort of economic analysis with respect to  
3 those other crops.

4 WITNESS KIMMELSHUE: So, one point of  
5 clarification:

6 I did mention that different varieties of the  
7 same crop are available, for example, more salt --  
8 saline-tolerant varieties, more drought-tolerant  
9 varieties. I didn't say move to different crops.

10 MS. MESERVE: Okay. And with respect to the  
11 alfalfa example we just looked at, could it be that some  
12 of those varieties that you are referring to actually  
13 can't be grown in the area of the Delta?

14 MS. MORRIS: Objection: I don't think the  
15 witness -- Dr. Kimmelshue's testimony basically  
16 summarizes and looks at Michelle Leinfelder-Miles --  
17 Dr. Leinfelder-Miles' study and says, she didn't consider  
18 these, she should consider these.

19 He didn't say they shouldn't do this, they  
20 should shift to this. He just said it should be  
21 considered in the study.

22 So I think this is outside the scope of his  
23 testimony.

24 CO-HEARING OFFICER DODUC: Actually, that does  
25 make sense. Her objection does make sense, Miss Meserve.

1 MS. MESERVE: I believe he said -- All I'm  
2 establishing with the witness is that he's mentioned  
3 looking at other varieties. However, he has not  
4 considered whether those other varieties could be grown  
5 or would be saleable in the region; right? I mean, that  
6 is within what he's -- He suggested these other  
7 varieties, so I'm simply asking him about --

8 CO-HEARING OFFICER DODUC: Are you suggesting  
9 varieties -- Did you suggest, Dr. Kimmelshue, varieties  
10 or did you critique that study for not considering those  
11 other varieties?

12 WITNESS KIMMELSHUE: My statement was centered  
13 on the fact that, over the last 32 years, since the  
14 levels that were used from the Ayers and Westcot Report,  
15 additional varieties have been developed that should be  
16 considered.

17 I did not say anything with regard to --

18 CO-HEARING OFFICER DODUC: Considered in the  
19 study.

20 WITNESS KIMMELSHUE: Considered by growers or  
21 in the study.

22 CO-HEARING OFFICER DODUC: But you also did not  
23 conduct any further analysis with respect to those.

24 WITNESS KIMMELSHUE: No, I did not. That's  
25 where I stopped.

1 Thank you.

2 CO-HEARING OFFICER DODUC: All right.

3 MS. MESERVE: On Page 21 -- back to  
4 Dr. Kimmelshue -- you note that the majority of -- in  
5 your testimony, that the majority of the leaching  
6 fractions were below 10 percent, and you say that they  
7 are not common.

8 Did you believe that such lower-than-5-percent  
9 leaching fractions are nevertheless possible?

10 WITNESS KIMMELSHUE: I suppose anything is  
11 possible but highly improbable in this case.

12 When you have a border check irrigation system,  
13 flood irrigation system, some of those irrigation systems  
14 can be efficient, some cannot.

15 I know that from my own experience, and I also  
16 vetted that with other experts in the field, Dan Howes,  
17 and the Cal Poly IRC, Irrigation Training and Research  
18 Center. I vetted it with Steve Grattan with U.C. Davis,  
19 and I vetted it in the literature, including Hoffman, who  
20 did an extensive literature review in the 2010 report.

21 All of those communications and exploration of  
22 leaching fractions, and my own personal professional  
23 experience, indicates to me that the leaching fractions  
24 are likely higher than the 5 percent number that's being  
25 thrown around. And, in fact, Dr. Leinfelder-Miles did

1 have two fields where the leaching fractions were  
2 calculated to be in the 20s. I can't recall the exact  
3 numbers.

4 MS. MESERVE: But you, however, have not done  
5 any field studies regarding leaching fractions; correct?

6 WITNESS KIMMELSHUE: Yes, I have.

7 The study -- The Project, the 10-year  
8 Project -- I guess it's 12 years now -- Project that I'm  
9 talking about in Arizona is highly driven by leaching  
10 fractions to maintain a suitable soil salinity within the  
11 soil profile for alfalfa production.

12 We care a lot about how much water's being  
13 applied, what the -- and we soil sample. I mean, you  
14 know, we know the water quality going on, its telemeter.  
15 We know it every 15 minutes. And we soil sample to the  
16 depth below the root zone. And we calculate leaching  
17 fractions on a grower-by-grower basis --

18 MS. MESERVE: And --

19 WITNESS KIMMELSHUE: -- which change because of  
20 the management of water.

21 MS. MESERVE: And this is the study in Arizona.

22 WITNESS KIMMELSHUE: Correct.

23 MS. MESERVE: And going -- Keeping with Page 17  
24 and what you just mentioned in terms of your survey, you  
25 cite to, on the very last line, a personal communication

1 with Howes.

2 WITNESS KIMMELSHUE: Um-hmm.

3 MS. MESERVE: Do you have any written  
4 documentation of these personal communications?

5 WITNESS KIMMELSHUE: No.

6 MS. MESERVE: I would move to strike the  
7 reference to a personal communication in this testimony.  
8 Without providing any written description of what  
9 Mr. Howes said or didn't say, it's impossible to know  
10 whether he supported the statement made prior, which --  
11 which he is -- which Dr. Kimmelshue attributes,  
12 apparently, to Mr. Howes.

13 MS. MCGINNIS: DWR opposes the motion.

14 Evidence Code 801(b) allows experts to testify about  
15 matters perceived or personally known to them.

16 CO-HEARING OFFICER DODUC: Objection overruled.  
17 It will go to weight.

18 MS. MESERVE: I would not think that this is  
19 personally known to him if he was asking someone else in,  
20 ostensibly, a telephone call where no notes were taken.  
21 I'm not sure that even falls within the Evidence Code  
22 stated, but I'll move on.

23 CO-HEARING OFFICER DODUC: Move on.

24 WITNESS KIMMELSHUE: May I clarify something?  
25 The sentence preceding the reference to Howes is

1 basically summary of that personal communication. That's  
2 why I referenced it in that fashion. And it says  
3 (reading):

4 "These levels of leaching fractions are not  
5 common in even the most efficient surface irrigated  
6 systems."

7 Those were not my words, those were his.

8 MS. MESERVE: And with respect to, at the  
9 bottom on Page 18, you also cite to a personal  
10 communication with Grattan for various statements made  
11 above that.

12 Do you have a written documentation of that  
13 personal communication that could clarify which portions  
14 of this statement are actually supported by Grattan?

15 WITNESS KIMMELSHUE: Okay. It's on the top of  
16 my page. Sorry.

17 Again, the preceding sentence in that personal  
18 communication is intended to be a summary of those --  
19 that communication.

20 (Reading):

21 "The inappropriate use of this basic ratio has  
22 been made elsewhere in high water tables with higher  
23 salinity."

24 MS. MESERVE: And you did not have -- You have  
25 no citation for that proposition other than this personal



1 communication; correct?

2 WITNESS KIMMELSHUE: Oh, yes, there are other  
3 citations for that.

4 MS. MESERVE: You chose not to include them in  
5 your testimony?

6 WITNESS KIMMELSHUE: I did.

7 MS. MCGINNIS: Sorry, clarification: You did  
8 house them in your testimony or you chose not to?

9 WITNESS KIMMELSHUE: I chose them -- I included  
10 them in my testimony. There's about three or four  
11 references to that, too, from Food and Agricultural  
12 Organization Paper Number 29, which the ratios were used  
13 to calculate leaching fractions. It said you shouldn't  
14 do that in high-water-table soils.

15 Two in there. One in this paper that you  
16 previously referenced from Sreenivas and Reddy, and a  
17 couple others that I can provide you if you'd like.

18 MS. MESERVE: That's sufficient. Thank you.

19 On Page 20 of your testimony, you state  
20 that(reading):

21 ". . . Unless one is completely sure of the  
22 resultant salinity below the root zone, then the  
23 (sic) results from formulas used to calculate the  
24 (sic) leaching fractions may be incorrect."

25 Are you aware of a scientifically accepted way

1 to calculate leaching fractions in shallow groundwater?

2 WITNESS KIMMELSHUE: I have a statement in my  
3 testimony that gets to that.

4 Can you search that? I don't know exactly what  
5 table -- Well, let me look. Hold on here just a second.

6 (Searching through document.)

7 WITNESS KIMMELSHUE: Can you search for  
8 "Grattan" in that document?

9 MR. LONG: Can you spell that, please?

10 WITNESS KIMMELSHUE: Grattan, G-R-A-T-T-A-N.

11 (Document displayed on screen.)

12 WITNESS KIMMELSHUE: That's it. So if you read  
13 this -- So it's on Page 22.

14 MS. MESERVE: So it states that no method has  
15 been developed prior.

16 WITNESS KIMMELSHUE: It states that (reading):  
17 "Traditional methods of estimating leaching  
18 fractions and leaching requirements may therefore  
19 underestimate the leaching fraction. No method has  
20 yet been developed to adjust the traditional  
21 estimating methods for the effect of shallow  
22 groundwater on soil salinity."

23 MS. MESERVE: On Page 10, in Line 19 through  
24 21, you state that (reading):

25 "The key take home message from the Hoffman

1 study is (sic) . . . that crop production has not  
2 been impacted . . ."

3 And you used the words, "anticipated future  
4 salinity levels."

5 Could you explain what you mean by "anticipated  
6 future salinity levels" in that sentence?

7 WITNESS KIMMELSHUE: I'm referring to the range  
8 of salinity levels that Hoffman used up to 1.4  
9 decisiemens per meter and the first bullet point that  
10 precedes that summary statement.

11 MS. MESERVE: So your opinion does not extend  
12 to anticipated salinity levels if they were to increase  
13 under the Proposed Project?

14 WITNESS KIMMELSHUE: I honestly cannot answer  
15 that because I don't know what levels they could  
16 potentially exceed to.

17 MS. MESERVE: So is it fair to say your  
18 testimony is limited to the levels studied in Hoffman  
19 without reference to what the salinity levels would be?

20 WITNESS KIMMELSHUE: I think it's fair to state  
21 that my testimony is focused on the myriad of variables  
22 that impact salinity management, and we've talked about a  
23 number of them already today and I won't repeat them.  
24 But -- And -- And it's highly driven by the leaching  
25 fraction and how you can manage that salinity.

1           So better leaching fraction, you can apply a  
2 slightly higher saline irrigation water.

3           MS. MESERVE: So, would you agree that  
4 additional study of leaching fractions in various  
5 locations throughout the Delta would be helpful in  
6 looking at these issues?

7           WITNESS KIMMELSHUE: Absolutely.

8           MS. MESERVE: Now, going to Page 9 of your  
9 testimony, please, at Line 15 and also in Footnote 15,  
10 you repeatedly reference the importance of "repeatable  
11 conclusions."

12           Are you saying that repeatable conclusions are  
13 necessary to validate field study results?

14           WITNESS KIMMELSHUE: In my training in agronomy  
15 and soil science, we had to run studies that were  
16 replicated and showed repeatability over time to draw  
17 conclusions that were valid to make decisions from.

18           So, yes, to answer your question, yes,  
19 repeatability is important.

20           MS. MESERVE: And if two studies don't come up  
21 with the same conclusion, would you say that the research  
22 was invalid, then?

23           WITNESS KIMMELSHUE: I would say that more  
24 research needs to be done.

25           MS. MESERVE: Could we look at LAND-102,

1 please.

2 This is the submission standards from the  
3 Agronomy Journal. Are you familiar with the submission  
4 standards?

5 WITNESS KIMMELSHUE: I am not.

6 Is this the American Society of Agronomy?

7 MS. MESERVE: Oh, I'm sorry. It's LAND-102.

8 Is that . . . I have the number wrong.

9 Is there one that's named for the Agronomy  
10 Journal submission standards in the folder?

11 WITNESS KIMMELSHUE: 105. Are you looking at  
12 that?

13 MS. MESERVE: I believe so, although that may  
14 be the peer review one. I apologize.

15 WITNESS KIMMELSHUE: That may be 96?

16 MS. MESERVE: Yes. Thank you.

17 WITNESS KIMMELSHUE: You're welcome.

18 MS. MESERVE: You have better eyes than do I.

19 (Document displayed on screen.)

20 MS. MESERVE: Let's see. So this is the  
21 Guidelines for Reviewers of the Agronomy Journal.

22 Is this familiar to you at all?

23 WITNESS KIMMELSHUE: No.

24 MS. MESERVE: Could we just look -- For  
25 purposes of exploring your statements, I would like to

1 look at the part where it says, I believe on the next  
2 page, that in order -- There was a highlighted portion.

3 (Document displayed on screen.)

4 MS. MESERVE: Thank you.

5 So when this particular journal -- You're  
6 familiar with the journal, though, Agronomy?

7 WITNESS KIMMELSHUE: Yes, I am.

8 MS. MESERVE: Okay. So when they look for  
9 manuscripts, does it sound correct that they would look  
10 for (reading):

11 "Sound methodology that (sic) is explained in  
12 (sic) sufficient detail so . . . other capable  
13 scientists could repeat it (sic)."

14 WITNESS KIMMELSHUE: Correct.

15 MR. BERLINER: Do you have a hard copy of this  
16 document so the witness could review it?

17 MS. MESERVE: I should have it in the stack  
18 here somewhere.

19 I believe . . .

20 (Handing document to witness.)

21 WITNESS KIMMELSHUE: Thank you.

22 MS. MESERVE: Just --

23 MR. BERLINER: And just for the record, this  
24 witness has not seen this document before; correct?

25 WITNESS KIMMELSHUE: Correct.

1 CO-HEARING OFFICER DODUC: But you're somewhat  
2 familiar with it or not?

3 WITNESS KIMMELSHUE: I'm familiar with the  
4 journal but not the submission standards.

5 MS. MESERVE: So, would you agree with this  
6 statement in regard to -- You've opined as to what you're  
7 looking for in science.

8 Do you agree with what the Agronomy Journal is  
9 saying they would look for in the highlighted text?

10 WITNESS KIMMELSHUE: I -- I highly doubt these  
11 are all of the guiding principles or decision-making  
12 processes for a highly respected refereed scientific  
13 journal like the Agronomy Journal. To me, these four  
14 bullet points would be guiding principles, just like they  
15 say.

16 When it goes before a review process in a  
17 Scientific Review Panel, and that is sent out to experts  
18 in the field in different universities and such, there is  
19 much more rigor with regards to the evaluation of a  
20 manuscript for publication than just these four points.

21 This is -- This is kind of the first cut.  
22 We're not even going to send it to our reviewers if you  
23 don't at least do this much.

24 MS. MESERVE: Certainly.

25 I want to focus on the words "repeatable

1 conclusions" that you have used.

2 Does this journal suggest that repeatable  
3 conclusions are necessary for submission?

4 WITNESS KIMMELSHUE: It is (reading):

5 ". . . With sufficient detail so that other  
6 capable scientists could repeat the experiments."

7 MS. MESERVE: Isn't the point of that that  
8 sound methodology is used and explained so that it may be  
9 repeated?

10 WITNESS KIMMELSHUE: Well, another way that  
11 that is used to verify repeatable conclusions of a  
12 scientific study is an extensive literature review.

13 So let's say that I found that it takes a  
14 hundred pounds of nitrogen to grow 2 tons of peaches per  
15 acre, and somebody in Georgia said it takes 105 pounds of  
16 nitrogen to grow 2 tons of peaches per acre, and somebody  
17 in Utah says it takes 103 pounds of nitrogen to grow  
18 2 tons of peaches, and I did a study, and I came up with  
19 102.

20 Well, that -- that's -- that's convincing.  
21 That's repeatable, in my sense, with regards to  
22 comparison of other literature that's out there.

23 And within a study -- So that's comparison  
24 between studies. But within a study, repeatability means  
25 I did this more than one year. I had replication in the



1 field. I -- And because I did it multiple times, I got  
2 the same results.

3 If I had the peach study example and I got  
4 20 pounds, 200 pounds and 300 pounds, it's not  
5 repeatable, and so you need to consider what the  
6 environmental factors were that dictated the difference  
7 in those results.

8 MS. MESERVE: Okay. Let's move on in the  
9 remaining time I have to the -- to a few questions I have  
10 for Dr. Thornberg.

11 I see that your background is in economics and  
12 that you have -- and you've looked at the cost benefit.

13 Have you looked at the cost benefit impacts of  
14 implementing certain policies in the Delta in your  
15 testimony?

16 WITNESS THORNBERG: Could you be a little --

17 MS. MORRIS: Objection: Ambiguous as to what  
18 policies.

19 WITNESS THORNBERG: Yes, please be clear.

20 MS. MESERVE: Let's back up one question.

21 CO-HEARING OFFICER DODUC: Thank you.

22 MS. MESERVE: Sorry.

23 Are you aware that it's the burden -- You  
24 opined in your testimony about injury; correct? You used  
25 that term.

1                   WITNESS THORNBERG: We opine on some of the  
2 opinions put forward by . . . Excuse me. I forget his  
3 name.

4                   CO-HEARING OFFICER DODUC: Dr. Whitelaw?

5                   WITNESS THORNBERG: Thank you. Dr. Whitelaw,  
6 yes. We opine on the opinions of Dr. Whitelaw.

7                   MS. MESERVE: And you are aware that it is the  
8 burden of Petitioners to demonstrate no injury, not the  
9 Protestants?

10                  MR. BERLINER: Objection: Calls for a legal  
11 conclusion; beyond the scope of this witness' testimony.

12                  CO-HEARING OFFICER DODUC: Well, we went into a  
13 great deal of discussion about no injury, so I think he's  
14 able to answer that.

15                  Overruled.

16                  WITNESS THORNBERG: Would you repeat that  
17 question?

18                  MS. MESERVE: Are you aware that it is the  
19 burden of Petitioners to demonstrate no injury, not the  
20 Protestants to establish an injury?

21                  WITNESS THORNBERG: I -- Perhaps that is a  
22 legal definition of the situation. However, I would also  
23 point out that, from a statistical basis, it is very  
24 difficult to prove an absence of something; in fact, it's  
25 impossible.

1           So, in a sense, for, shall we say, an economist  
2     to be asked to prove that no damages would occur is  
3     creating a statistically impossible result and, as such,  
4     obviously, cannot be required of some empirical columns.

5           What we can certainly say in the context of the  
6     work we do is, it doesn't seem as if damages in the past  
7     have occurred, at least within the range of -- of  
8     salinity that we've seen in the Delta waterways.

9           MS. MESERVE: Do you have any experience in the  
10    science underlying the policies that we've been  
11    discussing, like experience with chemistry or soil  
12    science or agronomy?

13           MS. MCGINNIS: Objection: Vague.

14           What policies?

15           CO-HEARING OFFICER DODUC: Yes, what policies?

16           MS. MESERVE: That's a poor word choice.

17           Any -- Do you have any experience with  
18    chemistry, soil sciences or agronomy to assist in your --  
19    that informed your testimony?

20           WITNESS THORNBERG: Very little. I'm an  
21    empirical economist and I was asked to review common  
22    metrics in some of the modeling that was done.

23           MS. MESERVE: So you have -- Is it -- Is it  
24    correct that you don't have any personal experience or  
25    background that would allow you to make conclusions

1 regarding agricultural and other non-economic issues  
2 discussed in your testimony; correct?

3 WITNESS THORNBERG: I'm sorry. I don't  
4 understand your question. Could you please rephrase it  
5 in a clear way?

6 CO-HEARING OFFICER DODUC: What non-economic  
7 discussion in his testimony are you referring to?

8 MS. MESERVE: If we could go to DWR-84, please,  
9 and look at Page 15, and starting at Line 13.

10 (Document displayed on screen.)

11 MS. MESERVE: There are quite a few opinions  
12 provided and that are non-economic in nature, and these  
13 are the opinions I'm referring to.

14 CO-HEARING OFFICER DODUC: Thank you.

15 WITNESS THORNBERG: Again, could you restate  
16 your question?

17 MS. MESERVE: So, do you have any education or  
18 other background to support the conclusions made -- the  
19 conclusions and information provided on Pages 6 -- 15 to  
20 16 of your testimony, starting with Line 13 of Page 15  
21 and going all the way to Page 16, Line 20?

22 WITNESS THORNBERG: We reviewed the modeling  
23 done by Dr. Michael and in his use of these leaching  
24 fraction tables to estimate the losses.

25 Our point was simply that his application of

1 these tables was incorrect. And indeed, if you apply,  
2 say, for example, different sort of leaching fractions  
3 from other studies or, equivalently, even if you use --  
4 In the case of Prichard, he seemed to be using the wrong  
5 input, then a different and smaller output should  
6 actually arise.

7 In this context, I'm not opining on the  
8 chemistry behind these tables. I'm simply pointing out  
9 that they were misused in the context of Dr. Michael's  
10 estimates.

11 MS. MESERVE: I believe -- I would like to move  
12 to strike starting with Line 13 of Page 15 where he  
13 begins with, "I understand that soil with higher  
14 salinity" and then he goes all the way through to Page --  
15 It would go actually to Page 18, Line 20, where he's  
16 discussing leaching fractions and his opinions thereon  
17 which I believe have no basis in his background.

18 MS. MORRIS: Stefanie --

19 CO-HEARING OFFICER DODUC: Hold on,  
20 Miss Morris. Let me make sure I understand this.

21 So, Miss Meserve, you're moving to strike  
22 starting from Page --

23 MS. MESERVE: 15, Line 13.

24 CO-HEARING OFFICER DODUC: -- 15, Line 13,  
25 through --

1 MS. MESERVE: Through Page 18, Line 20.

2 CO-HEARING OFFICER DODUC: 18, Line 20.

3 MS. MESERVE: As those discuss areas outside of  
4 this witness' expertise.

5 CO-HEARING OFFICER DODUC: Okay. Now you may  
6 join in or --

7 MS. MORRIS: Oppose.

8 CO-HEARING OFFICER DODUC: -- oppose.

9 MS. MORRIS: Thank you.

10 I just want to note for the record, and I  
11 oppose that motion to strike.

12 Dr. Thornberg is an expert. He can rely on  
13 literature that he's cited, in fact -- it's not like  
14 they're unsubstantiated -- to back up his ultimate  
15 opinions, as well as he cited to Dr. Kimmelshue's  
16 testimony which actually raises the exact same points and  
17 cites to much of the same literature.

18 MS. MCGINNIS: Robin McGinnis, California  
19 Department of Water Resources.

20 I join the opposition to the motion, and the  
21 testimony is within the scope of Evidence Code 801.

22 CO-HEARING OFFICER DODUC: Mr. Jackson.

23 MR. JACKSON: I would like to --

24 CO-HEARING OFFICER DODUC: Mr. Jackson, I don't  
25 believe your microphone is on.

1           MR. JACKSON: I would like to join in the  
2 motion to strike on behalf of CSPA and point out that  
3 Dr. . . .

4           MR. BERLINER: Thornberg.

5           MR. JACKSON: . . . Thornberg is -- has  
6 testified on a number of things, including this section,  
7 in which his CV shows no expertise.

8           And I'm wondering if, in fact, you rule that  
9 you're going to leave it in to go to the weight of the  
10 evidence whether or not we're going to be able to  
11 cross-examine in regard to the weight of the evidence if  
12 you don't strike it.

13           CO-HEARING OFFICER DODUC: You want to  
14 cross-examine us --

15           MR. JACKSON: No.

16           CO-HEARING OFFICER DODUC: -- in terms of  
17 weighing the evidence?

18           MR. JACKSON: No. I want to cross-examine this  
19 witness if, in fact, you, in regard to his expertise --

20           CO-HEARING OFFICER DODUC: I believe that's  
21 what Miss Meserve is doing.

22           MR. JACKSON: I believe that's the case, but  
23 you're now going to rule, and I just want to make sure  
24 that these issues are not going to be foreclosed by the  
25 ruling.

1 CO-HEARING OFFICER DODUC: I'm actually totally  
2 confused by that.

3 Miss Meserve, can you help me out?

4 MS. MESERVE: I think just -- I would like to  
5 go -- I guess I am attempting to ask questions that may  
6 go to weight in addition to the motion to strike and I  
7 think other questioners will go on that.

8 I have very little time to complete the  
9 questioning of Dr. Thornberg, however, so . . . I would  
10 like time after lunch, a few minutes, if it's okay, to --  
11 I could probably narrow down what I have here.

12 I'm concerned that the subsequent examiners may  
13 not have all the same questions that I have and so I'm  
14 hesitant to skip over that since I represent several  
15 parties that are interested in this.

16 CO-HEARING OFFICER DODUC: So --

17 MS. MESERVE: But I want to add one other thing  
18 before you think on that, please, is that on Page 3,  
19 Lines 18 and 19 -- 18 -- Page 3, Lines 18 to 19, Mr. --  
20 Dr. Thornberg states that the first claim, meaning the  
21 increase in salinity, is beyond the scope but is  
22 presented by Dr. Kimmelshue.

23 And I think what I'm objecting to is that he  
24 seems to admit that Dr. Kimmelshue's covering it, but  
25 then he goes ahead and covers it, anyway, and that's why



1 I think this should be stricken.

2 CO-HEARING OFFICER DODUC: Okay.

3 I'm looking at Miss Heinrich to make sure we've  
4 captured that.

5 MS. HEINRICH: (Nodding head.)

6 CO-HEARING OFFICER DODUC: All right. So  
7 Miss Meserve, how much additional questions you have of  
8 Mr. -- Is it Mr. or Dr. Thornberg?

9 WITNESS THORNBERG: It's Dr. Thornberg.

10 CO-HEARING OFFICER DODUC: It's Dr. Thornberg.  
11 And I'll take your motion under consideration  
12 as well as your objection to the motion.

13 MS. MORRIS: I'm sorry. I have to clarify this  
14 for the record.

15 That sentence, "The first claim is beyond the  
16 scope of this analysis," was referring to: One, the  
17 construction of the WaterFix Tunnels will significantly  
18 increase the average salinity levels of soil in the  
19 Delta.

20 So the way that Miss Meserve just characterized  
21 it is incorrect.

22 CO-HEARING OFFICER DODUC: And we're not going  
23 to argue back and forth. We are capable of reading it,  
24 reaching our own interpretation, conclusion and issuing a  
25 ruling at some point.

1           Miss Meserve, how much additional questions do  
2 you have for Dr. Thornberg?

3           MS. MESERVE: I only have a few. It may be 10  
4 minutes. I can probably narrow it down better after the  
5 lunch, if you'd like to go ahead and break and let me  
6 just have a few minutes when we come back, and then I  
7 will turn it over to the other questioners.

8           CO-HEARING OFFICER DODUC: So you would only  
9 need 10 minutes or less when we return?

10          MS. MESERVE: Yes, I believe so.

11          CO-HEARING OFFICER DODUC: Thank you,  
12 Miss Meserve.

13          MR. BERLINER: Could we just --

14          CO-HEARING OFFICER DODUC: That was a good  
15 answer.

16          MR. BERLINER: Could we just -- It's just 10  
17 minutes. Could we just finish now?

18          CO-HEARING OFFICER DODUC: No, but she needs  
19 some time, I believe, to organize her thoughts.

20          Is that correct, Miss Meserve?

21          MS. MESERVE: I think that would be helpful to  
22 trying to narrow down so that the questions are indeed  
23 non-duplicative --

24          CO-HEARING OFFICER DODUC: Thank you.

25          MS. MESERVE: -- as I'm sure you guys would

1 like, too.

2 CO-HEARING OFFICER DODUC: The Chair would like  
3 me to remind all of you that the Farmers Market is  
4 happening across the street in the park, so do use the  
5 opportunity of our one-hour-long lunch break to visit the  
6 Farmers Market and support the growers in California.

7 With that, we will take our lunch break and  
8 return it 1 p.m.

9 (Luncheon recess was taken at 11:59 p.m.)

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1 Wednesday, May 10, 2017 1:00 p.m.

2 PROCEEDINGS

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4 CO-HEARING OFFICER DODUC: All right. Good  
5 afternoon, everyone. Welcome back. Hopefully, we've all  
6 been refreshed.

7 Miss Meserve.

8 MS. MESERVE: Thank you. Osha Meserve for  
9 local agencies of the North Delta.

10 And I just have a couple more questions for  
11 Dr. Thornberg.

12 So, looking at your testimony again, which is  
13 DWR-84, at Line 22 of Page 3 of that testimony.

14 If we could take a look at it.

15 (Document displayed on screen.)

16 MS. MESERVE: You note your conclusion that you  
17 (reading):

18 ". . . find little evidence that the (sic)  
19 increase in Delta salinity would (sic) negatively  
20 impact crop productivity . . ."

21 Could you tell me what increase in Delta  
22 salinity you analyzed to form this opinion?

23 WITNESS THORNBERG: As noted within my  
24 testimony, my historical data analysis used information  
25 on changes in salinity level over time, from 1991 to

1 2015.

2 That data is shown in the graph on -- pardon  
3 me, I'm looking for this particular page -- on Page 21 of  
4 my testimony. The graph "Electroconductivity, Annual  
5 Average 1991 to 2015." This is in microsiemens per  
6 centimeter, ECM as the case may be.

7 And, of course, within that particular range,  
8 we're running anywhere from a range of 300 to a high of  
9 slightly over 800.

10 MS. MESERVE: Now, in -- back on Page 3 of your  
11 testimony, on Line 24, you say, within -- 23 and 24  
12 (reading):

13 ". . . within the range of salinity increases  
14 that might reasonably be expected because of  
15 operation of the tunnels."

16 Is it your opinion that these values for EC  
17 provided on Page 21 are those -- are the same as what  
18 might be expected from the tunnels?

19 WITNESS THORNBERG: I'm to understand that  
20 the -- and I apologize as I believe it's D-1641 -- D-1641  
21 rules regarding salinity is roughly within these levels,  
22 if perhaps slightly higher.

23 But then, again, in the context of the type of  
24 empirical analysis I -- I was doing, we can extrapolate  
25 my results, shall we say, to a small degree above and

1 below this.

2 So, yes, I would be comfortable that those  
3 results could be extended within the context of the  
4 D-1641 parameters.

5 MS. MESERVE: And are you aware that the --  
6 there is a proposed amendment to the South Delta salinity  
7 standard that would increase the level of salinity?

8 MR. BERLINER: Objection: Relevance.

9 He's talking about current standards, not --  
10 The witness is talking about current standards, not  
11 future standards.

12 CO-HEARING OFFICER DODUC: Miss Meserve.

13 MS. MESERVE: I will rephrase.

14 So is it fair to say that your testimony is  
15 only backwards-looking at prior cropping outputs and  
16 doesn't attempt to look into a future with tunnel  
17 scenario?

18 WITNESS THORNBERG: As already noted, the  
19 D-1641 standards with the tunnel in place would provide a  
20 level salinity within this historic range. And so, then,  
21 yes, therefore, the results of the past analysis can be  
22 reasonably projected into the future.

23 MS. MESERVE: And that opinion relies on the  
24 D-1641 standard for salinity remaining the same; correct?

25 WITNESS THORNBERG: Oh, absolutely. Obviously,

1 if standards change and salinity was allowed to triple,  
2 quadruple, quintuple, there would be a separate argument,  
3 but I'm not sure why that's relevant to the conversation  
4 we're having.

5 MS. MESERVE: And so, according to your  
6 testimony, if salinity increased within the range that  
7 you've shown, you don't expect any -- that you mention on  
8 Page 21, to be specific -- you do not expect any decrease  
9 in crop product -- productivity; correct?

10 WITNESS THORNBERG: As noted in my historical  
11 analysis, when I looked at yields per acre of 17  
12 different crops, over this range of salinity within the  
13 Delta region, I found nothing to suggest negative impact  
14 of higher salinity levels.

15 MS. MESERVE: And the data you looked at was  
16 for the entire San Joaquin County; correct?

17 WITNESS THORNBERG: That is correct.

18 MS. MESERVE: And the portion of San Joaquin  
19 County that is within the Delta is about one-third of the  
20 county; is that right?

21 WITNESS THORNBERG: I'm not sure if I  
22 understand your question.

23 MS. MESERVE: You looked at crop data for  
24 San Joaquin County in order to do your analysis. Are you  
25 aware that San -- that the Delta makes up only about --

1 the portion of San Joaquin County that's in the Delta is  
2 about a third of the county?

3 WITNESS THORNBERG: Again -- I'm sorry -- can  
4 you please restate that question because I'm not  
5 following what it is -- What is one-third of what?

6 MS. MESERVE: You looked at crop data for the  
7 entire county. Only a portion of the county is within  
8 the Delta; correct?

9 WITNESS THORNBERG: Oh, I see what you're  
10 asking me.

11 Yeah, that is correct.

12 MS. MESERVE: Going back to the increase -- the  
13 decrease in crop productivity.

14 Would that mean that you do not expect -- Would  
15 that mean also that there would be no likely reductions  
16 in revenue to the farmer?

17 WITNESS THORNBERG: We did not study, if you  
18 will, the relationship between revenues per acre and  
19 salinity levels, largely because revenues per acre is  
20 dominated by externally-generated price shifts.

21 The international agricultural markets have a  
22 much larger impact on prices than most anything else, and  
23 as such, you're really not able to pick out, if you will,  
24 anything from that data.

25 So we did focus our efforts on yields, and as



1 noted, there's no evidence that higher salinity leads to  
2 lower yields, and as such, I would expect that it  
3 wouldn't lead to any reduction in revenues as well.

4 MS. MESERVE: And your data was limited to  
5 the -- You only looked at the entirety of San Joaquin  
6 County -- correct? -- which is not entirely within the  
7 Delta?

8 WITNESS THORNBERG: Well, that is absolutely  
9 the case.

10 But I would point out that, A, that data wasn't  
11 available to us; otherwise, I would have looked only at  
12 the Delta portion of agriculture.

13 And, also, I'll similarly point out that if the  
14 Delta region itself was significantly impacted by the  
15 higher salinity, that would be seen in the aggregate  
16 data. I mean, the aggregate data would show a decline,  
17 all else being constant.

18 So I don't actually find the fact that other  
19 data wasn't included there to be relevant to my comments.

20 MS. MESERVE: Looking at your testimony again  
21 on Page 5, and also 34 and 43, you refer three times to  
22 the possibility of compensation through payment as a  
23 means to address reductions in crop yield; is that  
24 correct?

25 WITNESS THORNBERG: It's --

1 MS. MESERVE: This is a yes-no question and I  
2 have a followup.

3 WITNESS THORNBERG: Yes, I do refer to that.

4 MS. MESERVE: Are you aware of any compensation  
5 plan for this Project if salinity causes injury to water  
6 users?

7 MS. MORRIS: Objection: Calls for speculation;  
8 outside the scope of this witness' testimony.

9 CO-HEARING OFFICER DODUC: Oh, he does mention  
10 compensation.

11 Are you aware of any such?

12 WITNESS THORNBERG: No, I'm not aware, to be  
13 honest with you, no.

14 And to be clear, the comment was really more  
15 towards -- Those comments were not directed towards  
16 whether or not I thought there was going to be damage.  
17 The comments were directed largely at what to us is an  
18 economically . . . impossible standard that Mr. Whitelaw  
19 puts forward that, somehow or other, if any person is  
20 even remotely harmed, that somehow or other this Project  
21 can go through.

22 In the context of the basic operation of an  
23 economy, there have to be trade-offs. The concept, for  
24 example, of eminent domain, where government steps in to  
25 take over a piece of land for the general public good.

1           As long as there's compensation for that  
2 eminent domain action, it is perfectly legal to do so,  
3 and it's understood that that's because the greater good  
4 is at play here.

5           So those comments are really largely about  
6 Mr. Whitelaw's testimony rather than, shall we say,  
7 anything specific to the water owners themselves.

8           CO-HEARING OFFICER DODUC: And you're providing  
9 those comments as an economist and not attributing any  
10 sort of legal meaning to that term "injury."

11          WITNESS THORNBERG: Oh, you are absolutely  
12 correct. I'm not a lawyer; I'm simply an economist.

13          CO-HEARING OFFICER DODUC: My dad's an  
14 economist and I don't think there's any "simply"  
15 associated with that, but thank you.

16          MS. MESERVE: So is it your position that the  
17 Project will not injure any legal user of water  
18 predicated on the payment of financial compensation?

19          WITNESS THORNBERG: I'm sorry. Could you  
20 restate that question?

21          MS. MESERVE: Is your -- You state in your  
22 testimony that there will not be injury to water users.

23          MR. BERLINER: No.

24          WITNESS THORNBERG: No.

25          MR. BERLINER: Misstates his testimony.

1                   WITNESS THORNBERG: That's not what I stated in  
2 any way, shape or form.

3                   What I stated is -- My -- My entire testimony  
4 is wrapped around examining the damage estimates of  
5 Dr. Michael and Mr. Machado.

6                   My point here is, historic evidence of  
7 fluctuations in salinity doesn't show any impact to yield  
8 which to me undermines their estimates. Beyond that, I  
9 wasn't asked to testify on the broader question here.

10                  My question I was asked to testify on was that  
11 whether or not their efforts of empirical modeling hold  
12 up under scrutiny, and the answer is they don't. That's  
13 what I'm testifying to here.

14                  MS. MESERVE: And are you aware that water  
15 users in the Delta support stricter salinity standards?

16                  MR. BERLINER: Objection: Beyond the scope of  
17 his testimony; and relevance.

18                  CO-HEARING OFFICER DODUC: Do you have any  
19 knowledge?

20                  WITNESS THORNBERG: I -- I -- That's way beyond  
21 the scope of my testimony. That wasn't what I was asked  
22 to think about.

23                  MS. MESERVE: I'm done. Thank you.

24                  CO-HEARING OFFICER DODUC: Thank you,  
25 Miss Meserve.

1                   Mr. Herrick and Mr. Ruiz. The Dynamic Duo.

2                   MS. MESERVE: I hope I'm Batman.

3                   WITNESS THORNBERG: Don't we all?

4                   CO-HEARING OFFICER DODUC: And is Mr. Ruiz  
5 starting off?

6                   MR. RUIZ: Yes, I am starting off, and my  
7 focus -- My questions will be specifically for  
8 Dr. Thornberg.

9                   And, as I said early this morning, I estimated  
10 about 15 minutes between the two of us.

11                   And I'm going to just go through several  
12 questions with respect to a little bit about  
13 Dr. Thornberg's background with respect to this Project,  
14 his critique of Dr. Michael's analysis with regard to  
15 direct economic damages, Dr. Thornberg's empirical  
16 analysis, Dr. Thornberg's critique of Dr. Michael's  
17 theoretical model, and Dr. Thornberg's critique of  
18 Dr. Michael's economic injury figures, his critique of  
19 the crops used by Dr. Michael, his critique of  
20 Dr. Michael's general -- generalizations as he cast them  
21 as incorrect, and, finally, his critique of the omission  
22 of the 2005 data.

23                   CO-HEARING OFFICER DODUC: And then I assume  
24 Mr. Herrick will take over?

25                   MR. HERRICK: (Nodding head.)

1 CO-HEARING OFFICER DODUC: All right.

2 MR. RUIZ: Yes. He will ask questions for  
3 Dr. Kimmelshue.

4 CROSS-EXAMINATION BY

5 MR. RUIZ: Dr. Thornberg, from your extensive  
6 qualifications and statements, it is fair to say you're  
7 quite experienced in real estate and economic  
8 forecasting; is that correct?

9 WITNESS THORNBERG: That's part of what I do,  
10 yes.

11 MR. RUIZ: And your testimony here today, your  
12 rebuttal testimony, is about agricultural economics;  
13 correct?

14 WITNESS THORNBERG: It's about the agricultural  
15 industry, yes.

16 MR. RUIZ: Do you consider yourself an expert  
17 in agriculture economics?

18 WITNESS THORNBERG: I've studied the issues  
19 before, yes.

20 MR. RUIZ: Do you consider yourself an expert?

21 WITNESS THORNBERG: I'm an expert enough to  
22 handle what was asked of me, which was to take a look at  
23 what Dr. Michael and Mr. Machado had done and to ask if  
24 those analyses, again, held up to scrutiny.

25 MR. RUIZ: Have you published any scholarly

1 articles in agricultural economics.

2 WITNESS THORNBERG: No, I have not.

3 MR. RUIZ: Did you take graduate classes in  
4 agricultural economics with respect to -- or while  
5 attaining your Ph.D.?

6 WITNESS THORNBERG: No, I did not.

7 MR. RUIZ: Did you consult with any  
8 agricultural economists with regard to preparation of  
9 your rebuttal testimony for this proceeding?

10 WITNESS THORNBERG: No, I did not.

11 MR. RUIZ: Have you spoken with any farmers in  
12 the Central or South Delta with respect to effects of  
13 salinity on crop yields and crop patterns?

14 WITNESS THORNBERG: No, I have not.

15 MR. RUIZ: Have you been in the Central or  
16 South Delta?

17 WITNESS THORNBERG: Yes, I have.

18 MR. RUIZ: When is the last time you were in  
19 the Central or South Delta?

20 WITNESS THORNBERG: Oh, perhaps two years ago.

21 MR. RUIZ: Have you reviewed the testimony of  
22 any of the farmers in this proceeding with respect to the  
23 effects from salinity and crop yield and crop patterns?

24 WITNESS THORNBERG: No, I have not. As noted,  
25 that was not what I was asked to do, sir.

1           MR. RUIZ:  If we could put up his testimony,  
2  which is DWR-84, I believe.

3           (Document displayed on screen.)

4           MR. RUIZ:  And if we could go to the bottom of  
5  Page 7, the top of Page 8.

6           (Document displayed on screen.)

7           MR. RUIZ:  You testify as to the, as you say,  
8  odd structure of Dr. Michael's analysis.

9           Do you -- Do you see that?  Do you recall that  
10 testimony?

11          WITNESS THORNBERG:  Yes.

12          MR. RUIZ:  By the "odd structure," you're  
13 referring to estimating crop yield effect theoretically  
14 and crop shifting effect empirically; correct?

15          WITNESS THORNBERG:  Correct.

16          MR. RUIZ:  Dr. Thornberg, isn't it true that  
17 Dr. Michael used a theoretical approach to yield because  
18 there are no Delta-specific data on crop yields, but he  
19 used an empirical approach on crop choices because there  
20 is Delta-specific data on crop choice?

21          WITNESS THORNBERG:  Actually, I would disagree  
22 with that.

23          MR. RUIZ:  How so?

24          WITNESS THORNBERG:  Because of the fact that we  
25 have historical evidence, as I've noted and studied at



1 quite length. And within my testimony, there are  
2 naturally occurring fluctuations of salinity within the  
3 Delta. That naturally occurring fluctuation in salinity  
4 provides us with a natural experiment by -- to allow us  
5 to tease out what happens to crop yields in the concept  
6 of changes of salinity.

7 The fundamental question here is whether or not  
8 these tunnels are going to change salinity and how that  
9 salinity will alter crop yields.

10 The historic evidence gives us plenty of  
11 ability to study that, and to ignore the historic  
12 evidence, I think, is a serious omission.

13 MR. RUIZ: And the historic evidence that  
14 you're referring to, from what I'm understanding, is your  
15 empirical analysis of the historic evidence. Is that  
16 what you're saying?

17 WITNESS THORNBERG: Well, that is -- My  
18 analysis was to show how important that omission is. I  
19 have no idea if other people have studied this.

20 MR. RUIZ: Okay. I'd like to take you to  
21 Page 19 of your testimony. And sorry for moving around  
22 pages but the testimony kind of moves around a bit.

23 (Document displayed on screen.)

24 MR. RUIZ: Beginning at Line 17.

25 (Scrolling down document.)

1           MR. RUIZ:  And speaking of your own salinity  
2 yield analysis, you say you (reading):

3           ". . . chose to examine a much broader array of  
4 crops . . . in the Delta, as determined by the  
5 San Joaquin County Crop Report.

6           Correct?

7           WITNESS THORNBERG:  Correct.

8           MR. RUIZ:  And on Page 6 -- I'm sorry.

9           And Page 20 of your testimony, at Table 6, is  
10 based on the San Joaquin County Crop Report for 2015;  
11 correct?

12          WITNESS THORNBERG:  Correct.

13          MR. RUIZ:  And you're aware that the  
14 San Joaquin County Delta is only but a portion of  
15 San Joaquin County overall; correct?

16          WITNESS THORNBERG:  Correct.

17          MR. RUIZ:  And you were aware of that at the  
18 time you prepared this testimony?

19          WITNESS THORNBERG:  Yes.  And while I asked to  
20 see if there was data on the Delta region specifically, I  
21 was told by the folks I was working with that even if  
22 such data was available, we were highly unlikely to be  
23 given it and, as such, my empirical efforts were  
24 unfortunately curtailed by that lack of data.

25          MR. RUIZ:  Okay.  So by that, you mean that you

1 looked at -- Well, by that, you mean you looked at  
2 countywide cropping data and the Crop Report for  
3 San Joaquin County overall but you didn't look at or  
4 desegregate for San Joaquin County Delta; correct?

5 WITNESS THORNBERG: As already noted, I would  
6 have preferred to do that but I was unable to because the  
7 data was not available.

8 MR. RUIZ: In looking at your Table 6, are you  
9 aware, for example, on the left column, you've got  
10 cherries in there?

11 Are you aware that there is but a few hundred  
12 acres of cherries in the San Joaquin County Delta?

13 WITNESS THORNBERG: Again, as already noted, I  
14 was not provided data as to how many acres of various  
15 sorts of crops are within the Delta versus what is  
16 outside.

17 MR. RUIZ: So that would be an answer. You  
18 don't know the answer, then, that there's only a few  
19 hundred acres of cherries in the Delta.

20 WITNESS THORNBERG: That is correct.

21 MR. RUIZ: And looking at that on the left  
22 column under almonds, are you aware that there's only  
23 3200 acres of the total almonds you've got listed there  
24 in the San Joaquin County Delta?

25 WITNESS THORNBERG: Sir, I'm going to have to

1     rely upon your expertise on this, because you clearly  
2     have access to data that I don't have access to.

3             However, I would like to point out that, if you  
4     would provide me with the data and the history in the way  
5     I have here, I'd be more than happy to perform my  
6     calculations again with your assistance.

7             MR. RUIZ: I think that's a little outside of  
8     my duty and job description but . . .

9             WITNESS THORNBERG: I figured that.

10            MR. RUIZ: Are you aware that Dr. Michael's  
11     analysis with respect to salinity and the impact in  
12     relation to crop yield and cropping choices pertains only  
13     to the San Joaquin County Delta?

14            WITNESS THORNBERG: I . . . suppose that could  
15     be true. I'm not exactly sure.

16            MR. RUIZ: But you read and critiqued and you  
17     are attempting to rebut Dr. Michael's testimony; correct?

18            WITNESS THORNBERG: Sir, I would be clear that,  
19     let's say, the salinity levels that we're talking about  
20     had a significant impact on, say, some of these crops  
21     that are heavily located within the Delta.

22            CO-HEARING OFFICER DODUC: Dr. Thornberg --

23            WITNESS THORNBERG: I'm trying to answer his  
24     question.

25            CO-HEARING OFFICER DODUC: Ask your question

1 again, Mr. Ruiz.

2 MR. RUIZ: Are you aware that Dr. Michael's  
3 analysis which you are rebutting is focused on the  
4 relationship between increases in salinity and crop yield  
5 and crop choices within the San Joaquin County Delta  
6 itself as opposed to the San Joaquin County in general?

7 WITNESS THORNBERG: Yes, that is what he's  
8 trying to estimate.

9 MR. RUIZ: But your focus in your rebuttal was  
10 not limited to that -- correct? -- because you didn't  
11 have access to the data.

12 WITNESS THORNBERG: Correct. But as I was  
13 starting to say before -- and I think it's an important  
14 point to keep in mind here -- if there was a significant  
15 impact of increased salinity on crop yields within the  
16 Delta, one would rightly suppose that that would show up  
17 in the broader data.

18 Just because I'm using a broader set of data  
19 doesn't nullify my findings that there doesn't seem to be  
20 any negative correlation. Because even if a portion of  
21 the acreage I'm looking at is in the Delta and that is  
22 negatively impacted by salinity, then the overall number  
23 should also saw -- show a decrease.

24 So, as such, while it may become a little bit  
25 harder to see the effect, I would point out that not only

1 did I not find any significant negative effects but, for  
2 the most part, many of these crops actually seem to show  
3 increases in yield in these high -- in these  
4 high-salinity times.

5 Now, I'm not suggesting for a heartbeat that  
6 the salinity was adding to yields, but it's pretty clear  
7 to me that the data does not suggest any true loss of  
8 yield in these high-salinity times.

9 MR. RUIZ: And how, from your analysis, is one  
10 to determine the impact specifically on yields in  
11 relationship to salinity in the San Joaquin County Delta  
12 itself?

13 WITNESS THORNBERG: Again, that should show up  
14 in the broader county level data if the impacts are  
15 significant.

16 MR. RUIZ: Are you aware that -- And I think  
17 we've probably established this, but are you aware  
18 that -- Well, are you aware that the source of irrigation  
19 water for San Joaquin County Delta farmers is almost  
20 exclusively Delta surface water?

21 WITNESS THORNBERG: I'm to understand that is  
22 the case.

23 MR. RUIZ: And are you aware that the source of  
24 water for other farmers in other portions of San Joaquin  
25 County not including the Delta, say, for example, Eastern

1 San Joaquin County is not the Delta?

2 WITNESS THORNBERG: That is probably the case.

3 MR. RUIZ: Do you have reason to believe that  
4 main be the case?

5 WITNESS THORNBERG: Sir, I didn't say that,  
6 because, again, it wasn't relative to developing my  
7 results.

8 As already noted, the Delta is contained within  
9 these county level statistics and, as such, if the Delta  
10 acres were impacted, it should show up in the broader  
11 data.

12 Just because something is part of a whole  
13 doesn't mean you can't look at the whole to figure out  
14 what's happening to the part.

15 MR. RUIZ: So, by some additional level of this  
16 aggregation or analysis, one might be able to dig further  
17 to determine -- or do additional work to determine what  
18 you're suggesting.

19 WITNESS THORNBERG: I'm sorry. Could you  
20 restate that? Was there a question there?

21 MR. RUIZ: There was a question there.

22 WITNESS THORNBERG: Could you restate it for  
23 me, please?

24 MR. RUIZ: So, by some additional analysis that  
25 may begin with what you've done for your work in this

1 matter, someone might be able to disaggregate and  
2 determine if there is, in fact, an impact on salinity and  
3 San Joaquin County Delta farming choices in crop yield  
4 and choices based on your work, but your work itself  
5 doesn't do that; does it?

6 WITNESS THORNBERG: Again, I'm not sure if I  
7 understand your question.

8 MR. RUIZ: I'll move on.

9 If we could look at Page 11 of your testimony.

10 (Document displayed on screen.)

11 MR. RUIZ: And it looks like it's beginning at  
12 Line 18.

13 You say that Dr. Michael's analysis is  
14 (reading):

15 ". . . based on a sample of crops that are not  
16 representative of the overall Delta economy."

17 That (reading):

18 ". . . the six crops selected in no way  
19 accurately reflect . . . agriculture in the Delta."

20 Do you see that?

21 WITNESS THORNBERG: Yes.

22 MR. RUIZ: Are you aware that corn, alfalfa and  
23 processing tomatoes are the top three crops by acreage in  
24 the Delta?

25 WITNESS THORNBERG: No, I'm not.



1           MR. RUIZ: Okay. You didn't look at that or  
2 you don't have knowledge of that particular -- those  
3 particular issues; is that fair?

4           WITNESS THORNBERG: I think it's fair to say  
5 that I was not provided with the data that would have  
6 helped me figure that.

7           MR. RUIZ: Then how can you say that the crops  
8 that Dr. Michael analyzed or looked at are not  
9 representative and in no way accurately represent  
10 agriculture in the Delta?

11          WITNESS THORNBERG: Your -- Your point is very  
12 well-taken. That is an overstatement on my part.

13          Now, obviously, we were by definition  
14 constrained to looking at overall county data. I  
15 probably overstepped by making that statement.

16          MR. RUIZ: Fair enough.

17          If we could look at Page 31, jump back again --  
18 or jump around again, Page 31, Line 12.

19                 (Document displayed on screen.)

20          MR. RUIZ: Yeah, Line 12.

21          Do you see that? In your testimony, you noted  
22 that 2005 data was not included in the model, and you  
23 state that that raises (reading):

24                 ". . . the question of whether the data was  
25 omitted for other possible reasons."

1 Do you see that?

2 WITNESS THORNBERG: Correct. Yes. I'm sorry.

3 MR. RUIZ: Okay. Thank you.

4 What other possible reasons are you suggesting?

5 WITNESS THORNBERG: Unfortunately, I have  
6 only -- was only made available to me the results of  
7 Dr. Michael's analysis, not anything having to do with  
8 his data used or the actual regression model that was in  
9 place.

10 What I do know, as someone who has over 20  
11 years of experience in empirical economics and applied  
12 economics, is that you don't lightly drop data.

13 Typically, if someone is randomly dropping  
14 data, they have to have a very clear reason for doing so,  
15 and from my perspective, it wasn't made clear to me  
16 exactly what the problem with that particular year was,  
17 why that data would have been excluded from this  
18 particular sample.

19 As such, my suspicions, of course, immediately  
20 arise that perhaps the 2005 data was not allowing the  
21 model to produce the results that were desired by the  
22 research.

23 From my perspective, that's not a fair reason  
24 for excluding data.

25 Now, if there were a better reason for it, I'm

1 happy to hear what it was, but there was not any  
2 reasonable explanation given, and candidly, as such, that  
3 raises red flags.

4 MR. RUIZ: Are you aware of the 2013 draft DEC  
5 Economics Report that was produced on behalf of one of  
6 your clients, the Department of Water Resources?

7 MS. MORRIS: Objection -- Stefanie Morris,  
8 State Water Contractors -- outside the scope of this  
9 witness' testimony.

10 CO-HEARING OFFICER DODUC: I will -- Mr. Ruiz.

11 MR. RUIZ: Yes.

12 CO-HEARING OFFICER DODUC: I believe you  
13 will --

14 MR. RUIZ: Yes.

15 CO-HEARING OFFICER DODUC: -- link it up?

16 MR. RUIZ: I will.

17 CO-HEARING OFFICER DODUC: All right. We'll  
18 just wait, Miss Morris.

19 Are you aware of that study?

20 MR. RUIZ: Are you aware of that report or that  
21 study?

22 WITNESS THORNBERG: Off the top of my head, I  
23 don't know what report you're talking about.

24 MR. RUIZ: Okay. And this isn't suggesting  
25 this means you don't know what it is, but you do -- At

1 Page 6 of your testimony, again, at Line 12 . . .

2 (Document displayed on screen.)

3 MR. RUIZ: Do you see that? You say that the  
4 BDC -- And I believe you're citing something that  
5 Dr. Michael was citing (reading):

6 "The BDCP Statewide Economic Impact Report  
7 examines a scenario in which the Delta tunnels cause  
8 a 1.1 percent increase in average salinity . . ."

9 Do you recall that?

10 WITNESS THORNBERG: Right. That's something we  
11 pulled directly out of Dr. Michael's testimony.

12 MR. RUIZ: But you haven't read or reviewed or  
13 have any other knowledge of the results or the -- of that  
14 particular report or study --

15 WITNESS THORNBERG: No.

16 MR. RUIZ: -- correct?

17 Okay. So you wouldn't be aware that that study  
18 also omitted 2005 data, the very same 2005 field data?  
19 You wouldn't be aware of that.

20 WITNESS THORNBERG: I would not.

21 CO-HEARING OFFICER DODUC: And was that the  
22 study which you asked him about, to which Miss Morris  
23 objected?

24 MR. RUIZ: It was.

25 CO-HEARING OFFICER DODUC: All right.

1 Overruled.

2 MR. RUIZ: Actually, the only thing I have --  
3 Well, actually, that concludes my questioning.

4 CO-HEARING OFFICER DODUC: Thank you again.  
5 Very efficient.

6 Mr. Herrick.

7 MR. HERRICK: Thank you, Madam Chairs, Board  
8 Members. John Herrick for South Delta parties.

9 I'll be asking a few questions of  
10 Dr. Kimmelshue. The topics deal with his recalculation  
11 of tables presented by our witness, Mr. Prichard, and  
12 then I want to go into a few questions regarding his  
13 citations to and I'll say reliance on -- although you can  
14 disagree with that -- the Hoffman Report for contrary  
15 conclusions that were done by our witness.

16 CROSS-EXAMINATION BY

17 MR. HERRICK: So with that, Dr. Kimmelshue.

18 WITNESS KIMMELSHUE: Um-hmm.

19 MR. HERRICK: If we could turn to -- I believe  
20 it's Page 30 of your testimony, which is DWR-85.

21 And that is the second Table 4. If we can get  
22 that up.

23 (Document displayed on screen.)

24 MR. HERRICK: And is it correct to say that  
25 this is -- this table is your recalculation of a table

1 that Dr. -- Mr. Prichard prepared only using the proper  
2 inputs to for -- using proper inputs?

3 WITNESS KIMMELSHUE: Yes.

4 MR. HERRICK: And just so -- I apologize for my  
5 unfamiliarity with the topic, but just so we can see it.

6 Near the top there in the first box that's --  
7 the first box, you have "ECe Threshold" and "ECe at  
8 0 percent yield reduction."

9 Do you see that box?

10 WITNESS KIMMELSHUE: Yes.

11 MR. HERRICK: And the bottom line of that box  
12 says -- It just has the letter "b."

13 Is it correct to say that's the slope resulting  
14 from the yield reduction curves? Would that be a correct  
15 way to say that?

16 WITNESS KIMMELSHUE: Yes, probably. Yeah.

17 MR. HERRICK: You can correct me. I'm not  
18 trying to confuse things. I'm just trying to get to an  
19 ultimate question here.

20 WITNESS KIMMELSHUE: Sure.

21 MR. HERRICK: And when you recalculated those  
22 three groups -- and by that, I mean a 5 percent leaching  
23 fraction, a 10 percent leaching fraction, and a  
24 15 percent leaching fraction which are below that -- you  
25 used that data from that "b" -- letter "b" line that we

1 just talked about above.

2 WITNESS KIMMELSHUE: The only data I changed in  
3 this table is what I highlighted in red.

4 MR. HERRICK: Now, when -- I'm not trying to  
5 trip you up or anything, but when we recalculated what  
6 you did, it appears that for the 5 percent calculation,  
7 you used that "b" line, but for the 10 and 15 percent  
8 calculations, you used the line above it data, the "ECE  
9 at 100 percent yield reduction."

10 Is there any way for you to just quickly  
11 calculate one line of the 10 percent to see if indeed you  
12 used the "b" line or the hundred percent reduction line,  
13 or is that too much to do now?

14 WITNESS KIMMELSHUE: I'd probably have to get  
15 the data off my servers and do it later.

16 MR. HERRICK: Okay. In your testimony, at a  
17 number of places, you refer to the Hoffman Report.

18 Are you familiar with the Hoffman Report?

19 And let me back up. Sorry.

20 Your testimony refers to the Hoffman Report  
21 submitted in the Bay-Delta proceedings. I'll just be  
22 saying the "Hoffman Report," although that's not the  
23 title. The title is Examination of -- I don't know what  
24 the title is. Sorry.

25 But you're familiar with that document;

1 correct?

2 WITNESS KIMMELSHUE: I am.

3 MR. HERRICK: And in that report, Dr. Hoffman,  
4 among other things, calculated leaching fractions for the  
5 Southern Delta water.

6 Would that be a correct statement?

7 WITNESS KIMMELSHUE: Yes.

8 MR. HERRICK: And are you familiar with how he  
9 calculated those leaching fractions in that report?

10 WITNESS KIMMELSHUE: Vaguely, yes. I have to  
11 go back and review it again, but I am -- I'm fairly  
12 familiar, yes.

13 MR. HERRICK: And these aren't trick questions.  
14 I'm just seeing if you recall or don't know or disagree.

15 Is it correct to say that when Dr. Hoffman  
16 calculated his leaching fractions, he used assumed water  
17 quality?

18 Do you recall that?

19 WITNESS KIMMELSHUE: I think there was a range  
20 of water quality -- and you can correct me if I'm  
21 wrong -- where he used an average of that or assumed  
22 water quality. I think he did look at some -- some  
23 historic water quality results, if I remember correctly.

24 MR. HERRICK: That's fine.

25 Did he examine measured water quality data for



1 his cal -- for his input calculations for leaching  
2 fractions? Do you know that?

3 WITNESS KIMMELSHUE: I can't recall.

4 MR. HERRICK: Okay. And as I've said before,  
5 excuse me for using these coarse terms.

6 But there's a salt-in component, which is the  
7 applied water salt, and then there's a -- I label it  
8 salt-out component, which is roughly speaking the  
9 drainage that comes out of that, and that's -- those are  
10 the inputs for calculating a leaching fraction generally;  
11 is that correct?

12 WITNESS KIMMELSHUE: See, that's the -- That is  
13 the -- the kind of question that I have in my overarching  
14 testimony.

15 In that salt-in component, the terminology that  
16 you use and Hoffman uses is, I think, fairly much --  
17 fairly well agree on; that is, that irrigation water  
18 that's applied to the surface of the soil.

19 The salt-out component is, in my opinion,  
20 questionable with regards to where -- and I said this  
21 earlier today -- the salt actually came from.

22 And in the -- And I -- And I questioned this in  
23 the Leinfelder-Miles paper itself as well.

24 In -- In using the ratio that Leinfelder-Miles  
25 used and if you use the ratio in the Delta anywhere, that

1 salt-out component by true definition of the leaching  
2 fraction as calculated by Ayers and Westcot should be --  
3 the salt should be attributed from the underlying  
4 applications of salt, not from underlying contributions.

5 MR. HERRICK: And do you know what data  
6 Dr. Hoffman used when he did his leaching fraction  
7 calculations.

8 WITNESS KIMMELSHUE: I cannot recall.

9 MR. HERRICK: And I'm just trying to see if I  
10 can spur your memory. It may not -- It may not work.

11 But would it be -- Do you recall that he used  
12 tile drainage information from a certain area of the  
13 Southern Delta?

14 WITNESS KIMMELSHUE: I remember reading about  
15 that, yes.

16 MR. HERRICK: And to your satisfaction, was  
17 that -- was tile drainage water an indication of the  
18 amount of water, applied water salts, that leached  
19 through the soil.

20 WITNESS KIMMELSHUE: It entirely depends upon  
21 the site.

22 MR. HERRICK: Okay.

23 WITNESS KIMMELSHUE: What I mean there is,  
24 growers drain their fields to get water out of the root  
25 zone -- right? -- for the purposes of producing

1 profitable crops. And some of that water could come from  
2 above; some of that water can come from below.

3 I did my research -- my Ph.D. and Master's  
4 research on the high-water-table soils in the eastern  
5 coast of North Carolina. And we had three treatments:  
6 We had free drainage; we had controlled drainage; and we  
7 had subirrigation.

8 So there's a multitude of ways -- What I'm  
9 telling you is there's a multitude of ways to manage  
10 those drainage systems, and it really depends how those  
11 drainage systems were managed, number one; and it depends  
12 on what the water table depth was, number two.

13 And it's important to understand what I was  
14 reiterating earlier about the site-specific location of  
15 those fields.

16 Do they have underdrains? Or are they only  
17 drained by surface drainage systems, you know, toe drains  
18 and such in the fields?

19 And so that is critical to understand where  
20 that is from -- coming from.

21 MR. HERRICK: Thank you.

22 But getting back to my question: Do you know  
23 whether or not Dr. Hoffman's tile drainage data was a  
24 result of excess applied water, salts, leaching through  
25 the soil, or it may have been something else or a

1 combination thereof?

2 WITNESS KIMMELSHUE: I do not know.

3 MR. HERRICK: That's one of your criticisms of  
4 the Leinfelder-Miles study is that the salt-out  
5 measurement, I'll say --

6 WITNESS KIMMELSHUE: Um-hmm.

7 MR. HERRICK: -- may not reflect only the  
8 applied water salts but may also reflect some other  
9 salts; correct?

10 WITNESS KIMMELSHUE: That's correct.

11 MR. HERRICK: So --

12 WITNESS KIMMELSHUE: And it may be that  
13 Dr. Hoffman chose fields where he was more confident that  
14 the water table depth was so low that it resulted in some  
15 high level of confidence that the salts that were in the  
16 drainage systems were from salt applied from above.

17 MR. HERRICK: Let me give you a hypothetical:  
18 If the tile drainages -- tile drainage data  
19 used from Dr. Hoffman is from 15 feet or deeper drains  
20 that are in the groundwater, wouldn't that bring into  
21 question his conclusions, too?

22 WITNESS KIMMELSHUE: It depends on where the  
23 groundwater came from. It depends on if that groundwater  
24 came from all that was applied on the surface versus --  
25 from irrigation or precipitation, or it depends on if it

1 came from seepage.

2 MR. HERRICK: And there's just a groundwater  
3 Table 15, 20 feet down in that area. That's -- You know,  
4 has, what, 20,000 years of accumulated salts in it. That  
5 would not be water that resulted from applied water for  
6 irrigation; correct?

7 WITNESS KIMMELSHUE: I have no way of knowing.

8 MR. HERRICK: Okay. But those are the key  
9 things in deciding whether or not the calculation of  
10 leaching fractions are reliable; correct?

11 WITNESS KIMMELSHUE: The fundamental definition  
12 of leaching fractions is the salts that are below the  
13 root zone, immediately below the root zone, came from  
14 that which is applied above.

15 MR. HERRICK: So, not knowing the particulars  
16 of Dr. Hoffman's salt-out number, how are you able to  
17 conclude that his report is more reliable than Michelle  
18 Leinfelder's --

19 WITNESS KIMMELSHUE: The way --

20 MR. HERRICK: -- Leinfelder-Miles?

21 WITNESS KIMMELSHUE: I'm sorry?

22 MR. HERRICK: I was finishing out her name.

23 WITNESS KIMMELSHUE: The way that I conclude  
24 that is, the additional literature that Dr. Hoffman  
25 looked at was quite extensive. And it incorporated a lot

1 of literature with regards to refereed scientifically  
2 vetted literature, and it incorporated a lot of  
3 literature with regards to the high-water-table soils and  
4 leaching fractions that are representative of those  
5 high-water-table soils and underdrained systems.

6 It just so happens that his calculations  
7 matched those literature values fairly well.

8 Dr. Leinfelder-Miles' leaching fractions are  
9 notoriously low.

10 MR. HERRICK: When you say "notoriously," to  
11 whom is it notorious? That's something --

12 WITNESS KIMMELSHUE: I'm using the word. In  
13 the -- In the realm of leaching fractions that  
14 Dr. Hoffman looked at, and the work that he did, they  
15 match up quite well with regard to the consistency.

16 Again, we get back to this reliability and  
17 repeatability, and she said repeatability of results, and  
18 that helped inform him what the leaching fractions should  
19 be.

20 Dr. Leinfelder-Miles' leaching fractions are  
21 definitely on one end of the spectrum of what we should  
22 be expecting and what others have experienced in the  
23 previous studies in the Delta.

24 MR. HERRICK: So you think that Dr. Hoffman's  
25 anticipated results -- you just said what he expected to

1 see -- being confirmed by using an assumed applied water  
2 and an undesignated tile drainage quality, you think  
3 those are reliable numbers, then?

4 WITNESS KIMMELSHUE: I think they're reliable  
5 in the fact that they match refereed scientific  
6 literature of which his study reviewed quite a bit.

7 MR. HERRICK: He reviewed lots of literature,  
8 but there were no in-Delta leaching studies reviewed by  
9 him; correct? Because --

10 WITNESS KIMMELSHUE: They were -- there may not  
11 have been, but there were other areas that had -- that  
12 had leaching studies related to high-water-table soils,  
13 such as in the Imperial Valley and other -- and the other  
14 places.

15 MR. HERRICK: Now, one of the points you make  
16 is that, as we've just been covering, that if the  
17 salt-out number is including salts that were derived from  
18 groundwater or some other source, then that may make the  
19 study or the conclusions of the study unreliable --  
20 correct? -- generally?

21 WITNESS KIMMELSHUE: Again, it depends on where  
22 that water came from.

23 MR. HERRICK: But if the -- Regardless of the  
24 source of that salt, if that indicates there's a problem  
25 with the soil salinity, isn't that the starting point for

1 analyzing any other actions' impacts on those crops and  
2 soils?

3 So whether or not the salt came from the  
4 applied water or not, that's the beginning condition for  
5 an analysis; isn't it?

6 WITNESS KIMMELSHUE: Can you rephrase the  
7 question for me?

8 MR. HERRICK: The purpose of this hearing is to  
9 determine whether or not -- and then legal conclusions  
10 later about whether that constitutes injury -- but to  
11 determine whether or not a proposed action will have an  
12 effect on water quality. That's one of the issues.

13 WITNESS KIMMELSHUE: Um-hmm.

14 MR. HERRICK: So I'm asking you whether or not  
15 you trust Michelle Leinfelder-Miles' conclusions on  
16 salinity?

17 Isn't she describing the conditions in that  
18 soil even if it's not from the applied salt but it's from  
19 some other source, too?

20 WITNESS KIMMELSHUE: In her testimony, she does  
21 recognize conditions of salt in the soil profile and --  
22 and, again, it is a function of where it came from.

23 And in her testimony and in her summary  
24 reports, I have no way to know where that salt came from.  
25 That's been one of my criticisms, as you know,



1 Mr. Herrick, as to where that salt came from.

2 And I just don't -- I find it difficult to  
3 believe why we can't see a map of where those fields were  
4 sampled, and that would help me greatly with regards to  
5 understanding the over -- the surrounding environment and  
6 the potential impacts, water table depth. Were there  
7 drainage systems installed; were there not drainage  
8 systems installed? Were they subsurface? If not, were  
9 they surface? All those things come into play.

10 MR. HERRICK: Okay. But I've moved beyond that  
11 in my question, so let me get back to my question:

12 Notwithstanding your criticisms, isn't the soil  
13 salinity that she measured, regardless of the source of  
14 that salt, isn't that the beginning condition against  
15 which we would judge impacts from some other action?

16 WITNESS KIMMELSHUE: If you were -- If you were  
17 implying that the soil salinity at a certain point in  
18 time is a beginning condition, and you say that point in  
19 time is August 2016, I disagree.

20 MR. HERRICK: No, I'm not saying that. I'm --

21 WITNESS KIMMELSHUE: Because --

22 MR. HERRICK: I'd ask that you answer my  
23 question.

24 I'm dealing with the alfalfa in South Delta so  
25 I'm not dealing with any of the North Delta things.

1           If -- If Michelle Leinfelder-Miles' study is a  
2           current condition for that timeframe, that was a two-year  
3           study, and it shows there's X amount of salt in the soil  
4           profile, isn't that the beginning point against which we  
5           might judge a Project that affects that?

6           MS. MORRIS:   Objection -- Stefanie Morris -- I  
7           think the question is vague and ambiguous; and it assumes  
8           facts not in evidence; and it's an incomplete  
9           hypothetical.

10           I don't know if you're trying -- I'm sorry.

11           I don't know if the question is going at some  
12           kind of baseline based on the two-year study. I cannot  
13           understand the question.

14           CO-HEARING OFFICER DODUC:   Well, I'll sustain  
15           her objection on the ground that I, too, am having  
16           trouble understanding the question.

17           MR. HERRICK:   Well, let me see if I can  
18           rephrase it.

19           CO-HEARING OFFICER DODUC:   Please.

20           WITNESS KIMMELSHUE:   Apparently I am, too.  
21           Sorry.

22           MR. HERRICK:   I thought it was an excellent  
23           question.

24           CO-HEARING OFFICER DODUC:   Motion to strike.

25           MR. HERRICK:   Motion to strike.

1 (Laughter.)

2 MR. HERRICK: Regardless of the source of the  
3 salt in the soil that the Leinfelder-Miles study showed,  
4 or concluded, isn't that the condition against which we  
5 would judge a change in applied water salts having  
6 effects on the soil salinity?

7 WITNESS KIMMELSHUE: It depends entirely on  
8 when you take those samples and what that concentration  
9 is at that moment in time, and it depends entirely upon  
10 the environmental conditions that dictated that  
11 concentration at that moment in time.

12 And that's what I was trying to say, was that  
13 the -- And this is a -- And this is the challenge with  
14 outdoor natural system studies; right? The study was  
15 performed and you're given the cards that you're dealt by  
16 Mother Nature; right?

17 And so you should expect that those salinity  
18 levels in that study for those years that were sampled  
19 should be elevated.

20 So if your goal is to use an elevated soil  
21 salinity as a baseline, then -- then that's a good study  
22 to use, but I don't think that's the goal. I think it  
23 should be more something towards an average salinity or a  
24 longer-term study sampling program because --

25 MR. HERRICK: Well, let me --

1                   WITNESS KIMMELSHUE: -- you should be expecting  
2 increased salinity in those conditions right now because  
3 of the drought.

4                   MR. HERRICK: Let me get back to my question,  
5 since we -- apparently I'm not expressing it so that an  
6 answer could be made.

7                   Whether or not it's a extreme condition or an  
8 average condition or a wet-year condition, all of those  
9 various conditions would then have to be judged as to how  
10 a change in applied water might affect the ag dependent  
11 upon that.

12                   So, if we're just looking at what you  
13 described, an extreme condition, that's fine, but  
14 wouldn't it be relevant to know what the extreme  
15 condition is and then to examine what a Project might do  
16 under those conditions?

17                   Because we're trying to determine if there's  
18 injury, not if there's average injury or if there's only  
19 wet-year injury, if there's only dry-year injury. We're  
20 trying to determine if there's injury.

21                   Now, you don't have to make the decision on  
22 whether it constitutes legal injury, but if the starting  
23 condition in drought extreme period, is the soil salinity  
24 data that Michelle Leinfelder-Miles came up with, isn't  
25 that relevant to, then, the analysis?

1 MS. MORRIS: Ob -- Objection.

2 CO-HEARING OFFICER DODUC: Miss Morris.

3 MS. MORRIS: Again, Mr. Herrick is walking the  
4 fine line to try to get this witness to suggest what the  
5 legal baseline should be for comparing soil salinity to  
6 current conditions versus this Project and it's -- I  
7 think it's inappropriate and it's outside the scope of  
8 this witness' testimony.

9 This testimony was rebutting Michelle  
10 Leinfelder-Miles, not making any sort of determination of  
11 baseline conditions for soil salinity which to compare  
12 against this Project.

13 CO-HEARING OFFICER DODUC: That's a fair  
14 objection, Mr. Herrick.

15 Your response?

16 MR. HERRICK: My response is, the numerous  
17 objections we've had today for some reason seem to be  
18 making sure that the Board does not hear questions  
19 relevant to the ultimate issue.

20 Now, these witnesses may not be offered on the  
21 ultimate issues, and they may not be testifying on them,  
22 but when they make conclusions about other people's  
23 analysis on the ultimate question, it's perfectly  
24 reasonable and fair to ask them whether or not their  
25 critique affects that ultimate conclusion.

1 CO-HEARING OFFICER DODUC: You lost me with  
2 that last part.

3 May I try this:

4 Dr. Kimmelshue, based on your analysis of the  
5 study to which Mr. Herrick has been mentioning, do you  
6 have any thoughts to offer in terms of its value in  
7 determining changes to the agricultural community?

8 I'm trying to avoid using the word "injury" or  
9 "impact."

10 But how might -- Based on your knowledge and  
11 your analysis of that study, what would you offer in  
12 terms of its potential use in determining effects on the  
13 ag community in the Delta?

14 WITNESS KIMMELSHUE: What I can offer is that  
15 the results of that study represent one end of the  
16 spectrum in an extreme circumstance.

17 We have gone through a drought condition -- and  
18 I know I'm saying things everybody knows here but I think  
19 I should say it for the record -- that has resulted in  
20 concentration of salts, has not allowed for precipitation  
21 to leach much like we saw this winter.

22 Again, I would love to go out there and take  
23 some samples right now. I think you would see something  
24 very different with regard to the salinity levels of the  
25 soils.

1           But I think, to answer your question, it  
2 represents an extreme point in a continuum of what the  
3 soil salinities may be. Just like modeling results use  
4 historic timeframes of wet, average, dry years, the  
5 results of Dr. Leinfelder-Miles' studies represent dry  
6 years.

7           That's my opinion.

8           MR. HERRICK: That's good enough for me.

9           Dr. Kimmelshue, did you review any of the other  
10 testimony that's been presented in this hearing by the  
11 South Delta parties in preparation for your -- your  
12 testimony?

13           WITNESS KIMMELSHUE: I reviewed  
14 Dr. Leinfelder-Miles' testimony, Mr. Prichard's.

15           MR. HERRICK: You did not -- Did you then --  
16 Did you also review the testimony of the, I'll say,  
17 farmers that represented earlier, that discussed their  
18 allegations, anyway, of ongoing salt damages?

19           WITNESS KIMMELSHUE: Yeah. I believe I -- I  
20 reviewed a testimony by -- help me -- vineyard grower.

21           Grant? Is that the name?

22           MR. HERRICK: That's North Delta. That's okay.  
23 I just -- That's fine.

24           Did you review any of the comments or -- or  
25 submitted declarations in the Bay-Delta process dealing

1 with the Hoffman Report in preparation for this  
2 testimony?

3 WITNESS KIMMELSHUE: No.

4 MR. HERRICK: Real basically, without sounding  
5 snide:

6 Are the -- Are all of the studies that you  
7 reference in your materials peer reviewed?

8 WITNESS KIMMELSHUE: Oh, I'd have to go back  
9 and look.

10 MR. HERRICK: Are all -- Do all the materials  
11 that you reference in your testimony include specific  
12 locations of the fields that were used in the test?

13 WITNESS KIMMELSHUE: Probably not all of them.

14 MR. HERRICK: Okay. I don't have any further  
15 questions. How's that for short?

16 Oh, I do have one further question, just to end  
17 on a horrible note.

18 Dr. Kimmelshue, was it your employees that were  
19 trespassing on South Delta land this summer to verify the  
20 aerial photographs of crops?

21 MS. MORRIS: Objection: Outside the scope of  
22 this hearing.

23 (Laughter.)

24 MR. HERRICK: Because it was.

25 (Laughter.)



1 WITNESS KIMMELSHUE: I'm not answering that  
2 question.

3 CO-HEARING OFFICER DODUC: Mr. Herrick --

4 MR. HERRICK: I withdraw the question.

5 CO-HEARING OFFICER DODUC: -- that was very  
6 naughty of you.

7 MR. HERRICK: It was.

8 CO-HEARING OFFICER DODUC: Yes, it was. Yes.

9 WITNESS KIMMELSHUE: If it was, it was  
10 inadvertent trespass.

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

13 Next we have Mr. Jackson.

14 And how is the court reporter doing? Should we  
15 take a short break.

16 THE REPORTER: (Shaking head.)

17 CO-HEARING OFFICER MARCUS: Okay.

18 MS. MCGINNIS: Excuse me. Before we go to the  
19 next cross-examiner, I asked the rest of the Panel 7 to  
20 come back around 3:00. Do you think that is --

21 CO-HEARING OFFICER DODUC: Mr. Jackson  
22 estimated 30 minutes. Is that still the case?

23 MR. JACKSON: I think, given the length of  
24 answers, I'd like to raise that to about 45.

25 CO-HEARING OFFICER DODUC: Okay. And what time

1 did you ask --

2 MS. MCGINNIS: I had asked them to come back at  
3 3:00 and if we're ending at 4:00, 4:30, I just -- I'm  
4 wondering what we anticipate.

5 CO-HEARING OFFICER DODUC: Hold on a second.

6 MR. JACKSON: Excuse me. I was not -- I did  
7 not hear what you just said and I was on my way up. What  
8 was it again?

9 MS. MCGINNIS: I asked the Hearing Officer  
10 what -- Well, I let her know that I asked our Panel 2 to  
11 come back at 3 o'clock.

12 MR. HERRICK: Your other panel.

13 MS. MCGINNIS: Yes.

14 MR. HERRICK: Okay.

15 CO-HEARING OFFICER DODUC: After Mr. Jackson, I  
16 have Ms. Womack.

17 And, Ms. Womack, are you still anticipating 60  
18 minutes?

19 MS. WOMACK: Who knows? I don't know.

20 CO-HEARING OFFICER DODUC: Okay.

21 MS. WOMACK: I'll do my best.

22 CO-HEARING OFFICER DODUC: We will try to be  
23 done around -- Oh, I think that might --

24 Miss Suard.

25 MS. SUARD: Yes. Nicky Suard with Snug Harbor.

1 I may be 15 --

2 CO-HEARING OFFICER DODUC: Your --

3 MS. SUARD: -- minutes.

4 CO-HEARING OFFICER DODUC: Your microphone.

5 MS. SUARD: Okay. Is this on now?

6 MR. BERLINER: The button.

7 CO-HEARING OFFICER DODUC: Yes.

8 MS. SUARD: Press the button, set it on that.

9 There we go.

10 Nicky Suard with Snug Harbor.

11 15 minutes at the most.

12 CO-HEARING OFFICER DODUC: Because it is now

13 2 o'clock, my guess would be 3:30 is closer.

14 MS. MCGINNIS: Okay. I'll let them know.

15 Thank you.

16 MR. JACKSON: To begin my cross, I have no  
17 questions for Mr. Kimmelshue. All my questions will be  
18 for Mr. Thornberg.

19 My first set of questions -- You would -- Do  
20 you want a --

21 CO-HEARING OFFICER DODUC: Please.

22 MR. JACKSON: -- description?

23 My first set of questions will be about the  
24 qualifications of Mr. Thornberg and about the summary of  
25 findings from Mr. Thornberg.

1 WITNESS THORNBERG: It's Dr. Thornberg, sir.

2 MR. JACKSON: Dr. Thornberg.

3 The . . . And I think that will re -- will  
4 result in there being no more questions until he begins  
5 what he calls Part 3 of his testimony on Page 30 -- 33,  
6 Line 22.

7 And then I will have questions in regard to  
8 the -- his headings:

9 Non-Agricultural Economic Impacts;  
10 Incorrect Assumption about the WaterFix by  
11 Reducing Farmland;

12 The standard set by my witness Dr. Whitelaw;  
13 The -- and -- and then, assuming his answers  
14 are as I expect them, then Negative Outcomes Do Not  
15 Outweigh Benefits of the WaterFix. I have a series of  
16 questions in that section.

17 Economic Theory Does Not Support Dr. Whitelaw's  
18 Strict Interpretation of the No Injury Rule and then his  
19 conclusion.

20 CO-HEARING OFFICER DODUC: And let me look at  
21 the court reporter. Sounds like this will be the --  
22 likely. Would you like a break around 2:30?

23 THE REPORTER: (Nodding head.)

24 CO-HEARING OFFICER DODUC: So, Mr. Jackson,  
25 let's look for a time -- a natural break in your

1 cross-examination around that time.

2 MR. JACKSON: Okay. And I -- And -- And  
3 depending on the answers in terms of the beginning  
4 portion of it.

5 CROSS-EXAMINATION BY

6 MR. JACKSON: Mr. Thornberg, in looking at your  
7 list of qualifications, have you done other work on  
8 natural resources?

9 WITNESS THORNBERG: Yes, I have.

10 MR. JACKSON: And where?

11 WITNESS THORNBERG: I have done a number of  
12 Projects for the Metropolitan Water District over the  
13 years.

14 MR. JACKSON: Is that who's paying you today?

15 WITNESS THORNBERG: No. I believe I'm being  
16 compensated by the Department of Water Resources.

17 MR. JACKSON: Okay. What have you done for the  
18 Metropolitan in regard to resources in the past?

19 WITNESS THORNBERG: We did a large-scale study  
20 on the tunnels themselves. That was a couple years ago.  
21 I don't believe that report has been publicly released.

22 I've also reviewed a couple other reports many  
23 years ago regarding the Imperial Valley Irrigation  
24 District.

25 CO-HEARING OFFICER DODUC: And hold on. I

1 believe Miss Morris . . .

2 MS. MORRIS: I just object to the sort of whole  
3 other line of questioning about his qualifications. It  
4 seems like all of these kinds of questions have already  
5 been asked and answered by the examiners before.

6 And that particular question was outside the  
7 scope, but I couldn't make the objection early enough.

8 CO-HEARING OFFICER DODUC: Mr. Jackson, where  
9 are you going with this line of questioning? Is it --

10 MR. JACKSON: Dr. Thornberg makes a substantial  
11 number of criticisms of other people's testimony, and  
12 that's appropriate for rebuttal.

13 But it's also appropriate to find out whether  
14 or not he has the background, and it goes to the weight  
15 of the evidence.

16 CO-HEARING OFFICER DODUC: All right. I will  
17 allow you some leeway, Mr. Jackson.

18 Overruled for now.

19 MR. JACKSON: Thank you.

20 Other than the WaterFix, have you worked on any  
21 resource issues?

22 WITNESS THORNBERG: That's a very broad  
23 question, sir. I'm a macroeconomist. I do a lot of work  
24 with agencies, governments, across the state. Some of  
25 those relate to water issues here or there, or perhaps

1 other resource issues.

2 MR. JACKSON: Right. I'm only interested in  
3 water issues here or there.

4 What water issues have you worked on in the  
5 past?

6 WITNESS THORNBERG: Oh, just in -- For example,  
7 studying the impact of the drought on the California  
8 economy, or lack thereof, as the case may be. Obviously,  
9 that's been a big source of conversation in my studies of  
10 California economy over the past few years.

11 MR. JACKSON: Anything else?

12 WITNESS THORNBERG: Sir, again, I have over 20  
13 years of experience. I'm not exactly sure how you expect  
14 me to pull through every nugget of . . . in my extensive  
15 experience.

16 MR. JACKSON: So, on Page 3 of . . . your  
17 testimony, and in your Summary of Findings section . . .  
18 Could we put that up?

19 (Document displayed on screen.)

20 MR. JACKSON: You indicate that you've  
21 extensively -- extensively reviewed the analysis and  
22 testimony of three people.

23 I'm interested only in the Ed Whitelaw part of  
24 this, because he was my witness.

25 WITNESS THORNBERG: That's a perfect reason. I

1 should point out to you, that was probably the least  
2 amount of work I did in the context of my work.

3 MR. JACKSON: It seemed to be.

4 So, when you mention "Michael, et al.," and  
5 when I find things quoted that were not in my witness'  
6 testimony, hypothetically, are you -- do you have  
7 information that leads you to believe that these three  
8 people were working together?

9 WITNESS THORNBERG: I'm not exactly sure of  
10 your question, sir.

11 I was using "Michael et al." as simply a  
12 shorthand so as to not have to constantly repeat things.  
13 If I inadvertently included Ed Whitelaw perhaps in some  
14 of these comments, my apologies. Obviously, no slight  
15 was intended.

16 MR. JACKSON: And, therefore, if -- did you  
17 attribute to Mr. Whitelaw individually your rebuttal to  
18 him alone? For instance, on Page 5 at --

19 (Document displayed on screen.)

20 MR. JACKSON: -- Line 5 -- or at Line 14, you  
21 mention Mr. Whitelaw the first time.

22 And in between Line 2 on Page 3, I don't  
23 believe that Mr. Whitelaw said anything that was in what  
24 you're talking about.

25 WITNESS THORNBERG: The only rebuttal to



1 Mr. Whitelaw's work was -- had to do with what we -- what  
2 I interpreted as an economically impossible standard to  
3 be met; that if the potential for any harm would happen  
4 to any individual within the Delta region as a result of  
5 the Delta fix, the Project thus cannot be allowed to  
6 proceed.

7 That, of course, standard just, again, belies  
8 basic economic sense.

9 MR. JACKSON: All right. And --

10 WITNESS THORNBERG: There's no standard --

11 MR. JACKSON: And even if the --

12 WITNESS THORNBERG: I'm sorry. I'm not  
13 actually finished.

14 MR. JACKSON: Well, I know, but you're not  
15 actually responding to the question.

16 WITNESS THORNBERG: Okay. Then maybe you need  
17 to restate your question.

18 MR. JACKSON: Okay.

19 WITNESS THORNBERG: I wasn't aware of what  
20 you're asking me.

21 MR. JACKSON: Where do you get the idea that  
22 the No Injury Rule is an economic standard?

23 WITNESS THORNBERG: Sir, are you asking me what  
24 my legal definition of the No Injury Rule is?

25 MR. JACKSON: No, sir. You're not a lawyer;

1 are you?

2 WITNESS THORNBERG: No, that's exactly right,  
3 so I wouldn't give it --

4 MR. JACKSON: So when you call the No Injury  
5 Rule -- When you say that Mr. Whitelaw establishes far  
6 too high a standard, was it your understanding that  
7 Mr. Whitelaw was describing an economic standard?

8 WITNESS THORNBERG: I was applying an economic  
9 standard. Now, whether or not Mr. Whitelaw's  
10 interpretation of the law is valid or not, it's not for  
11 me to determine or argue anything offset.

12 However, I am allowed to have an economic  
13 opinion about what someone is claiming as a legal  
14 standard. And the economic opinion is that that standard  
15 is simply not reasonable in any true economic question.

16 Now, perhaps the legal definition is different,  
17 and that's not for me to debate.

18 MR. JACKSON: And --

19 WITNESS THORNBERG: But my economic opinion is  
20 that is not a viable standard in a functioning economy.

21 MR. JACKSON: And so -- We'll get to a number  
22 of questions, because you've used that in your work.

23 Have you read the regulations and statutes on  
24 the No Injury Rule?

25 WITNESS THORNBERG: No, sir, I have not.

1           MR. JACKSON: Did anyone that you were working  
2 with explain to you what those standards were?

3           WITNESS THORNBERG: No.

4           MR. JACKSON: Okay. So, in looking at the  
5 testimony, you're talking about, "conclusions 2 through  
6 4," and they all "fail in the face of a thorough  
7 analysis, ultimately negating the claims," and now I'll  
8 just use Ed Whitelaw.

9           What claims by Ed Whitelaw in his testimony is  
10 your thorough analysis negating in Mr. Whitelaw's  
11 testimony.

12          WITNESS THORNBERG: Again, from an economic  
13 perspective, the standard he uses is simply not logical.

14          MR. JACKSON: And that's it.

15          WITNESS THORNBERG: And that's it.

16          MR. JACKSON: And that's your opinion.

17          WITNESS THORNBERG: Yes, it is.

18          MR. JACKSON: Okay.

19          So the next time that Mr. Whitelaw is mentioned  
20 in your testimony -- I'm sure he will forgive me if I  
21 sometimes call him Mr. Whitelaw. He's not here. The --

22          WITNESS THORNBERG: You can call me Chris, by  
23 the way.

24          MR. JACKSON: Thank you, Chris.

25          You say that (reading):

1                   "The flaws in the testimonies of Michael  
2                   Machado and Ed Whitelaw have weaknesses of their  
3                   own . . ."

4                   CO-HEARING OFFICER DODUC: Mr. Jackson, I'm  
5                   sorry. What page are you on?

6                   MR. JACKSON: I'm on Page 7 now, the next time  
7                   my witness was mentioned.

8                   (Document displayed on screen.)

9                   MR. JACKSON: (Reading):

10                  ". . . that only serve to further undermine the  
11                  logical chain above."

12                  What about Dr. Whitelaw's testimony had  
13                  anything to do with the logical chain that you created  
14                  above?

15                  WITNESS THORNBERG: Your point's well taken.  
16                  The logical chain obviously replied -- excuse me --  
17                  applies largely to the empirical work of Dr. Michael and  
18                  Mr. Machado.

19                  MR. JACKSON: Thank you.

20                  Calling your attention to Line 15 (sic) on  
21                  Page 7, you indicate that, in Part 1 of your lengthy  
22                  testimony, you are going to deal with (reading):

23                  ". . . the negative impact" with your  
24                  estimate -- "weaknesses in the estimate of the  
25                  negative impact of increased salinity on

1 agricultural productivity.

2 Do we agree that Part 1 of your testimony has  
3 nothing to do with Dr. Whitelaw?

4 WITNESS THORNBERG: Yes, we can agree to that.

5 MR. JACKSON: All right. In Part 2 of the  
6 analysis, you (reading):

7 ". . . will use regression results to  
8 demonstrate that salinity levels have not impacted  
9 crop choices in the Delta region."

10 Is it fair to say that Part 2 does not rebut  
11 anything in Dr. Whitelaw's testimony?

12 WITNESS THORNBERG: Correct.

13 MR. JACKSON: All right. And that Part 3  
14 (reading):

15 ". . . will demonstrate . . . positive impacts  
16 of the WaterFix that have been overlooked in the  
17 testimony of Dr. Michael and Dr. Whitelaw . . ."

18 And then back to the interpretation of the No  
19 Injury Rule.

20 Is that the limit of the analysis in regard to  
21 your rebuttal of Dr. Whitelaw?

22 WITNESS THORNBERG: Yes. As noted, my only  
23 real -- only comment about Mr. Whitelaw's relatively  
24 short testimony, again, goes back to this idea of an  
25 economically illogical standard that he seems should

1 apply here.

2 MR. JACKSON: And you saw that as him creating  
3 an economic standard.

4 WITNESS THORNBERG: No. I think that the  
5 standard he put forward doesn't make any sense from an  
6 economic sense.

7 MR. JACKSON: All right. And you don't feel  
8 bound by the law, if that's the law.

9 MS. MORRIS: Objection -- Stefanie Morris,  
10 State Water Contractors -- argumentative; outside the  
11 scope of his testimony.

12 This is -- This is not -- That's it. It's  
13 argumentative mostly.

14 CO-HEARING OFFICER DODUC: Mr. Jackson.

15 MR. JACKSON: Well, I'm trying to -- This --  
16 This witness took it on himself, for convenience I  
17 suppose, to mush these -- if that's a word -- mush these  
18 different kinds of testimony together, and I'm just  
19 trying to separate them before I ask my questions.

20 CO-HEARING OFFICER DODUC: Okay.

21 MR. JACKSON: And -- And there seems to be --  
22 The main attack on my witness seems to be that he created  
23 an economic standard.

24 CO-HEARING OFFICER DODUC: I believe what I  
25 heard Dr. Thornberg say was that he applied his economic

1 expertise to -- to analyze what your witness presented.

2 Am I correct, Dr. Thornberg?

3 WITNESS THORNBERG: Yes. Thank you.

4 CO-HEARING OFFICER DODUC: You're not  
5 suggesting that Dr. Whitelaw made an economic argument.

6 You are applying your economic analysis to his argument.

7 WITNESS THORNBERG: Economic intuition might be  
8 a better way of putting it.

9 Again, I'm not a lawyer, don't pretend to  
10 understand the law, not sure of the legal arguments  
11 around Mr. Whitelaw's opinion.

12 But that opinion, from an economic standpoint,  
13 just, again, to me is -- just doesn't make any sense.  
14 You would -- If an economy used that sort of standard, it  
15 would just be locked down because it would mean there are  
16 no trade-offs and --

17 CO-HEARING OFFICER DODUC: And you're not --  
18 You're not representing any legal interpretation.

19 WITNESS THORNBERG: Absolutely not.

20 CO-HEARING OFFICER DODUC: To your --

21 WITNESS THORNBERG: It's not my place to do so.

22 CO-HEARING OFFICER DODUC: Okay.

23 WITNESS THORNBERG: Not my place to do so.

24 MR. JACKSON: Moving on to Page 33, the

25 Part 3 --

1 (Document displayed on screen.)

2 MR. JACKSON: -- which you said is a section  
3 that relates to rebutting the witness my clients called;  
4 correct?

5 WITNESS THORNBERG: Yes.

6 MR. JACKSON: Okay. On Page 34, Line 1 --

7 (Document displayed on screen.)

8 MR. JACKSON: -- you understand that  
9 whatever -- You indicate that (reading):

10 "The arguments below, made by Dr. Whitelaw  
11 (sic) and by Dr. Michael (sic), either exaggerate  
12 economic harm caused by the construction of the  
13 WaterFix" and -- or --

14 And I'm just going to deal with the first part  
15 of it first.

16 What economic harm caused by the construction  
17 of the WaterFix are you talking about with Dr. Whitelaw?

18 WITNESS THORNBERG: The phrase obviously is  
19 applying to Dr. Michael.

20 MR. JACKSON: In the second part of that phrase  
21 (reading):

22 ". . . or underestimate the economic benefits  
23 of the WaterFix."

24 WITNESS THORNBERG: Right. So, let's take the  
25 No Injury Rule to its logical conclusion.



1           Let's imagine for the sake of argument that  
2           some emergency happened in the Delta. There are a  
3           thousand children trapped on an island and, to save those  
4           children, they would have to empty out one of these  
5           canals.

6           By Dr. Whitelaw's rule or standard, he would  
7           suggest that, because a farmer may be harmed or a few  
8           hundred dollars as a result of those efforts to save the  
9           children, those children shouldn't be saved.

10          Clearly, if you are completely ignoring the  
11          potential benefits and only looking at the costs, we end  
12          up with shockingly unreasonable overall economic  
13          outcomes.

14          That is what I meant by the fact that this  
15          standard really just doesn't hold up from an economic  
16          perspective.

17          MR. JACKSON: So let's parse that a little.

18          Do you understand that standard, the No Injury  
19          Rule, to be evaluated on -- when you're evaluating  
20          benefits, to be evaluated on a statewide level?

21          MS. MORRIS: Objection: Calls for a legal  
22          conclusion.

23          MR. JACKSON: It does not.

24          CO-HEARING OFFICER DODUC: Why don't you ask  
25          him whether he applied his analysis on a statewide level.

1           MR. JACKSON: Did you apply this analysis on a  
2 statewide level?

3           WITNESS THORNBERG: If you look at the overall  
4 potential benefits of the WaterFix, clearly the potential  
5 benefits to many other parts of the state are very  
6 positive.

7           Now, from an economic standpoint, would those  
8 benefits -- should those benefits be measured relative to  
9 the potential for economic harm within the Delta region  
10 itself?

11           And the answer is, of course, it should,  
12 because benefits to people outside the region are  
13 obviously part of the overall economic calculation.

14           MR. JACKSON: Did you -- The overall economic  
15 calculation of no injury to a water user? Or the  
16 economic benefits of the Project to everyone in the State  
17 of California?

18           WITNESS THORNBERG: A true cost benefit  
19 analysis on the WaterFix Project would include all the  
20 costs, including the costs of the construction, along  
21 with any damage, if such damage were to actually occur,  
22 to various people within the realm of the WaterFix  
23 Project or the Sacramento Delta region.

24           And on the other side of it, you would, of  
25 course, have to include all the benefits to accrue to

1 water users in other parts of the state, such as the  
2 Central Valley or San Joaquin or Los Angeles or  
3 Bakersfield, as the case may be.

4 From an economic perspective, that is the  
5 logical metric by which you would evaluate a Project such  
6 as this. You wouldn't just look at the potential harm to  
7 water users within the Delta itself. That would be  
8 economically incorrect.

9 MR. JACKSON: Have you ever read --

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

12 MR. KEELING: Tom Keeling for the San Joaquin  
13 County Protestants.

14 Hearing Officer Doduc, I would like to strike  
15 this aspect of this witness' testimony. That is  
16 precisely the subject matter that was stricken by this --  
17 these Hearing Officers from Dr. Michael's testimony and  
18 thrown over into Part 2 by your ruling earlier.

19 We struck that when we revised his testimony to  
20 conform to your ruling and now we're hearing rebuttal to  
21 a part of his testimony that you have put into Part 2.

22 CO-HEARING OFFICER DODUC: Actually, that's a  
23 fair statement, Mr. Keeling.

24 Mr. Berliner.

25 MR. BERLINER: Yes. Well, the witness is

1 responding to a question on cross-examination. That's an  
2 entirely different nature of the development of testimony  
3 than submitting rebuttal testimony that's beyond the  
4 scope. This witness can't help what questions he's  
5 asked.

6 Perhaps we should have objected to the question  
7 to preclude the answer, but essentially Mr. Keeling is  
8 seeking to strike the question itself because the answer  
9 followed logically from the question. That happens. We  
10 can't control strictly what questions are asked.

11 And so when a witness uses the tools he has  
12 available to him to answer a question, it may delve into  
13 some other areas, and that's all that happened here.

14 So either we have to police these questions  
15 more carefully, but it can't invalidate the answer if the  
16 answer is responsive to the question.

17 CO-HEARING OFFICER DODUC: Mr. Keeling.

18 MR. KEELING: I wasn't moving to strike the  
19 question. The question arose from the --

20 CO-HEARING OFFICER DODUC: Rebuttal testimony.

21 MR. KEELING: From his rebuttal testimony. The  
22 meandering monologue that occurred thereafter was a  
23 choice of the witness, not of the questioner.

24 CO-HEARING OFFICER DODUC: No. The question  
25 asked about underestimation of the economic benefits of

1 the WaterFix, therefore, his answer was appropriate in  
2 the context of answering that question.

3           However, you are correct, Mr. Keeling, in that  
4 the broader issue of economic benefits is to be addressed  
5 in Part 2.

6           So --

7           MR. JACKSON: And --

8           CO-HEARING OFFICER DODUC: -- Mr. Jackson.

9           MR. JACKSON: -- that was the point I was  
10 trying to make, is that my client did not get into  
11 anything except the individual water rights injury as we  
12 were constantly reminding him of.

13           The balance that (sic) the cost benefit  
14 analysis, all of that cannot appropriately be done until  
15 you've received evidence on the public trust on the  
16 fisheries issues and on the question of what's in the  
17 public interest. And we need all of the elements there  
18 before that could be done.

19           And the Board has been very specific -- The  
20 Hearing Officer and her lawyers have been very specific.  
21 We've had our testimony redacted a number of times  
22 because we want to jump into the hole kit and caboodle.

23           And I believe that this testimony in Part 3 is  
24 outside the scope of Part 1 and needs to either -- to be  
25 stricken for this hearing, all of it, and then I can go

1 sit down.

2 CO-HEARING OFFICER DODUC: All right.

3 Response, first, Mr. Berliner, and then Ms. Morris.

4 MR. BERLINER: Thank you.

5 It's just interesting to note that this  
6 question of striking testimony comes up now after the  
7 cross-examiners had ample opportunity to make an argument  
8 that his testimony was outside the scope. So if there  
9 was material in the written submittal, that should have  
10 been addressed sometime ago.

11 Again, we can't control the questions that are  
12 asked, and the witness' answer --

13 CO-HEARING OFFICER DODUC: Mr. Berliner --

14 MR. BERLINER: -- has been responsive.

15 CO-HEARING OFFICER DODUC: -- please let me  
16 direct you not to the question that Mr. Jackson asked and  
17 the answer that Dr. Thornberg provided but to, I think,  
18 the underlying objection that Mr. Jackson has voiced, and  
19 that is to the Part 3 analysis in Dr. Thornberg's  
20 testimony that discuss a broader economic benefits  
21 argument than is beyond the scope of what we're focusing  
22 on in Part 1.

23 MS. MORRIS: I'd like to respond to that.

24 MR. BERLINER: I'll let Miss Morris respond  
25 because, frankly, I would like a little -- a moment to

1 think about that.

2 CO-HEARING OFFICER DODUC: All right.

3 Miss Morris.

4 MS. MORRIS: My response is that Dr. Whitelaw's  
5 testimony sets forth a standard by which Dr. Whitelaw  
6 thinks that the no-injury analysis should be looked at.  
7 And, unfortunately, that testimony came in and we're --  
8 the Department and the Bureau and others are required to  
9 rebut it.

10 And part of that rebuttal is looking at it from  
11 an economic standpoint and saying in response, you can't  
12 just look at it in isolation, you're looking at it  
13 broader.

14 So, inevitably, this type of evidence has to  
15 come in to be allowed to respond to what Dr. Whitelaw put  
16 in the record for this portion of the hearing.

17 CO-HEARING OFFICER DODUC: Mr. Berliner, do  
18 you --

19 MR. BERLINER: I don't have --

20 CO-HEARING OFFICER DODUC: -- need more time to  
21 think?

22 MR. BERLINER: No. I don't have anything to  
23 add, because that's right. We're merely responding;  
24 we're not propounding new testimony.

25 CO-HEARING OFFICER DODUC: Mr. Keeling.

1                   MR. KEELING: Further in response to  
2 Miss Morris' comments.

3                   The fact that Dr. Whitelaw was talking about  
4 economics within the Delta and the other side wants to  
5 say, "Well, let's talk about economic statewide," that is  
6 the same movement in mind from the Delta to statewide  
7 that caused you to require us to redact Mr. Michael's  
8 testimony in the first place.

9                   Well, I'm happy to go there but not after we've  
10 had to redact it, submit revised testimony, and kick it  
11 over into Part 2. That's number one.

12                   With respect to Mr. Berliner's comments, the  
13 ruling of the Hearing Officers is that we have between  
14 the time they start their rebuttal case and the time they  
15 end the rebuttal panel to make our objections, to make  
16 our motions to strike, number one. So the fact that  
17 we've had the written testimony for some time, no matter,  
18 never mind, completely irrelevant.

19                   Two, the fact that an earlier cross-examiner of  
20 these witnesses didn't make a motion to strike has  
21 nothing to do with whether I have a right now or  
22 Mr. Jackson has a right now.

23                   CO-HEARING OFFICER DODUC: All right,  
24 Mr. Keeling.

25                   Mr. Herrick.



1                   MR. HERRICK: Thank you. John Herrick for  
2 South Delta parties.

3                   I think beyond what Mr. Keeling just said,  
4 we're now facing testimony that says, if I may summarize,  
5 "Even if there's an injury, you can balance that against  
6 benefits," which, of course, is so far beyond not only  
7 the scope of this hearing but contrary to the scope of  
8 this hearing that it needs to be somehow limited or  
9 removed because that's exactly why we're here, to find  
10 that injury or not, not to say, "Well, somebody else got  
11 a benefit so that doesn't matter," because that's not the  
12 process we're in.

13                   Thank you.

14                   CO-HEARING OFFICER DODUC: Miss Meserve, I see  
15 you inching up.

16                   Do you wish to add something?

17                   MS. MESERVE: I would just add that I believe  
18 the portion of the testimony that I would join in  
19 requesting to strike would be beginning on Page 39,  
20 Line 15 --

21                   CO-HEARING OFFICER DODUC: 39, Line 15.

22                   MS. MESERVE: -- and then that would go through  
23 Page 43, Line 12.

24                   CO-HEARING OFFICER DODUC: Through Page 43,  
25 Line 12.

1 MS. MESERVE: I believe that is the -- the area  
2 that we are alleging is responsive to testimony that was  
3 stricken by Dr. Michael.

4 CO-HEARING OFFICER DODUC: Anything else to  
5 add, Mr. Keeling?

6 MS. MESERVE: He's got something.

7 MR. KEELING: Yes.

8 In the written testimony, Dr. Thornberg's  
9 excursion beyond the Delta in the statewide benefits  
10 begins on Page 34. We will give the Hearing Officer  
11 precise page and line numbers, if you would like,  
12 afterwards.

13 CO-HEARING OFFICER DODUC: Thank you.

14 And, by the way, very nice colors you're  
15 wearing today.

16 MR. KEELING: I thought you'd like that.

17 CO-HEARING OFFICER MARCUS: Took you till now.

18 CO-HEARING OFFICER DODUC: I was busy focusing  
19 on other things.

20 But Miss McGinnis, Mr. Berliner and  
21 Miss Morris, any final thoughts on this motion?

22 MS. MCGINNIS: Yes. Robin McGinnis for the  
23 California Department of Water Resources.

24 I -- I am confused about what is being proposed  
25 to be struck because Mr. Jackson's witness' testimony is

1       rebutted starting on Page 33, and then his -- I believe  
2       the section Mr. Keeling is interested in about statewide  
3       benefits is later on where Miss Meserve pointed out.

4                So I just . . . I suppose we might want to see  
5       something in writing to be able to respond to because I'm  
6       quite confused.

7                CO-HEARING OFFICER DODUC: Ms. Morris.

8                MS. MORRIS: Very briefly.

9                The sections that Miss Meserve is trying to  
10       strike are in direct response to allegations raised in  
11       the testimony of -- of Dr. Michael. So they are in  
12       direct response.

13               And, again, I just -- If this kind of testimony  
14       didn't come in, we wouldn't have to do anything, but it's  
15       there and it has to be rebutted.

16               CO-HEARING OFFICER DODUC: All right. I think  
17       now is the time for us to take our break. We will resume  
18       at 2:45.

19                        (Recess taken at 2:30 p.m.)

20                        (Proceedings resumed at 2:45 p.m.)

21                CO-HEARING OFFICER DODUC: All right. It is  
22       2:45. We are back in session.

23                Before we took our break, there was a motion to  
24       strike joined in by various people and responded to by  
25       various people.

1           We will take that under advisement and we will  
2 ask -- I believe it was -- Well, I'll ask Mr. Jackson,  
3 since he made the original motion -- well, he and  
4 Mr. Keeling -- to provide us with the exact citation of  
5 portions from Dr. Thornberg's testimony that you wish to  
6 strike.

7           You do not have to do that now. We will --

8           MR. JACKSON: I can do that now.

9           CO-HEARING OFFICER DODUC: Okay.

10          MR. JACKSON: I mean, as far as the motion's  
11 concerned.

12          It would be everything from the beginning of --

13          CO-HEARING OFFICER DODUC: Part 3?

14          MR. JACKSON: -- Part 3 through -- through  
15 Part 3.

16          CO-HEARING OFFICER DODUC: Through the end.

17          MR. JACKSON: Through the end.

18          CO-HEARING OFFICER DODUC: We will take that  
19 under advisement, but for now, I will allow you to  
20 proceed with your cross-examination, Mr. Jackson.

21          And . . . how much time do you anticipate  
22 needing?

23          MR. JACKSON: Well, that makes it a little  
24 longer, because the -- I now need to protect as if you  
25 were going to rule against me in the future. So I need

1 to kind of make the record.

2 CO-HEARING OFFICER DODUC: Okay. Well, let's  
3 be very clear: We have not ruled.

4 MR. JACKSON: I know you haven't.

5 CO-HEARING OFFICER DODUC: You have not been  
6 victimized yet. There is no double standards; okay?

7 MR. JACKSON: I think -- Yes, and I may have at  
8 times not articulated --

9 CO-HEARING OFFICER DODUC: And insulted the  
10 Hearing Officer?

11 (Laughter.)

12 MR. JACKSON: I -- I don't know whether I  
13 insulted her or not. That's up to her.

14 And if I did, I apologize.

15 CO-HEARING OFFICER DODUC: All right,  
16 Mr. Jackson.

17 Miss McGinnis, with this slight change, let's  
18 go ahead and let your Panel 2 know that we will not need  
19 them till tomorrow.

20 MS. MCGINNIS: Thank you.

21 CO-HEARING OFFICER DODUC: At which time, for  
22 Mr. Aladjem, who may or may not be listening, we will  
23 resume with his cross-examination of your remainder of  
24 Panel 2, actually, with the assumption that we're getting  
25 through this panel today, which now may or may not be the

1 case. But in any case, we will not get to your Panel 2  
2 until tomorrow.

3 And Miss Heinrich has a question.

4 MS. HEINRICH: I do, because now I'm confused  
5 about the scope of the motion to strike, because Part 3  
6 of Dr. Thornberg's testimony begins at Page 26 and  
7 continues through . . .

8 WITNESS THORNBERG: Actually, Part 3 starts on  
9 Page 33. I think there's Roman Numerals and parts there.

10 MS. HEINRICH: Oh, okay.

11 CO-HEARING OFFICER DODUC: There's a heading  
12 that says Part 3.

13 MS. HEINRICH: Okay.

14 CO-HEARING OFFICE DODUC: Yes.

15 MS. HEINRICH: So that --

16 WITNESS THORNBERG: We put the wrong --

17 MS. HEINRICH: -- begins on Page 33?

18 Is that right?

19 MR. JACKSON: Yes, Line 22.

20 MS. HEINRICH: Do I have a different version,  
21 because my Page 33 has a Part IV. Oh, it's Roman IV,  
22 Part 3.

23 MR. JACKSON: It's a Roman Numeral.

24 MS. HEINRICH: So just that Roman Numeral IV,  
25 beginning on Page 33 through . . . all the way through to

1 Page 43? All of Roman Numeral IV?

2 CO-HEARING OFFICER DODUC: Because Roman  
3 Numeral V is Conclusion.

4 MR. JACKSON: Yes. The conclusion -- The  
5 reason I would suggest the conclusion is that, as you  
6 will see with the next set of questions, we end up with  
7 these water users could receive compensatory payments for  
8 that injury. The unrealistically high standard is still  
9 there.

10 All of this is part of -- relies on Part IV,  
11 and if we're going to put it into -- into the second part  
12 of the hearing, I would assume that it's hard to parse  
13 the conclusion.

14 MR. BERLINER: I guess now I'm confused. I  
15 thought we were looking at a motion that was concerned  
16 about arguing for damages statewide or benefits  
17 statewide --

18 CO-HEARING OFFICER DODUC: Yes.

19 MR. BERLINER: -- as against damages in the  
20 Delta.

21 So there's a number -- Without getting into the  
22 merits of the -- of the motion itself, but just there's a  
23 number of pages in here that have nothing to do with that  
24 question.

25 For instance, the first few pages are merely

1 summarizing other -- the witness' testimony. I mean, not  
2 Dr. Thornberg's testimony but the other testimony.

3 So I think it would be helpful, rather than  
4 trying to do this here, get a little more precision on  
5 exactly which pages or paragraphs so that --

6 CO-HEARING OFFICER DODUC: Yes.

7 MR. BERLINER: -- we get it exactly right.

8 MR. KEELING: I agree with Mr. Berliner --

9 CO-HEARING OFFICER DODUC: Yes.

10 MR. KEELING: -- and tomorrow morning, we will  
11 have just that for you.

12 CO-HEARING OFFICER DODUC: Thank you. Much  
13 appreciated.

14 All right, Mr. Jackson, please proceed.

15 MR. JACKSON: Calling your attention to

16 Page 35.

17 Oh, wait. Let me see where I was.

18 On Page 34, Line 18.

19 (Document displayed on screen.)

20 MR. JACKSON: Again, Dr. Thornberg, you -- you  
21 indicate your disagreement with Dr. Whitelaw setting this  
22 high standard.

23 And then, in Line 20 to 22, you talk about

24 (reading):

25 ". . . his claims overlook the possibility of



1           compensatory payments . . ."

2           Do you know whether or not compensatory  
3 payments are allowed in a no injury case?

4           WITNESS THORNBERG: Again, sir, it sounds like  
5 you're asking me a legal question.

6           This is strictly an economic conversation I'm  
7 having here. And I'm suggesting that, say, in the  
8 broader index of, as noted earlier, eminent domain, that  
9 compensatory payments are a regular part of that in order  
10 to make up for specific injury.

11           In no way, shape or form am I discussing the  
12 legal framework here as I'm not a lawyer and wouldn't  
13 know how to do that.

14           MR. JACKSON: Do you know whether the State  
15 Board is allowed to authorize condemnation for water  
16 rights in a Change Petition?

17           WITNESS THORNBERG: I'm --

18           MR. BERLINER: Objection.

19           CO-HEARING OFFICER DODUC: He will answer he  
20 does not know.

21           WITNESS THORNBERG: I do not know.

22           MR. JACKSON: On Page 35, Lines 8 --

23           (Document displayed on screen.)

24           MR. JACKSON: -- through 17, again, you  
25 indicate in this case that (reading):

1           ". . . Dr. Michael overlooked the substantial  
2           economic impact of construction, operations, and  
3           maintenance of the WaterFix."

4           Do you see that part?

5           WITNESS THORNBERG: Yes.

6           MR. JACKSON: That compensation would go to  
7           people other than the individual water rights holders;  
8           correct?

9           WITNESS THORNBERG: Oh, that's -- Yes.  
10          Obviously, the point here is that there were, in the  
11          context of Dr. Michael's testimony, numerous allegations  
12          to broader harm beyond farmers.

13          For example, he suggested that the local  
14          logistics industry would be harmed by the result of the  
15          construction of the Projects. In fact, that was in part  
16          of the testimony we analyzed.

17          We were responding largely to that sort of  
18          claim by pointing out that -- Well, first of all, it's  
19          not even clear why the construction itself would harm the  
20          growing logistics industry in San Joaquin.

21          But, equivalently, if we're going to talk about  
22          the harm to, say, logistics caused by the construction of  
23          this tunnel, we need to talk about the potential benefits  
24          to the logistics industry.

25          Because local logistics industry would probably

1 be largely assigned to moving the materials back and  
2 forth and, thus, might actually benefit from the actual  
3 construction here.

4 MR. JACKSON: So what you're portraying is a  
5 cost benefit analysis?

6 WITNESS THORNBERG: Sure, it's a cost benefit.  
7 That's exactly what I'm talking about.

8 MR. JACKSON: And the -- In a cost benefit  
9 analysis, do you look at the benefits to the individual  
10 water rights holder only and the cost to the individual  
11 water rights holder only?

12 WITNESS THORNBERG: If a cost benefit analysis  
13 is done properly, it would look at the costs and the  
14 benefits to everyone, not just a subset of people who  
15 would be in some way impacted by the operation and  
16 construction of this infrastructure Project.

17 MR. JACKSON: So, again, a statewide look?

18 WITNESS THORNBERG: Or even a local look  
19 because a lot of the positive impacts of construction of  
20 these tunnels would flow right into the San Joaquin --  
21 right into the local economy of this county.

22 MR. JACKSON: You almost got it.

23 The . . . The -- The Delta economy . . .

24 Do you know whether or not the people in the  
25 Delta would get any of the water from the fix?

1 WITNESS THORNBERG: I --

2 MR. BERLINER: Objection: Asked and answered.  
3 We've been through all of this before.

4 CO-HEARING OFFICER DODUC: Your answer is you  
5 do not know.

6 WITNESS THORNBERG: I'm not even sure what the  
7 question is, to be honest.

8 MR. JACKSON: Well, I mean, isn't the value of  
9 the water something that you are talking about as a  
10 benefit to people in Southern California? Doesn't it say  
11 that "water agencies . . . receiving State Water Project  
12 and CVP supplies from the Delta would fund the WaterFix"?

13 WITNESS THORNBERG: Yeah, we are to understand  
14 that is what it is.

15 MR. JACKSON: And so is it your understanding  
16 that any of that water would go to the people of the  
17 Delta?

18 MR. BERLINER: Again, asked and answered.  
19 We've been through this whole thing before.

20 MR. JACKSON: I --

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

22 MR. JACKSON: I'm simply trying to figure out  
23 what he --

24 CO-HEARING OFFICER DODUC: I understand.

25 MR. JACKSON: Okay.

1 CO-HEARING OFFICER DODUC: So, Dr. Thornberg,  
2 that statement beginning on Line 15, are you -- are you  
3 referring to any particular water agencies? Do you have  
4 any knowledge in terms of where these water agencies are,  
5 who they are that might benefit from this new spending to  
6 which you are referring?

7 WITNESS THORNBERG: The new spending I'm  
8 talking about there would be spending within the local  
9 economy, driven by the construction and operation and  
10 maintenance of the WaterFix Project. That spending is  
11 funded by the water agencies outside the region.

12 In other words, it's external money flowing  
13 into the local economy.

14 CO-HEARING OFFICER DODUC: So you're not  
15 referring to water. You're referring to spending as a  
16 result of the construction.

17 WITNESS THORNBERG: Correct, and maintenance  
18 and operation of the tunnels.

19 MR. JACKSON: Have you done any work on your  
20 own to come to that conclusion?

21 WITNESS THORNBERG: Have I done any work on my  
22 own to come to what conclusion?

23 MR. JACKSON: To come to the conclusion that  
24 this spending would come from any particular place?

25 MS. MCGINNIS: Objection: Vague.

1           What do you mean "on your own"? Do you mean  
2 the work he --

3           MR. JACKSON: I mean --

4           MS. MCGINNIS: Sorry. It's unclear whether he  
5 means the work that Dr. Thornberg did to produce --

6           CO-HEARING OFFICE DODUC: I think any work.

7           MS. MCGINNIS: -- his rebuttal testimony, or  
8 does he mean other --

9           MR. JACKSON: Other work --

10          MS. MCGINNIS: You mean other work?

11          MR. JACKSON: -- to come to this conclusion.

12          MS. MCGINNIS: Other work not related to his  
13 work prepping his rebuttal testimony?

14          MR. JACKSON: Correct.

15          WITNESS THORNBERG: Yes, I've done work  
16 external to this Project, and I am to understand from  
17 that work that this WaterFix will be funded by rate  
18 payers outside the region.

19          MR. JACKSON: And that was work that you did  
20 for the Metropolitan.

21          WITNESS THORNBERG: Water District, yes, that's  
22 correct.

23          MR. JACKSON: On Page 39, Line 15 --

24                 (Document displayed on screen.)

25          MR. JACKSON: -- you have a heading saying

1 (reading):

2 "Negative Outcomes Do Not Outweigh Benefits of  
3 the WaterFix.

4 What analysis did you do? Did you do any  
5 quantitative analysis of the negative outcomes and the  
6 benefits?

7 WITNESS THORNBERG: We did a quantitative  
8 analysis of the negative outcomes. That is, of course,  
9 the previous two sections where I looked at the impact of  
10 changes in salinity and yields, and changes in salinity  
11 on crop choices.

12 And, again, what we found was no evidence that,  
13 within these ranges, salinity has an impact on yield or  
14 crop choices. As such, we don't find any economic harm.

15 As such, in many ways, any positive benefit  
16 from this construction in the area would seem to largely  
17 outweigh things.

18 Now, have we done the specific calculation on  
19 this? No, we have not. We were not asked to go that far  
20 in the context of our analysis, but I'm fairly  
21 comfortable my intuition would hold if we actually did  
22 get into a deeper empirical analysis of that particular  
23 question.

24 \$15 billion is a lot of money to spend. And  
25 having done any multiple analyses on large construction

1 projects, I have a good sense that those do have a  
2 dramatic impact on local economies. A lot of money flows  
3 in locally.

4 MR. JACKSON: You're pointing to your intuition  
5 as a source of this.

6 WITNESS THORNBERG: No. I'm pointing to my  
7 20-plus years experience looking at these kind of issues,  
8 sir.

9 MR. JACKSON: And did you write a report on  
10 that?

11 WITNESS PARKER: There is a report written on  
12 some of these issues, but at this point in time, it has  
13 not been produced publicly.

14 MR. JACKSON: I think on Line 42 -- or on  
15 Page 42, Line 5, is it fair to say that all of the  
16 information in this heading is simply a repetition of --  
17 and perhaps an elaboration of your dispute with  
18 Dr. Whitelaw's interpretation of "no injury"?

19 WITNESS THORNBERG: Again, it's -- Yes, I guess  
20 you could say that.

21 MR. JACKSON: All right. Specifically at  
22 Line 11 through Line 17, you recount that (reading):

23 "Dr. Whitelaw claimed that D-1641 standards do  
24 not cover all aspects of quality or quantity . . .  
25 that might injure other legal users of water."



1 CO-HEARING OFFICER DODUC: Hold on. Hold on,  
2 Mr. Jackson.

3 I think we have a static something. Can we  
4 check the microphones?

5 MR. JACKSON: There was a problem with the  
6 Webcast yesterday.

7 CO-HEARING OFFICER MARCUS: Oh, really?

8 MR. JACKSON: It went off late in the  
9 afternoon.

10 CO-HEARING OFFICER DODUC: Around 5:00?

11 (Laughter.)

12 MR. JACKSON: No. Around -- Our best guess  
13 would be around 4:15.

14 CO-HEARING OFFICER DODUC: Oh. While we're  
15 addressing that, how much time do you anticipate needing?

16 MR. JACKSON: Well, since I'm only . . . three  
17 pages and -- and four or five lines with my pen, I would  
18 estimate that I'm within six or seven minutes.

19 CO-HEARING OFFICER DODUC: Okay.

20 Let's be generous and give Mr. Jackson 10  
21 minutes.

22 MR. JACKSON: Are we ready to start?

23 CO-HEARING OFFICER DODUC: The static has gone  
24 away, yes.

25 MR. JACKSON: Okay. Do you know what D-1641

1 is?

2 WITNESS THORNBERG: It has to do with salinity  
3 standards.

4 MR. JACKSON: Do you know that it's fish  
5 standards?

6 WITNESS THORNBERG: I'm not exactly sure what  
7 that means, but from what I understand, it has to do with  
8 salinity standards.

9 MR. JACKSON: The -- Is it your -- Is it your  
10 position that D-1641 and its standards do cover all  
11 aspects of quality and quantity that might injure water  
12 users?

13 MR. BERLINER: Objection: Outside the scope of  
14 his testimony. He's taking a very narrow look here.

15 CO-HEARING OFFICER DODUC: Mr. Thornberg, do  
16 you even know?

17 WITNESS THORNBERG: No. Again, to be clear, my  
18 testimony is wrapped around the estimated impact of  
19 salinity on yields and, therefore, the economic harm  
20 being created. That is what my testimony's about. These  
21 broader issues I have not looked into.

22 MR. JACKSON: So is it -- is it fair to say  
23 that if Dr. Whitelaw did look into those broader issues,  
24 you don't have a particular disagreement with his  
25 testimony?

1 CO-HEARING OFFICER DODUC: He did not look at  
2 that.

3 WITNESS THORNBERG: I did not look at it, and  
4 to say that, because I did not look at it, I would agree  
5 with it, that's at best a reach, sir.

6 MR. JACKSON: I . . . I didn't say you did. I  
7 said, will you -- will you agree that, if you looked at  
8 it, and you didn't, then you don't have a disagreement?

9 MS. MORRIS: Objection: Asked and answered and  
10 ambiguous.

11 CO-HEARING OFFICER DODUC: Mr. Jackson, the  
12 logic there sort of escapes me.

13 MR. JACKSON: Well, the logic was that if he  
14 had not reviewed anything, did not testify that there was  
15 anything wrong with Mr. Whitelaw's testimony in the -- in  
16 regards to D-1641, that -- that -- that there's -- he  
17 didn't find anything that he could point to that was  
18 wrong.

19 CO-HEARING OFFICER DODUC: But he also didn't  
20 look, so he can neither confirm nor deny that.

21 MS. MCGINNIS: I'd also like to add an  
22 objection based on relevance.

23 We've already gone over and over about what  
24 Dr. Thornberg looked at in Mr. -- Dr. Whitelaw's  
25 testimony.

1 CO-HEARING OFFICER DODUC: All right.

2 Mr. Jackson, we'll move on.

3 MR. JACKSON: All right. On Page 43, Line 4  
4 and 5, you -- you testify that (reading):

5 "Ideally, the most economically sound decision  
6 would be to maximize social (sic) benefits" --

7 CO-HEARING OFFICER DODUC: Societal.

8 MR. JACKSON: What?

9 CO-HEARING OFFICER DODUC: Societal.

10 WITNESS THORNBERG: It's not "social benefits";  
11 it's "societal benefits."

12 MR. JACKSON: Societal benefits.

13 Is it . . . Is it possible that, in maximizing  
14 societal benefits, the optimal allocation of water that  
15 you talk about to people in the Delta and out of the  
16 Delta, that that might not be the way that California  
17 water law system works?

18 MS. MCGINNIS: Objection: Calls for a legal  
19 conclusion.

20 CO-HEARING OFFICER DODUC: Sustained.

21 What do you mean by "optimal allocation"?

22 WITNESS THORNBERG: Water is a scarce resource  
23 in any service resource. And a scarce resource needs  
24 it's to be allocated to its highest-value uses, whatever  
25 that happened to be.

1           So, for example, in the context of, I don't  
2 know, the oil industry, we have open markets for oil  
3 where a price for oil is set at a certain level and those  
4 who find that price acceptable in the context of their  
5 business operations will buy, and those that find the  
6 value of that oil and whatever they want to do with it is  
7 not valuable will not buy it.

8           So, in other words, I could -- Would you like  
9 me to state that again?

10           CO-HEARING OFFICER DODUC: When -- When you use  
11 the terminology "an optimal allocation of water to Delta  
12 and non-Delta water users."

13           WITNESS THORNBERG: That's just another way of  
14 talking again about this broader cost benefit analysis;  
15 that --

16           CO-HEARING OFFICER DODUC: You don't have a  
17 specific idea of what -- that optimal allocation level.

18           WITNESS THORNBERG: Again, given -- I'm not  
19 even going to go there, given that we've already heard a  
20 lot about how this testimony is supposed to be largely on  
21 the impacts on ag industry.

22           CO-HEARING OFFICER DODUC: Well, I asked that  
23 in terms of -- as an economist.

24           WITNESS THORNBERG: As an economist?

25           CO-HEARING OFFICER DODUC: Yes.

1                   WITNESS THORNBERG: There is obviously a  
2 situation in California where we are going through  
3 periods of dry spells and there's questions about how we  
4 allocate this scarce resource.

5                   CO-HEARING OFFICER DODUC: Um-hmm.

6                   WITNESS THORNBERG: Right now, we don't use  
7 market sale to get that resource, where we have these  
8 historic rights that determine things. And it doesn't  
9 allow the movement of resources hither and thither. And,  
10 as such, what we would call societally suboptimal  
11 outcomes arise.

12                   I can give a number of examples of that. I'm  
13 not sure you want me to get too deep about it but . . .

14                   It goes back to this broader idea that every  
15 conversation needs to have -- When you start talking  
16 about water, or the use of the water in the Delta  
17 relative, shall we say, to the operation of these  
18 particular tunnels, a true cost benefit analysis is going  
19 to look beyond the ag users just in the Delta region  
20 itself from an economic, theoretical perspective, not  
21 a -- It's not a legal interpretation.

22                   I'm just saying you'd have to consider those  
23 folks outside the Delta region to make a proper economic  
24 decision.

25                   CO-HEARING OFFICER DODUC: So I take it from

1 what you said -- Actually, the first part of your  
2 response to my question is based on your, granted,  
3 limited understanding of the water rights system.

4 You don't believe that it would fit within an  
5 economist's view of optimal allocation -- of optimal  
6 allocation.

7 WITNESS THORNBERG: No, I do not think so.

8 CO-HEARING OFFICER DODUC: Okay. Thank you.

9 MR. JACKSON: May I follow up on your question?

10 CO-HEARING OFFICER DODUC: Sure.

11 MR. JACKSON: In this optimal allocation, would  
12 you include the environment of the Delta?

13 WITNESS THORNBERG: That would be --

14 MS. MCGINNIS: Objection: Scope.

15 CO-HEARING OFFICER DODUC: Hold on.

16 MS. MCGINNIS: This is a Part 2 issue.

17 CO-HEARING OFFICER DODUC: Mr. Jackson, what's  
18 that question again?

19 MR. JACKSON: Would it include the value of the  
20 environment in the Delta in his optimum allocation of  
21 someone using water.

22 CO-HEARING OFFICER DODUC: It's a fair enough  
23 question pending on the ruling on the motion that  
24 Mr. Jackson previously made.

25 WITNESS THORNBERG: Yes, of course, it would.

1           MR. JACKSON: And it would include all of the  
2 species that inhabit that --

3           MS. MCGINNIS: Same --

4           MR. JACKSON: -- environment?

5           MS. MCGINNIS: -- objection. Same objection.

6           WITNESS THORNBERG: Again, sir, the cost  
7 benefit analysis would include all these factors. And as  
8 far as that goes, I mean, I understand there's very  
9 complicated questions involved with valuing those sort of  
10 things.

11           CO-HEARING OFFICER DODUC: And we're not going  
12 to get into the details nor the specifics.

13           WITNESS THORNBERG: Thank you.

14           MR. JACKSON: And one more, and, you know, I  
15 don't know what you're going to do with it, so . . .

16           CO-HEARING OFFICER DODUC: Move to strike.

17   (Laughter.)

18           MR. JACKSON: Okay. I may grant it.

19   (Laughter.)

20           MR. JACKSON: The --

21           CO-HEARING OFFICER DODUC: Mr. Herrick is going  
22 to be so widely quoted.

23           MR. JACKSON: The . . . Other things that a  
24 true cost benefit analysis would look at is, are there  
25 alternative water sources to this place; correct?



1 MS. MCGINNIS: Beyond the scope.

2 WITNESS THORNBERG: We have to --

3 MS. MCGINNIS: Objection: Beyond the scope.

4 CO-HEARING OFFICER DODUC: Hold on.

5 I'm interested in his answer as an economist.

6 WITNESS THORNBERG: The answer is, yes, you  
7 would have to look at various sorts of other potential  
8 water. So you would have to, in other words, consider a  
9 broader picture of different sources of supply compared  
10 to relative costs accordingly.

11 MR. JACKSON: And then balance all of that.

12 CO-HEARING OFFICER DODUC: In a true --

13 WITNESS THORNBERG: It's tough job, but  
14 someone's got to do it.

15 CO-HEARING OFFICER DODUC: In a true cost  
16 benefit analysis.

17 MR. BERLINER: Same objection.

18 CO-HEARING OFFICER DODUC: All right. I think  
19 Mr. Jackson is done.

20 MR. JACKSON: I am.

21 CO-HEARING OFFICER DODUC: Thank you.

22 Miss Suard, I believe you're up.

23 MS. DES JARDINS: Miss Doduc, is there a chance  
24 I could ask my question? I know I didn't have one in  
25 advance, but there was -- my question that I had --

1 CO-HEARING OFFICER DODUC: I'm sorry. You need  
2 to come to the microphone.

3 MS. DES JARDINS: Yeah.

4 CO-HEARING OFFICER DODUC: I don't have you on  
5 my list of people who requested --

6 MS. DES JARDINS: Yes. I didn't request it in  
7 advance. It was just listening to Mr. Jackson's cross.

8 CO-HEARING OFFICER DODUC: And so it would be  
9 very short?

10 MS. DES JARDINS: It's just one question.

11 CO-HEARING OFFICER DODUC: All right. Go  
12 ahead, Miss Des Jardins.

13 MS. DES JARDINS: And I'd like you to pull --

14 CO-HEARING OFFICER DODUC: Hold up. Hold on.  
15 Don't ask until you sit down.

16 MS. DES JARDINS: May --

17 CO-HEARING OFFICE DODUC: And speak into the  
18 microphone.

19 MS. DES JARDINS: -- we pull up SWRCB-1.

20 My -- This is -- My name is Dierdre Des Jardins  
21 with California Water Research.

22 And I'd like you to pull up SWRCB-1, please.

23 (Document displayed on screen.)

24 MS. DES JARDINS: And scroll down.

25 (Scrolling down document.)

1 MS. DES JARDINS: There we go.

2 And on -- down to the list on Page 3.

3 (Scrolling down document.)

4 MS. DES JARDINS: Scroll down just a little.

5 (Scrolling down document.)

6 MS. DES JARDINS: There we go.

7 CROSS-EXAMINATION BY

8 MS. DES JARDINS: So Mr. -- This is a question  
9 for Mr. Thornberg. And this is the cover letter that  
10 came with the Petition.

11 And it said (reading):

12 "The California WaterFix would also advance the  
13 State's water supply goals by:

14 "Upgrading the SWP/CVP water conveyance system  
15 in a manner that improves the ability to capture  
16 water during wet years and store it for use during  
17 dry years."

18 CO-HEARING OFFICER DODUC: Miss Des Jardins --

19 MS. DES JARDINS: Read the section on Page 3.

20 But it says (reading):

21 "Protecting against . . . disruptions  
22 associated with . . . earthquakes . . ."

23 CO-HEARING OFFICER DODUC: And your question  
24 is?

25 MS. DES JARDINS: (Reading):

1           ". . . and sea level rise."

2           When you talk about the State economic  
3 benefits, are these the kinds of considerations, this --  
4 Are you considering assertions such as these?

5           MS. MCGINNIS: Objection: Beyond the scope of  
6 this witness' rebuttal testimony.

7           CO-HEARING OFFICER DODUC: Well, he did raise  
8 the issue of broader benefits, so unless and until such  
9 time that we rule on Mr. Jackson's motion, the objection  
10 is overruled.

11           Please answer.

12           WITNESS THORNBERG: These would be the kind of  
13 things you would take into account, yes.

14           MS. DES JARDINS: And you're relying on these  
15 kind of assertions in your assessment of Statewide  
16 benefits?

17           MS. MCGINNIS: Objection.

18           CO-HEARING OFFICER DODUC: No, I don't believe  
19 he said that.

20           MS. DES JARDINS: Okay. But these are the sort  
21 of things that you would.

22           WITNESS THORNBERG: This would be some of the  
23 potential things you might consider in the context of a  
24 broader analysis, yes.

25           MS. DES JARDINS: But you haven't evaluated

1 these in detail.

2 WITNESS THORNBERG: Not in the context of this  
3 testimony, no, I have not.

4 MS. DES JARDINS: All right. Thank you.

5 CO-HEARING OFFICER DODUC: All right.

6 Miss Suard, and then --

7 WITNESS THORNBERG: I'm sorry. May I  
8 interrupt?

9 So it looks like we are going to be going  
10 longer than expected, which is perfectly fine, but I'm  
11 going to have to change my flight.

12 Would you allow us a five-minute break so I can  
13 log in to southwest.com and go ahead and make that  
14 change?

15 CO-HEARING OFFICER DODUC: Yes, we will do  
16 that.

17 We will resume at 3:25. Do you need more time  
18 than that?

19 WITNESS THORNBERG: No. It should be very  
20 quick and simple.

21 CO-HEARING OFFICER DODUC: Well, we'll resume  
22 as soon as Dr. Thornberg acquires his new flight.

23 (Pause in proceedings.)

24 CO-HEARING OFFICE DODUC: Is the Webcast still  
25 on?

1 MR. OCHENDUSKO: Yes.

2 CO-HEARING OFFICER DODUC: Let me take this  
3 opportunity, since we're sort of taking a mini break  
4 here, to let people know that we do not have to change  
5 rooms tomorrow. We will be in Byron Sher the entire day.

6 MS. MCGINNIS: Thank you.

7 (Recess taken at 3:17 p.m.)

8 (Proceedings resumed at 3:27 p.m.)

9 CO-HEARING OFFICER DODUC: All right. While  
10 Dr. Thornberg is still working out his issues with  
11 Southwest, why don't we ask Miss Suard to begin her  
12 cross-examination with Dr. Kimmelshue.

13 And the things you'll be covering, Miss Suard?

14 MS. SUARD: I'm covering -- Yes. Nicky Suard  
15 with Snug Harbor.

16 And I did ask Mr. Keeling to assist me in  
17 talking to the economist because I'm not really used to  
18 litigation and cross-examination, especially with  
19 somebody in economy.

20 So -- But I would like to talk to ask  
21 Dr. Kimshue -- Kimmelshue, sorry -- just a few questions.

22 I did want to point out that I put on my tag  
23 that I am, I believe, from the last discussion,  
24 suboptimal because I do -- I am one of those water  
25 rights -- riparian water rights in the Delta that was

1 listed or claimed to be suboptimal use. And I object to  
2 that so . . .

3 CO-HEARING OFFICER DODUC: Hold on.

4 MS. SUARD: Could we get --

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

7 Don't -- Don't -- When you use words such as  
8 "object," I actually have to take notice and respond.

9 So is that a formal objection, Miss Suard? And  
10 if so, to what specifically?

11 MS. SUARD: The phrase was used, riparian water  
12 rights holders in the Delta were -- could be considered  
13 suboptimal use. That's what I heard.

14 However, I think I'll withdraw it.

15 CO-HEARING OFFICER DODUC: Thank you for  
16 withdrawing that.

17 MS. SUARD: Yeah.

18 MS. MCGINNIS: Robin McGinnis, Department of  
19 Water Resources.

20 Just for a point of clarification, I'm  
21 wondering -- Mr. Keeling, I'm wondering who he's  
22 representing right now. Is he representing his normal  
23 clients, or is he representing Snug Harbor --

24 CO-HEARING OFFICE DODUC: He is --

25 MS. MCGINNIS: -- or he is representing --

1 CO-HEARING OFFICER DODUC: He is assisting  
2 Miss Suard.

3 MS. SUARD: Yes. He's -- I requested that he  
4 assist me because there are some questions about the  
5 economics of what was presented that do directly impact  
6 Snug Harbor.

7 CO-HEARING OFFICER DODUC: Similar to the way  
8 that Mr. Berliner assisted Miss Aufdemberge the other  
9 day.

10 So, Miss Suard, putting aside that objection  
11 now that you've withdrawn, what are your questions for --

12 Oh, is Dr. Thornberg officially back?

13 All right. So what are your questions for both  
14 Dr. Thornberg and Dr. Kimmelshue?

15 MS. SUARD: I'll start with Dr. Kimmelshue.

16 Sir --

17 CO-HEARING OFFICER DODUC: Sorry. Your topic  
18 areas.

19 MS. SUARD: Topic area is specifically related  
20 to his testimony on -- on EC and crop impacts, and  
21 specifically on Steamboat Slough.

22 CROSS-EXAMINATION BY

23 MS. SUARD: Are you familiar with where  
24 Steamboat Slough is, sir?

25 WITNESS KIMMELSHUE: I am not.



1 MS. SUARD: Okay. Can we get SHR-354, I  
2 believe it is -- we had to change the numbers -- and it's  
3 Page 4. If that could come up so we can help him to  
4 understand where this is.

5 (Document displayed on screen.)

6 CO-HEARING OFFICER DODUC: And what is it that  
7 we're looking at?

8 MS. SUARD: We're looking at a map of the North  
9 Delta with Steamboat Slough emphasized, and I -- There's  
10 a bunch of blue arrows that -- The map comes from -- It's  
11 a screen print on 430, or something like that, CDEC.

12 And when I added to this map, as I say over to  
13 the right, I put blue arrows to show where there are  
14 different people, residential houses, commercial  
15 properties, that are on Steamboat Slough, not behind the  
16 levees, so they're on Steamboat Slough.

17 So I wanted to emphasize that that is -- what  
18 happens on the water and the waterways in the Delta may  
19 be different -- I'm going to ask you the question.

20 Is the water quality on the -- on the waterside  
21 of the levees, in your opinion, is it the same as the  
22 water quality on the other side of the levee on Steamboat  
23 Slough?

24 MS. MORRIS: Objection.

25 CO-HEARING OFFICER DODUC: Hold on.

1 Miss Morris.

2 MS. MORRIS: I'm going to object to the  
3 question first as outside the scope.

4 I am not sure how any of this has anything to  
5 do with Dr. Leinfelder-Miles' analysis and the leaching  
6 fraction, which is what Mr. Kimmelshue's entirety of  
7 rebuttal testimony is about.

8 And I'm going to object to this map, and it's  
9 unclear where it came from and what kind of circles are  
10 monitoring stations, what kind of monitoring they are.  
11 There's just no foundation for this map.

12 CO-HEARING OFFICER DODUC: Miss McGinnis.

13 MS. MCGINNIS: I will just join.

14 CO-HEARING OFFICER DODUC: Dr. Kimmelshue, to  
15 what extent do you have any familiarity with Steamboat  
16 Slough that was considered as part of your rebuttal  
17 testimony?

18 WITNESS KIMMELSHUE: I have no familiarity with  
19 it as considered with my rebuttal testimony.

20 CO-HEARING OFFICER DODUC: So do you have any  
21 knowledge about water quality conditions in that area?

22 WITNESS KIMMELSHUE: No.

23 MS. SUARD: Okay. Then let -- Can we go to  
24 your testimony, DWR page --

25 CO-HEARING OFFICER DODUC: So -- I'm sorry. So

1 does that mean that you are now withdrawing that exhibit  
2 to which Miss Morris objected?

3 MS. SUARD: The only purpose of -- of  
4 presenting this, which I've actually prepared for  
5 something else, is so our witness could understand the  
6 location in the Delta, because the North Delta and South  
7 Delta are different. The water quality is different.

8 I thought it would be important to understand  
9 we're talking about waterside versus within an island  
10 issues.

11 So I don't mind. We don't -- We'll take that  
12 one back down. I'm fine with that.

13 CO-HEARING OFFICER DODUC: Okay.

14 MS. SUARD: Let's --

15 CO-HEARING OFFICER DODUC: Objection sustained.

16 MS. SUARD: Okay. So can we go to DWR-85,  
17 Page 8, please.

18 (Document displayed on screen.)

19 MS. SUARD: Is this a chart you prepared, sir?

20 WITNESS KIMMELSHUE: No, it's not.

21 MS. SUARD: Who -- Who prepared this chart?

22 WITNESS KIMMELSHUE: This is a chart from Ayers  
23 and Westcot.

24 MS. SUARD: Okay. And the -- Does the chart  
25 represent salinity levels of applied water for different

1 types of crops; is that correct?

2 WITNESS KIMMELSHUE: The -- The chart  
3 represents -- Well, I'll just read the figure title for  
4 you(reading):

5 "Effect of applied water salinity . . . upon  
6 root zone salinity . . . at various leaching  
7 fractions."

8 So the purpose of the chart is to show that at  
9 different -- various leaching fractions, what you see in  
10 the diagonal lines and leading out from the axis --  
11 center of the axis and general categories of crops on the  
12 left side, tolerant crops, moderately tolerant crops,  
13 moderately sensitive crops, and sensitive crops, and it  
14 relates the water salinity to the soil salinity.

15 So if you had a water salinity and you were  
16 targeting a leaching fraction, you could go up at your  
17 leaching fraction line and over to see what your  
18 resultant soil salinity line would be.

19 And what that number would relate to would be  
20 your crop that you're growing and how sensitive that  
21 would be. And it would tell me what your leaching --  
22 basically, in a very rough. This is just very rough,  
23 intending to be demonstrative -- a very rough sense what,  
24 if you were a grower and you knew what your water  
25 salinity was, where you could end up to be the soil --

1 the salinity that would relate to your crop tolerance.

2 MS. SUARD: Okay. Thank you.

3 Would you assume that soil that is waterfront  
4 and in tidal gets water on the land, would be similar to  
5 the -- the EC would somewhat match the water there at  
6 that location?

7 MS. MORRIS: Objection: Outside the scope of  
8 this witness' rebuttal testimony.

9 CO-HEARING OFFICER DODUC: Hold on. Let's  
10 allow her some room to make the linkage, which I expect  
11 you will; right?

12 MS. SUARD: Yes. I'm -- I'm referring  
13 specifically to a place called Snug Harbor and it's on  
14 Steamboat Slough, and it -- it -- We -- We have  
15 irrigation there --

16 WITNESS KIMMELSHUE: Um-hmm.

17 MS. SUARD: -- and we grow cherry trees.

18 So, specifically, if we would put little dots  
19 on your chart, where would cherry trees fit? If you were  
20 to put a red dot somewhere in there, what is the salinity  
21 level that -- where salinity would start impacting cherry  
22 trees?

23 MS. MORRIS: Same objection.

24 CO-HEARING OFFICER DODUC: Are you -- I noted  
25 your objection, but I'm going to give her a little bit of

1 leeway.

2 Dr. Kimmelshue, to what extent are you able to  
3 answer the question, not specific to Snug Harbor but to  
4 the crop of cherries, which I'm very fond of.

5 WITNESS KIMMELSHUE: Me, too.

6 First, I would determine a crop of cherry, and  
7 if it were sensitive, moderately sensitive, moderately  
8 tolerant, and probably digging more into the literature  
9 and see what actual number.

10 Because you'll see up there the moderately  
11 tolerant, the range is from three to six, so you have  
12 quite a range, intended to be, again, just a  
13 demonstrative figure.

14 And then I would understand what my water  
15 quality was and, again, come up from my water quality and  
16 over from my soil quality -- soil salinity, and you've  
17 got to know both of those, and you've got to understand  
18 that both change, so it's a bit dynamic; okay?

19 MS. SUARD: Yes.

20 WITNESS KIMMELSHUE: And -- And -- And get  
21 below that third dashed line there that's left of the  
22 word "soil" on the vertical axis to make sure that  
23 whatever leaching fraction I need at a water quality  
24 is -- is satisfied.

25 MS. SUARD: Okay. Thank you.

1           What about pears?

2           WITNESS KIMMELSHUE: Same thing.

3           MS. SUARD: Okay. What about lemon trees?

4           WITNESS KIMMELSHUE: Same approach.

5           MS. SUARD: What about live oak?

6           WITNESS KIMMELSHUE: This is a chart that is  
7 based on agronomic crops and not necessarily native or  
8 natural systems.

9           MS. SUARD: Okay.

10          WITNESS KIMMELSHUE: There's a lot more  
11 research that's gone on in ag -- agronomic crops, as you  
12 might imagine, that create figures like this, and -- and  
13 other research than there has been in native systems.

14          MS. SUARD: Okay. Thank you.

15          I think, other than to ask our economist -- I  
16 believe you covered cherries, didn't you, in your  
17 appendix?

18          WITNESS THORNBERG: Yes, we did.

19          MS. SUARD: Okay. And what was the EC expected  
20 for, like, as a sensitive plant that was in -- at the end  
21 of your appendix; right?

22          WITNESS THORNBERG: I'm sorry. I'm not sure I  
23 understand your question.

24          MS. SUARD: Did -- In -- In your estimation,  
25 were cherries a sensitive crop?

1                   WITNESS THORNBERG: No. If you look at our  
2 empirical analysis and you look at what happened in terms  
3 of cherry yield in, shall we say, high salinity years  
4 versus low salinity years, there was no evidence of  
5 reduced yield in those high salinity years in the Delta  
6 region. In fact, we came up with positive results that  
7 were a tiny bit statistically significant.

8                   Now, again, does salinity help cherries? I  
9 doubt it. I have to assume that that's a weather effect  
10 that we aren't able to fully control for. But we  
11 certainly didn't find any negative effects.

12                   CO-HEARING OFFICER DODUC: Miss Morris.

13                   MS. MORRIS: Yes. I think, again, for the  
14 record, that the question and the answer are not on the  
15 same wavelength.

16                   I think Miss Suard was asking about actual, are  
17 cherry trees sensitive? And Dr. Thornberg was answering  
18 about the economic impacts that he saw.

19                   So I think our record is unclear.

20                   MS. SUARD: I was just asking about sensitivity  
21 of cherry trees.

22                   CO-HEARING OFFICER DODUC: To which --

23                   MS. MORRIS: And I object.

24                   CO-HEARING OFFICE DODUC: To --

25                   MS. MORRIS: It's outside the scope of his



1 testimony.

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

4 To which, then, Dr. Thornberg would not have  
5 the information.

6 WITNESS THORNBERG: I would not have the direct  
7 information, no. I only have the ability to look at  
8 history of the situation and surmise accordingly.

9 MS. SUARD: I'm done with the cherry trees.

10 CO-HEARING OFFICER DODUC: And what topics are  
11 you exploring on behalf of Miss Suard, Mr. Keeling?

12 MR. KEELING: Tom Keeling appearing specially  
13 on behalf of Snug Harbor.

14 And I'm -- The bad news is, I have a lot. The  
15 good news is that, as a result of the myriad questions  
16 about injury and compensation that we heard earlier,  
17 along with all the colloquy, I've probably cut that down  
18 by 80 or 90 percent.

19 So although I may still have a couple of  
20 prefatory questions that are repetitious, for which I  
21 apologize in advance, I think I managed to cut it down to  
22 just a few of the spots that weren't covered, so if  
23 you'll bear with me there.

24 MS. MORRIS: I have a --

25 MR. KEELING: And then --

1 CO-HEARING OFFICER DODUC: Hold on.

2 Miss Morris.

3 MS. MORRIS: I object. This seems like a  
4 second bite at the apple for Mr. Keeling. Unless these  
5 question are specific to Snug Harbor and his special  
6 appearance today, I think this is unfair that he's having  
7 a second chance to ask additional questions.

8 CO-HEARING OFFICER DODUC: Actually, I don't  
9 think he asked first questions.

10 MR. KEELING: I never had a first chance.

11 CO-HEARING OFFICER DODUC: I understand.

12 MS. MORRIS: I asked for it.

13 CO-HEARING OFFICER DODUC: Miss Morris, I  
14 understand your concern.

15 I will take Mr. Keeling at his word that he is  
16 representing Miss Suard in this matter in asking these  
17 questions. Obviously, if anyone believes otherwise, they  
18 may object when his questions are asked.

19 MR. KEELING: And I have a question about  
20 Dr. Thornberg's reference to Dr. Whitelaw's claim about  
21 D-1641. Some of that has been obviated by Mr. Jackson.  
22 There's a specific quote. I'll give page and  
23 line.

24 CO-HEARING OFFICER DODUC: Please.

25 MR. KEELING: And I have a specific question

1 about a, quote, statement -- another statement made later  
2 in his testimony regarding legal users. And a -- a  
3 state -- a question about his testimony concerning the  
4 financing of the proposed WaterFix Project, which is in  
5 his written testimony.

6 CO-HEARING OFFICER DODUC: Which others have  
7 touched upon as well.

8 MR. KEELING: Yes, and I've cut that back.

9 CO-HEARING OFFICER DODUC: Okay.

10 MR. KEELING: And a clari -- an initial  
11 clarification question on his basic economics.

12 CROSS-EXAMINATION BY

13 MR. KEELING: Good afternoon, Dr. Thornberg.

14 WITNESS THORNBERG: (Nodding head.)

15 MR. KEELING: You would agree -- You agree, do  
16 you not, that the proposed WaterFix would generate  
17 negative externalities?

18 WITNESS THORNBERG: Could you be more specific,  
19 please?

20 MR. KEELING: What did you mean when you used  
21 the phrase "negative externalities"? I believe you  
22 defined it in your testimony.

23 CO-HEARING OFFICER DODUC: Perhaps you might  
24 point us to that.

25 WITNESS THORNBERG: Yeah, please. Could you

1 point --

2 MR. KEELING: What does the term "negative  
3 externalities" mean?

4 WITNESS THORNBERG: Is that a question?

5 First of all, there's a negative externality  
6 component and --

7 MR. KEELING: And I realize you talked about  
8 positive externalities as well.

9 WITNESS THORNBERG: No, I talked about impacts.  
10 You're confusing terms. Externality is a cost  
11 or benefit that is not being captured for some reason.  
12 It's a specific type of cost and/or benefits.

13 CO-HEARING OFFICER DODUC: And before we go  
14 down and have a lecture on externalities --

15 WITNESS THORNBERG: Absolutely.

16 CO-HEARING OFFICER DODUC: -- are you alleging  
17 that that is a term that is in his testimony?

18 MR. KEELING: That's where I remember seeing it  
19 but maybe -- maybe --

20 WITNESS THORNBERG: Would you tell me where it  
21 is, sir?

22 MR. KEELING: I think while we're here, we can  
23 search for it. I don't have a computer to search for it.  
24 Miss Meserve might.

25 But regardless of whether you used the term,

1 you're familiar with the concept of internalizing  
2 negative externalities; are you not?

3 WITNESS THORNBERG: Of course I am.

4 MR. KEELING: Of course you are.

5 Because you're an economist; aren't you? You  
6 aren't a lawyer.

7 WITNESS THORNBERG: No, I am not, sir.

8 CO-HEARING OFFICER DODUC: Well --

9 MR. KEELING: Will the Project, if built,  
10 generate negative externalities, that is to say, adverse  
11 impacts, economic or otherwise, that are not  
12 internalized?

13 CO-HEARING OFFICER DODUC: And I have to ask:  
14 Where is this within his rebuttal testimony?

15 Miss Meserve, do you have the answer?

16 MS. MESERVE: Yes, it's on Page 40, Line 16.

17 CO-HEARING OFFICER DODUC: Can we put it up so  
18 we can all see the context.

19 (Document displayed on screen.)

20 CO-HEARING OFFICER DODUC: Being an engineer  
21 and not an economist.

22 MR. BERLINER: I would point out that this is  
23 actually not Dr. Thornberg's testimony. He is indicating  
24 what Dr. Michael testified about.

25 If you look at the top of the page, where the

1 first reference is, it's Dr. Michael who claims that the  
2 WaterFix will impose negative externalities.

3 MR. KEELING: And at Line 16, Dr. Thornberg  
4 takes on that phrase and then says that Dr. Michael's  
5 ignoring the positive externalities, and that's why I'm  
6 asking these questions.

7 CO-HEARING OFFICER DODUC: And your question  
8 again is?

9 MR. KEELING: Well . . .  
10 You would agree, wouldn't you, that the  
11 proposed WaterFix would generate negative externalities?

12 CO-HEARING OFFICER DODUC: I don't believe his  
13 testimony says that.

14 MR. KEELING: You did take on Dr. Michael's  
15 claim about the Project generating negative  
16 externalities; did you not?

17 WITNESS THORNBERG: Again, sir, I'm a little  
18 confused by where you're going here.

19 But -- But to answer your question, does this  
20 Project create some potential negative consequence to  
21 some aspect of the overall economy? The answer is,  
22 probably yes, there will be some costs somewhere along  
23 the way.

24 I think of any major construction project as  
25 creating at some level some basic logistic difficulties

1 for the economy.

2 MR. KEELING: And you criticized Dr. Michael  
3 for not offsetting those negative externalities with a  
4 discussion of positive externalities; is that correct?

5 WITNESS THORNBERG: I think that if you're  
6 going to bring up issues such as the claim that the  
7 WaterFix might hurt the logistics industry because of  
8 traffic congestion, that you also reasonably have to  
9 discuss the possibility that the construction of the  
10 tunnels can help the logistics industry by the business  
11 it would bring to the local economy.

12 I think that's a fair general assessment, yes.

13 MR. KEELING: Have you attempted to quantify  
14 these positive externalities you refer to?

15 WITNESS THORNBERG: To be clear, sir, that was  
16 outside the, shall we say, testimony I was asked to  
17 provide.

18 MR. KEELING: Is it your position that the  
19 negative externalities should be balanced against  
20 positive externalities in this Board's decision-making  
21 with respect to the proposed WaterFix?

22 CO-HEARING OFFICER DODUC: Yes, I --

23 MS. MCGINNIS: Objection: Scope.

24 CO-HEARING OFFICER DODUC: And, yes, it's  
25 sustained.

1                   MR. KEELING: Take a look at Page 42. Page 42,  
2 Lines 11 through 12.

3                   (Document displayed on screen.)

4                   MR. KEELING: Please take a look at that,  
5 Dr. Thornberg, and also Page 42, Line 26 through Page 43,  
6 Line 1.

7                   You'll see that this refers to what you've  
8 characterized as Dr. Whitelaw's claim, quote, in that  
9 (reading):

10                   ". . . the D-1641 standards do not cover all  
11 aspects of quality or quantity conditions that might  
12 injure other legal users of water."

13                   Do you see that?

14                   WITNESS THORNBERG: Yes.

15                   MR. KEELING: And I apologize. I realize you  
16 were asked about this earlier and there was some  
17 colloquy, and I may be confused but I didn't get a clear  
18 answer.

19                   Do you disagree with Dr. Whitelaw's claim that  
20 you -- that you had --

21                   MS. MORRIS: Objection.

22                   MR. KEELING: -- that I just quoted from your  
23 testimony?

24                   MS. MORRIS: Objection: The witness didn't say  
25 anything about whether he agreed or not. He's just



1 saying that Dr. Whitelaw claims D-1641 standards do not  
2 cover. This witness didn't say anything about whether or  
3 not he did, so it's outside the rebuttal testimony.

4 MR. KEELING: Well, it kind of renders the --  
5 this --

6 CO-HEARING OFFICER DODUC: Hold one. Hold on.  
7 He's pointing out comments of Dr. Whitelaw's  
8 claim. So, ergo, if you're pointing out problems, does  
9 it mean you disagree?

10 WITNESS THORNBERG: I think, again, going back  
11 to this idea that he's sort of waving his hands and  
12 saying, there might be some other issues here, you know,  
13 candidly, if you think there are other issues, I guess  
14 the question would be, well, what are they? And can you  
15 please define them? And if you can define them, then  
16 perhaps we can begin to reasonably bring that into the  
17 context of a fuller analysis.

18 But beyond that, again, my primary testimony  
19 here was -- was about what these researchers were saying  
20 and, clearly, I don't have a distinct opinion as to  
21 whether or not that statement's true.

22 MR. KEELING: So the answer is, you do not have  
23 an opinion as to the truth or falsity or accuracy of this  
24 statement.

25 WITNESS THORNBERG: That is outside of my

1 testimony, sir.

2 MR. KEELING: Let's take a look at Page 42,  
3 Lines 14 through 17.

4 (Document displayed on screen.)

5 MR. KEELING: When you state (reading):

6 "The biggest problem with Dr. Whitelaw's claim  
7 is that the actual 'no injury' rule does not clearly  
8 translate to economic terms," and et cetera.

9 What did you mean by the phrase, "the actual  
10 'no injury' rule"?

11 WITNESS THORNBERG: That possibly is a . . .  
12 Well, probably poor choice of grammar.

13 But what he is defining as the no injury rule,  
14 or what he claims the no injury rule actually means,  
15 whatever his legal interpretation of it is.

16 MS. SUARD: So when you used the phrase "the  
17 actual 'no injury' rule," you're referring to something  
18 you think Dr. Whitelaw said?

19 WITNESS THORNBERG: I am referring to  
20 Dr. Whitelaw's interpretation of this no injury rule,  
21 yes.

22 MR. KEELING: But there's no distinction  
23 between the actual no injury rule and some other no  
24 injury rule that you're talking about.

25 MS. MORRIS: Objection: Asked and answered.

1 CO-HEARING OFFICER DODUC: Yes, sustained.

2 MR. KEELING: Did anyone tell you that this  
3 definition -- that -- that this definition, the one you  
4 apparently are using, is relevant -- of "no injury" is  
5 relevant to this proceeding?

6 MS. MCGINNIS: Objection: We have gone over ad  
7 nauseam with Mr. Jackson what --

8 MR. KEELING: Well, I don't --

9 MS. MCGINNIS: -- Dr. Thornberg did in his  
10 rebuttal testimony.

11 MR. KEELING: I --

12 MS. MCGINNIS: And it was an economist --

13 CO-HEARING OFFICER DODUC: Hold on. Hold on.  
14 I am sustaining your objection.

15 He applied his economist thinking to  
16 Dr. Whitelaw's no-injury analysis.

17 MS. MORRIS: I believe --

18 CO-HEARING OFFICER DODUC: He did not impose  
19 his own definition of no injury.

20 MS. MORRIS: I'd like to renew my objection.

21 I don't see how these questions are about Snug  
22 Harbor or along the lines of what's been asked in this  
23 proceeding.

24 These are Mr. Keeling's questions on his own  
25 notepad. And I think if he is going to do that, he

1 should have done it like everybody else following the  
2 rules.

3 MS. SUARD: If I may answer.

4 I met with Mr. Keeling, and I realize there are  
5 a lot of questions related to the economics in the Delta  
6 which I believe the current witness is incorrect. And I  
7 am one of those suboptimal water users -- that -- That  
8 was a word that he used -- and that it impacts the  
9 economy, and so I'm very concerned about those impacts.

10 I'm trying to understand how the general big  
11 picture of all of California can apply straight down to  
12 Snug Harbor specifically.

13 CO-HEARING OFFICER DODUC: I understand,  
14 Miss Suard.

15 To the extent that Mr. Keeling's question is  
16 adding value to the record and to our deliberation, I am  
17 again trusting his word and yours that they are  
18 reflecting your concerns, your issues, your questions  
19 which you otherwise would state.

20 So, with that, Miss Morris, your objection is  
21 overruled.

22 WITNESS THORNBERG: If I may, I never used the  
23 words "suboptimal water user."

24 CO-HEARING OFFICER DODUC: Yes. We actually  
25 had that discussion before you came in. And Miss Suard,

1 I think, withdrew her objection.

2 MR. KEELING: Mr. Baker, Page 43, Lines 1  
3 through 4.

4 (Document displayed on screen.)

5 MR. KEELING: Dr. Thornberg, I'll direct your  
6 attention to the two sentences that read as follows  
7 (reading):

8 "In the South Delta applied water salinity  
9 tends to be higher than in the North Delta. This  
10 creates a scenario where, entirely independent from  
11 WaterFix, demand from allegedly legal users  
12 outstrips supply."

13 Do you see those two sentences?

14 WITNESS THORNBERG: Yes, I do.

15 MR. KEELING: My question: I simply want you  
16 to explain, frankly, the word "this" which begins your  
17 first sentence because I can't make the connection out  
18 between those two sentences.

19 WITNESS THORNBERG: No, that -- And I'm glad  
20 you asked this question, because as I was reviewing my  
21 materials today, I saw this and I realized there was a  
22 horrendous grammatical snafu that happened here.

23 But let me -- I can explain the broader context  
24 of what this means.

25 MR. KEELING: Please do.

1                   WITNESS THORNBERG: Okay. Again, going back to  
2 the idea of Dr. Whitelaw's idea, this no injury rule,  
3 which is a fixed standard.

4                   Our point was, very simple, that, let's say,  
5 for example, that one farmer in the Delta decided to  
6 change what he was growing on his particular hunk of land  
7 and, as a result of that, his needs for irrigation  
8 increased substantially.

9                   Well, that, because he's pulling more and more  
10 water out, someone downstream of him, particularly in  
11 some of these, say, canals, may actually find the water  
12 quality remaining for them, or the salinity remaining for  
13 them, or even the quantity of water remaining for them  
14 diminished.

15                  Thus, if we're going to take Dr. Whitelaw at  
16 his word, then, by definition, different farmers within  
17 the Delta should not be allowed to change what they're  
18 growing simply on the basis that it may harm somebody  
19 else in the Delta.

20                  Again, this no harm rule leads us to all sorts  
21 of sort of, if you will, absurd conditions when you look  
22 at it from an economic standpoint.

23                  Now, again, that's not a legal interpretation,  
24 but that's what we are attempting to put across here, and  
25 I have to agree it was very poorly worded.

1 CO-HEARING OFFICER DODUC: All right. Hold on.

2 Mr. Jackson.

3 MR. JACKSON: I'm sorry. I got sidetracked.

4 CO-HEARING OFFICER DODUC: Your microphone  
5 isn't on, I don't think.

6 MR. JACKSON: I'm sorry. I got sidetracked on  
7 listening.

8 The -- The point I wanted to make is that Snug  
9 Harbor, like every other private property owner and water  
10 rights holder in the Delta, was not looked at  
11 individually and, consequently, the only way they can go  
12 forward, like the rest of us, is to deal with the sort of  
13 unspecific nature of the regional conclusions that are  
14 being drawn in this report.

15 So I think it's perfectly all right to ask  
16 these questions, and I think they add value.

17 CO-HEARING OFFICER DODUC: Did I not say that?

18 MR. JACKSON: If you did, it's -- it's be --  
19 I --

20 CO-HEARING OFFICER DODUC: Are you not  
21 listening to me again, Mr. Jackson?

22 MR. JACKSON: No. Actually, I was listening to  
23 something else that boggled my mind, but on -- on my way  
24 up here.

25 But I didn't think that you had ruled yet on

1 this issue.

2 CO-HEARING OFFICER DODUC: I had overruled  
3 Miss Morris' objection.

4 MR. JACKSON: I'm sorry.

5 CO-HEARING OFFICER DODUC: Miss Womack, you  
6 look as confused as I feel.

7 MS. WOMACK: Exactly. Well, I'm just -- I  
8 object so strongly to Mr. Thornberg's depiction of what a  
9 farmer does. Farmers choose what they grow every year.  
10 It's an important thing.

11 CO-HEARING OFFICER DODUC: Hold on.

12 MS. WOMACK: Nobody tells them --

13 CO-HEARING OFFICER DODUC: Hold on.

14 You may disagree with --

15 MS. WOMACK: I object. He's making farmers out  
16 to be, I don't know, that they're causing all this damage  
17 by changing what they grow. Oh, my gosh.

18 CO-HEARING OFFICER DODUC: Miss Womack --  
19 Miss Womack, you may disagree but I'm overruling your  
20 objection. You will have your chance to conduct  
21 cross-examination.

22 MS. WOMACK: I can't wait.

23 CO-HEARING OFFICER DODUC: -- that will help us  
24 all.

25 But for now -- for now, we will return to



1 Mr. Keeling.

2 MR. KEELING: After that last comment, I'm  
3 almost afraid to ask another question.

4 I realize, Dr. Thornberg, you're not a lawyer.  
5 You've testified to that six times today. But regardless  
6 of whether you're a lawyer, trained as a lawyer, do you  
7 have any knowledge of the California Water Code?

8 WITNESS THORNBERG: Very limited.

9 MS. MORRIS: Objection: Outside the scope.

10 CO-HEARING OFFICER DODUC: Yes, that is outside  
11 the scope of his testimony, yes.

12 MR. KEELING: Do you have an opinion as to  
13 whether the possibility of compensation to an injured  
14 party has anything to do with the no injury rule imposed  
15 by the Water Code in proceedings commenced by a Petition  
16 to change the Point of Diversion?

17 CO-HEARING OFFICER DODUC: Do you have an  
18 opinion on that as an economist?

19 WITNESS THORNBERG: That wasn't what the  
20 question was.

21 CO-HEARING OFFICER DODUC: I'm changing the  
22 question.

23 WITNESS THORNBERG: As an economist, yes,  
24 compensating payments are a regularly used way of dealing  
25 with the potential for some negative cost to fall upon

1 one party when that -- the greater benefits justify that  
2 compensation.

3 CO-HEARING OFFICER DODUC: Without that, you  
4 have no specifics to add how that might be applied in  
5 these proceedings.

6 WITNESS THORNBERG: It's not --

7 CO-HEARING OFFICE DODUC: All right.

8 WITNESS THORNBERG: -- part of my testimony or  
9 experience.

10 CO-HEARING OFFICER DODUC: Been there, done  
11 that.

12 Go on, Mr. Keeling.

13 MR. KEELING: Dr. Michael's testimony on crop  
14 choice, I believe, summarized data analysis in the Delta  
15 Protection Commission's Economic Sustainability Plan and  
16 the BDCP Statewide Economic Impact Report; is that  
17 correct?

18 WITNESS THORNBERG: There was a lot of words  
19 there.

20 MR. KEELING: You want me to repeat it slowly?

21 WITNESS THORNBERG: Maybe it would be helpful,  
22 yes.

23 MR. KEELING: The question is -- And I'm going  
24 to ask you if this is correct, if my understanding is  
25 correct.

1 Dr. Michael's testimony on crop choice --

2 WITNESS THORNBERG: Um-hmm.

3 MR. KEELING: -- summarized data analysis in  
4 the Delta Protection Commission's Economic Sustainability  
5 Plan and in the BDCP Statewide Economic Impact Report.

6 CO-HEARING OFFICER DODUC: I can hear the  
7 objection now.

8 MR. KEELING: Isn't that correct?

9 MR. BERLINER: Well, actually, it would be  
10 helpful if we could have the testimony pulled up where  
11 you're referring to Dr. Michael's testimony so the  
12 witness has a frame of reference. I believe it might be  
13 on Page 6.

14 MR. KEELING: The references to -- If you want  
15 the references to that testimony of Dr. Michael's, I  
16 thought that was pretty clear, but . . .

17 (Document displayed on screen.)

18 MR. KEELING: I don't have it in front of me.

19 Do you recall references to these two sources  
20 in Dr. Michael's testimony?

21 MR. BERLINER: Scroll down.

22 WITNESS THORNBERG: Again, I studied  
23 Dr. Michael's testimony. Do I remember every aspect of  
24 what Dr. Michael referenced himself? Not really.

25 (Examining document.)

1           MR. BERLINER:  If you scroll down a little  
2 further, I think there's a footnote that Mr. Keeling is  
3 referring to.

4           WITNESS THORNBERG:  So that's a direct quote  
5 from his work, yes.

6           MR. KEELING:  Do I correctly infer from your  
7 response that you did not review the analysis in the  
8 Economic Sustainability Plan?

9           WITNESS THORNBERG:  No.  I was not asked to do  
10 so.

11          MR. KEELING:  Do I infer correctly from your  
12 response that you did not review the analysis in the BDCP  
13 Statewide Economic Impact Report produced for DWR by  
14 Dr. Sunding?

15          MS. MORRIS:  Objection --

16          WITNESS THORNBERG:  No.

17          MS. MORRIS:  -- outside this witness'  
18 testimony.

19          CO-HEARING OFFICER DODUC:  The witness can  
20 testify he did not review those documents.

21          WITNESS THORNBERG:  I did not review those  
22 studies.  I reviewed the studies of Dr. Michael and  
23 Mr. Machado.

24          MR. KEELING:  You did -- You did criticize  
25 Dr. Michael's testimony for lacking sufficient detail;

1 did you not?

2 WITNESS THORNBERG: Regarding his multinomial  
3 logic model, yes.

4 MR. KEELING: And as a result of his what you  
5 claim was his inattention to detail in those respects,  
6 you suggested, did you not, that he had marshaled the  
7 data to support his conclusion in a less than forthright  
8 way?

9 MR. BERLINER: Objection: Asked and answered.

10 WITNESS THORNBERG: Again, sir, I'm not one  
11 to --

12 CO-HEARING OFFICER DODUC: We went through this  
13 particular portion already, Mr. Keeling. Move on,  
14 please.

15 MR. KEELING: Well, in light of that  
16 conclusion, didn't you think it would be important for  
17 you to review the sources -- the data sources for his  
18 testimony?

19 MR. BERLINER: Ob --

20 CO-HEARING OFFICER DODUC: He did.

21 MR. KEELING: He just said he did not.

22 MS. MORRIS: I think this is confusing the  
23 record again.

24 This witness was asked to review the testimony  
25 that was provided by Dr. Michael. Dr. Michael

1       unfortunately didn't include a lot of backup material  
2       that we would have analyzed, or this witness likely would  
3       have analyzed, if it was provided.

4               CO-HEARING OFFICER DODUC: All right. Enough.

5               Mr. Keeling, you need to move on. This is not  
6       adding the value that I'm expecting from you.

7               MR. KEELING: Well, since these are already  
8       exhibits in this hearing, I thought it was appropriate.

9               But I have only one other line.

10              Line 38 -- Excuse me. Page 38, Lines 15  
11       through 17.

12              (Document displayed on screen.)

13              MR. KEELING: I'm referring to the language,  
14       quote (reading):

15              "The WaterFix . . . will be funded entirely by  
16       the various water agencies that receive State Water  
17       Project and Central Valley Project water supplies."

18              Do you see that language?

19              WITNESS THORNBERG: Yes.

20              MR. KEELING: What is your basis for saying  
21       that?

22              WITNESS THORNBERG: Some work I've done in the  
23       past for the Metropolitan Water District.

24              MR. KEELING: What work?

25              WITNESS THORNBERG: As noted --

1 MR. BERLINER: Objection: Relevance.

2 MR. KEELING: What work did you --

3 CO-HEARING OFFICER DODUC: Hold on.

4 THE WITNESS: Please.

5 MR. KEELING: -- did you perform that gives you  
6 this conclusion?

7 WITNESS THORNBERG: I did some work -- As noted  
8 before, one of the reasons I was selected for this, I  
9 have studied the California WaterFix Project in the  
10 context of some work I did for the Metropolitan Water  
11 District.

12 MR. KEELING: And you concluded from that that  
13 this would be paid for entirely by the water agencies  
14 that receive State and Federal Project work?

15 WITNESS THORNBERG: My understanding is, the  
16 bonds that are going to be put forward to fund this  
17 particular Project will be paid back through increases in  
18 water rates.

19 MR. KEELING: Without any Federal funding?

20 MS. MCGINNIS: Objection.

21 MS. MORRIS: Objection.

22 MR. BERLINER: Objection: Relevance.

23 CO-HEARING OFFICER DODUC: All right. I'm  
24 going to sustain Mr. -- Mr. Keeling --

25 MR. KEELING: Well --

1 CO-HEARING OFFICER DODUC: -- are you going to  
2 move --

3 MR. KEELING: I am going to leave that up,  
4 because my next question's:

5 Why was this important that you say this?

6 MS. MORRIS: Why don't you strike it then?

7 CO-HEARING OFFICER DODUC: Hold on.

8 Mr. Keeling, are you about to make another  
9 motion to strike this portion because it exceeds the  
10 scope of Part 1? It goes towards the economic  
11 feasibility of the Project which we in a prior ruling had  
12 moved to Part 2.

13 MR. KEELING: In the page and line references  
14 you will receive tomorrow, yes, this will be part of it.

15 But in light of the fact that the Board has --  
16 And I'm following Mr. Jackson's point. In light of the  
17 fact that this is a not ruled-upon motion, I'm protecting  
18 the record here.

19 MR. BERLINER: And I would point out, this is  
20 germane to the motion that Ms. Morris made earlier. This  
21 goes directly to the motion that Mr. Keeling made, not  
22 joined in by Snug Harbor, so it seems to me we are now  
23 drifting into an area that has nothing to do with Snug  
24 Harbor. It has everything to do with Mr. Keeling seeking  
25 to support his motion.



1 CO-HEARING OFFICER DODUC: All right. Let's  
2 not -- That's enough.

3 Your motion has been made. We look forward to  
4 getting the specific citations tomorrow.

5 If you would like to file any written response  
6 to that tomorrow, please do so as well.

7 Does that conclude your cross-examination on  
8 behalf of Miss Suard, Mr. Keeling?

9 MR. KEELING: (Conferring with Miss Suard.)

10 I think that the question probably has already  
11 been asked by Mr. Jackson, so I'm going to leave it with  
12 this.

13 CO-HEARING OFFICER DODUC: Thank you.

14 MR. BERLINER: If we could just get some  
15 clarification. If we could just get some clarification.

16 We understand that the Protestants are going to  
17 submit some information tomorrow what they'd like  
18 stricken.

19 Could we have a day to respond to that?

20 CO-HEARING OFFICER DODUC: You may.

21 MR. BERLINER: Thank you.

22 CO-HEARING OFFICER DODUC: All right.

23 Miss Womack.

24 Now, you had requested 60 minutes. Might you  
25 be able to do this in 30 minutes or less?

1 MS. WOMACK: You know, I've had an awful lot of  
2 things answered and it is my mother's 89th birthday  
3 today.

4 CO-HEARING OFFICER DODUC: Oh.

5 MS. WOMACK: In light of that, I really want to  
6 get out here, but I do have a few questions.

7 CO-HEARING OFFICER DODUC: All right.

8 CROSS-EXAMINATION BY

9 MS. WOMACK: Mr. Thornberg, just a few  
10 general -- Oh, I need to -- Suzanne Womack, Clifton Court  
11 L.P., Group 43.

12 And my general things are just going to be just  
13 very quick: Injury, economic injury, based -- looking at  
14 production and, of course, salinity seepage, just very  
15 briefly.

16 And then for Mr. Kimmelshue, I have a few  
17 clarifications regarding, I guess, talking about the  
18 drought a little bit, and the results. Just a few  
19 questions.

20 So, Mr. Thornberg, do you know where my farm at  
21 Clifton Court is?

22 WITNESS THORNBERG: No, I do not.

23 MS. WOMACK: Okay. And do you know what my  
24 water rights are, then?

25 WITNESS THORNBERG: No, I do not.

1 MS. WOMACK: Clifton Court goes back to the  
2 1870s. Are you aware of the history?

3 CO-HEARING OFFICER DODUC: No, he isn't.

4 MS. WOMACK: Okay. And do you know how I use  
5 my water on my farm?

6 MS. MORRIS: Objection: Relevance.

7 MS. WOMACK: Well, I'm a water user.

8 CO-HEARING OFFICER DODUC: Hold on.

9 Miss Morris.

10 MS. MORRIS: Objection: This is outside the  
11 scope of this witness' testimony and other things.

12 CO-HEARING OFFICER DODUC: I don't know yet how  
13 relevant it is.

14 Miss Womack, perhaps if you might go straight  
15 to the point instead of asking him about your specifics  
16 which he obviously does not know about.

17 MS. WOMACK: Okay. So, in your testimony at  
18 DWR-84, Page 34, Line 18 to 22, regarding compensation.

19 I know this has been looked at a lot today, but  
20 for myself, how do I collect damages, the money you refer  
21 to? This is only -- There's going to be damages. I  
22 don't see anything.

23 (Document displayed on screen.)

24 MS. WOMACK: I want to know how I can collect  
25 my damages.

1 CO-HEARING OFFICER DODUC: And he cannot answer  
2 that --

3 MS. WOMACK: He can't answer.

4 CO-HEARING OFFICER DODUC: -- because he does  
5 not have any information regarding the potential  
6 compensatory payments.

7 MS. WOMACK: So why is this in here, then?  
8 It's like a promise but --

9 CO-HEARING OFFICER DODUC: No, it's not a  
10 promise.

11 MS. WOMACK: No.

12 CO-HEARING OFFICER DODUC: It's there to  
13 highlight something that he believed was overlooked in a  
14 study or analysis that was conducted by Dr. Whitelaw.

15 MS. WOMACK: Okay. Thanks.

16 So, then -- Yeah. You wouldn't know if DWR has  
17 compensated for my damages in the past, any sort of  
18 compensation for damages?

19 CO-HEARING OFFICER DODUC: No, he would not.

20 MR. BERLINER: Objection.

21 MS. WOMACK: So moving right along, then.

22 This is -- So, basically Page 39, the  
23 (reading):

24 "Negative Outcomes Do Not Outweigh Benefits of  
25 the WaterFix."

1 (Document displayed on screen.)

2 MS. WOMACK: Have you determined if my farm has  
3 a negative outcome?

4 CO-HEARING OFFICER DODUC: No, he has not.

5 MS. WOMACK: Well, he could say that.

6 MR. BERLINER: Objection.

7 MS. MCGINNIS: Objection: Beyond the scope of  
8 Dr. Thornberg's testimony; and asked and answered.

9 MS. WOMACK: He's -- He's been saying that  
10 there are negative outcomes, or the negative outcomes are  
11 outweighed by the benefits.

12 CO-HEARING OFFICER DODUC: I think,  
13 Miss Womack, you are correct to point out, and it is  
14 indeed correct, that Dr. Thornberg's analysis is on a  
15 much more broad generalized basis that does not  
16 specifically address water users such as Snug Harbor and  
17 such as yourself.

18 That is indeed something that is lacking in his  
19 analysis and, therefore, he would not have any  
20 information that he can provide that goes to that  
21 specificity that you are seeking.

22 MS. WOMACK: Yeah. I -- I -- I just don't want  
23 to be injured. You know that.

24 CO-HEARING OFFICER DODUC: I know that.

25 MS. WOMACK: Okay. So I won't talk about the

1 benefits, then, because clearly you wouldn't have that.

2 So, you talk about the -- Or, I'm sorry,

3 Page 40, Line 12.

4 (Document displayed on screen.)

5 MS. WOMACK: You talk about the gross regional  
6 product in the San Joaquin County and how it has grown,  
7 and that it hasn't been -- you know, it's been growing  
8 and growing. And I know there's been quite a bit of back  
9 and forth about not getting data.

10 How does that refer to my farm in Contra Costa  
11 County, talking about San Joaquin County? How does that  
12 doing well affect my farm? Why -- I don't know. I've  
13 been -- I heard that you . . . couldn't get data is why  
14 you don't have data.

15 Did you request data for my farm for salinity  
16 and different things?

17 MR. BERLINER: Objection: Beyond the scope of  
18 his testimony.

19 And I'm going to make a broader motion, which  
20 is to request that Ms. Womack be prohibited from asking  
21 questions specifically about her farm. It's not touched  
22 on in this witness' testimony at all. We've already  
23 established that he doesn't have information about her  
24 farm.

25 CO-HEARING OFFICER DODUC: Do you have any

1 information about Contra Costa County -- Actually, no,  
2 because it's not in your rebuttal testimony.

3 Mr. Jackson.

4 MR. JACKSON: Yes. This rebuttal testimony  
5 was -- This is the area where the rebuttal testimony is  
6 to Mr. Whitelaw and his statement that no responsible  
7 economist could make a decision about injury to an  
8 individual water user without looking at the water user's  
9 crop use.

10 And -- And so I think it's relevant that --  
11 that, again, in his criticisms of our economist and his  
12 criticisms of Dr. Michael, that folks who own the  
13 property be allowed to criticize his analysis of their  
14 injury.

15 MS. MCGINNIS: I'd like to respond.

16 I'm not sure where Mr. Jackson's going with  
17 this but it's pretty clear this section doesn't have  
18 anything to do with Mr. Whitelaw. It had -- This is all  
19 about Dr. Michael. So I'm not --

20 CO-HEARING OFFICER DODUC: No, no. Okay.  
21 Stop.

22 Mr. Jackson, I appreciate your point, and  
23 Miss Womack, I appreciate your point as well, that that  
24 level of detail is not presented in Dr. Thornberg's  
25 testimony.

1           However, repeated questions to him right now is  
2 not going to gain any additional information that he does  
3 not have or analysis that he did not perform.

4           So if your point is to establish for the record  
5 that lack of specificity in his analysis, then you have  
6 made that point.

7           MS. WOMACK: Thank you. Yes, that -- that is  
8 exactly my point.

9           I . . . I don't know if this -- Well, I'll move  
10 on to:

11           You -- You were speaking, when you started,  
12 about the 32 million that Michael Machado referred to as  
13 a loss, debit, from salinity. We're dealing with  
14 salinity.

15           My farm has a lot of salinity and seepage  
16 problems, so I'm very interested.

17           And you're saying it's only -- 32 million is  
18 just a drop in the bucket. It's -- You know, it's only  
19 10 percent of San Joaquin is what you'd said up there.

20           WITNESS THORNBERG: I didn't say that, ma'am.  
21 I said less than 2 percent.

22           MS. WOMACK: Less than 2 percent. So it's just  
23 so tiny, just minuscule.

24           But I guess what I'd want to know is, then you  
25 would think 50 to a hundred thousand is just a laughable



1 amount of money to deal with; is that correct? Since  
2 32 million is 2 percent, so 50 to a hundred thousand is  
3 just -- it's a very small amount.

4 WITNESS THORNBERG: Well, let me take a step  
5 back because I think you're misinterpreting my comments.

6 My comments were from a broader economic  
7 perspective, because, candidly, Mr. Machado and, of  
8 course, Dr. Michael refer to general damages to the local  
9 economic region. They don't specify who suffers these  
10 damages and whether certain people would suffer those  
11 damages more than others. It was simply a broad claim.

12 My response was that, look, relative to the  
13 overall agricultural part of the economy, these are  
14 relatively small numbers.

15 But, with that in mind, I then went the next  
16 step to say these numbers are actually too large.  
17 Mistakes in the analysis, what seems to be mistakes in  
18 the modeling, what seems to be errors in --

19 CO-HEARING OFFICER DODUC: But you did no  
20 analysis and offered no opinion with respect to the  
21 individual economic harm or benefit of any particular  
22 party.

23 WITNESS THORNBERG: What I did was looked at  
24 overall yields within the region for 17 different crops,  
25 and I basically, through a variety of statistical --

1 MS. WOMACK: But that was --

2 WITNESS THORNBERG: I'm sorry. I'm not  
3 finished.

4 MS. WOMACK: Okay. But you're talking  
5 San Joaquin.

6 WITNESS THORNBERG: Right. Contra Costa isn't  
7 part of my testimony and Dr. Michael didn't talk about  
8 Contra Costa, either.

9 In terms of San Joaquin, what we looked at is  
10 variations of salinity over time, over the last 15 years  
11 or so, and asked ourselves the basic question: Does the  
12 data suggest that there was a true loss of yield when  
13 salinity levels in the Delta were high?

14 CO-HEARING OFFICER DODUC: From a broad  
15 perspective.

16 WITNESS THORNBERG: From a broad perspective.

17 And the answer was, from a broad perspective,  
18 we did not find any relationship there.

19 So, as such, I don't even think that that  
20 \$32 million you're citing is right. I think the actual  
21 number is considerably lower than that.

22 Now, within the context of that, might there be  
23 some variation? I'd have -- The data I have does not  
24 support that degree of analysis, and I believe it's  
25 outside the scope of what I was asked to testify on.

1           But for the overall region, and by that, I can  
2 surmise what's going on within the Delta itself, I don't  
3 see any evidence that, within these levels of salinity,  
4 it's had any impact on productivity on Delta-level  
5 agriculture.

6           CO-HEARING OFFICER DODUC: On a broad basis.

7           WITNESS THORNBERG: On a broad basis, yes,  
8 absolutely.

9           MS. WOMACK: Well, I -- I think we keep  
10 conveniently overlooking the individual farmers.

11           And we lost 7 percent to salinity seepage this  
12 past year, 50 to a hundred thousand.

13           CO-HEARING OFFICER DODUC: And is there a  
14 question for Dr. Thornberg?

15           MS. WOMACK: Yes.

16           So the cost benefit -- You talk about cost  
17 benefit. And so your que -- My question is, once the  
18 family farm is gone and becomes the South Clifton Court  
19 Forebay, you cannot go back to that farm. You speak  
20 always as if a cost benefit is one or the other.

21           When my farm is gone, it will be gone. I grew  
22 up in a time when I saw most of Brentwood area become a  
23 bedroom community. All the little farms are gone.

24           So my little farm, when it's gone, it's gone.  
25 I -- There is no cost benefit. It's only a cost to me.

1 WITNESS THORNBERG: Is there a question?

2 MS. WOMACK: Yes.

3 So what is -- What is the benefit of the  
4 Delta's loss of another family farm? What benefit is  
5 there?

6 MS. MCGINNIS: Objection: Scope --

7 CO-HEARING OFFICER DODUC: Yes.

8 MS. MCGINNIS: -- calls for speculation;  
9 argumentative.

10 CO-HEARING OFFICER DODUC: Sustained.

11 MS. WOMACK: It is argumentative.

12 I -- You know what? I have a farm. I am  
13 affected. My --

14 CO-HEARING OFFICER DODUC: Miss Womack --

15 MS. WOMACK: Well, you know what?

16 CO-HEARING OFFICER DODUC: Miss Womack, we  
17 understand.

18 MS. WOMACK: I -- Well --

19 CO-HEARING OFFICER DODUC: And you have --

20 MS. WOMACK: Yes, but --

21 CO-HEARING OFFICER DODUC: You have established  
22 that, and you have established that Dr. Thornberg's  
23 analysis does not address your particular concerns or  
24 needs. You made that point with us.

25 MS. WOMACK: I guess I have one final question.

1           I have been writing letter after letter to both  
2 DWR and the Bureau for years talking about salinity  
3 problems, talking about seepage problems, real problems  
4 that affect a real farm. And nothing. We've had zero.

5           If I am supposed to be able to get all these  
6 benefits, why haven't I received zero all these years?

7           CO-HEARING OFFICER DODUC: All right. That was  
8 not a question directed at you, Dr. Thornberg, because I  
9 understand you are not able to answer.

10           Miss Womack --

11           MS. WOMACK: So --

12           CO-HEARING OFFICER DODUC: Miss Womack, unless  
13 you have other specific questions . . .

14           MS. WOMACK: I have very specific for  
15 Dr. Kimmelshue.

16           CO-HEARING OFFICER DODUC: Okay.

17           MS. WOMACK: So, you kept -- You were referring  
18 to the study from August 2016 and you -- where you said  
19 it's at the peak of the drought.

20           And when I filed my water forms this past year,  
21 actually, 2016 was above average water year. My farmer  
22 couldn't get on the farm -- on the property to harvest  
23 the winter wheat. They didn't get to use water until  
24 May.

25           CO-HEARING OFFICER DODUC: And your question

1 is?

2 MS. WOMACK: So my question is, how can you say  
3 that it's at the peak of the drought? The peak of the  
4 drought was 2014-2015 so why -- why did you quantify  
5 that?

6 WITNESS KIMMELSHUE: When I talk about the --  
7 What I say is the peak of the drought -- and I mentioned  
8 earlier that -- it's about, when that rainfall comes,  
9 it's duration and intensity.

10 And so when you look at the total timeframe --  
11 quantity of rainfall that occurred up until August 2016,  
12 it was limited over that --

13 MS. WOMACK: No.

14 WITNESS KIMMELSHUE: -- hydrologic year.

15 MS. WOMACK: Going from January?

16 WITNESS KIMMELSHUE: Hydrologic year.

17 MS. WOMACK: We had -- We had over and above  
18 the rainfall for January, February, March, April.

19 WITNESS KIMMELSHUE: The hydrologic year  
20 beginning in October --

21 MS. WOMACK: Um-hmm.

22 WITNESS KIMMELSHUE: -- through September.

23 MS. WOMACK: Yeah. That year, because I --

24 WITNESS KIMMELSHUE: Below average.

25 MS. WOMACK: It was above average.

1 CO-HEARING OFFICER DODUC: All right. All  
2 right.

3 MS. WOMACK: I just know the forms I filled  
4 out.

5 CO-HEARING OFFICER DODUC: Okay. There is a  
6 disagreement between the two of you.

7 MS. WOMACK: Well, this is rather significant.  
8 And we're talking about whether there's a drought or --  
9 He's putting down her -- the doctor's whole study,  
10 saying, "Oh, it was a drought year."

11 And I -- I agree with you. Jerry Brown didn't  
12 call the drought off until Oroville almost exploded on  
13 us.

14 I mean, if we -- we have -- we're just out of  
15 the drought now, according to Jerry Brown, so I  
16 understand.

17 But 2014 and '15 were our --

18 CO-HEARING OFFICE DODUC: Miss Womack --

19 MS. WOMACK: -- drought years.

20 CO-HEARING OFFICER DODUC: Miss Womack, you may  
21 disagree with him and his analysis, but he has testified  
22 that is his opinion, his expert opinion. Yes, you may  
23 disagree.

24 MS. WOMACK: Okay. So I have one more thing.

25 In 2014 and '15, we voluntarily took part in a

1 25 percent less use of water in our farm at the Delta.  
2 My farmer actually went out of business probably because  
3 of this.

4 But I want to know how you wash soil during  
5 times when you're using 25 percent water, wash of  
6 salinity because you've referred to that.

7 MS. MORRIS: Outside the scope of this rebuttal  
8 testimony.

9 CO-HEARING OFFICER DODUC: Mr. Berliner.

10 MR. BERLINER: Same objection.

11 CO-HEARING OFFICER DODUC: Sustained,  
12 Ms. Womack.

13 MS. WOMACK: He's gone on about washing the  
14 land of its salinity, and that's -- he said that you just  
15 need to run water through it.

16 And as farmers, we all know, we have so much  
17 water. We're very limited in our water use and we cannot  
18 wash salinity away.

19 CO-HEARING OFFICER DODUC: I believe he  
20 mentioned that as one traditional method to be  
21 considered.

22 MS. WOMACK: We're --

23 CO-HEARING OFFICER DODUC: It does not apply in  
24 every instance in every time --

25 MS. WOMACK: Well, yeah.



1 CO-HEARING OFFICER DODUC: -- Miss Womack.

2 MS. WOMACK: And then, finally, I want to know  
3 how I'm supposed to wash away salinity on my seepage  
4 soil? I have seepage soil that's brought up the salt,  
5 40 acres. I can't farm.

6 MS. MCGINNIS: Objection: Outside the scope.  
7 We've already discussed seepage issues.

8 MS. WOMACK: Salinity.

9 CO-HEARING OFFICE DODUC: But do you --

10 MS. WOMACK: The salinity has brought up the  
11 seepage.

12 CO-HEARING OFFICER DODUC: Do you have anything  
13 else to add on the issue of seepage and . . .

14 WITNESS KIMMELSHUE: No.

15 MS. WOMACK: Okay. So -- Yeah. Thank you so  
16 much.

17 CO-HEARING OFFICER DODUC: Happy birthday to  
18 your mother.

19 MS. WOMACK: Thank you.

20 CO-HEARING OFFICER DODUC: Is she as feisty as  
21 you are?

22 MS. WOMACK: She's worse.

23 (Laughter.)

24 MR. BERLINER: That's how she gets to be 89.

25 CO-HEARING OFFICER DODUC: Oh, yeah.

1 Any redirect?

2 MS. MCGINNIS: Yes.

3 CO-HEARING OFFICER DODUC: Just stay there.

4 MS. MCGINNIS: Okay. I'll stay put.

5 Robin McGinnis, California Department of Water

6 Resources. I have redirect for Dr. Kimmelshue.

7 CO-HEARING OFFICER DODUC: And what is it

8 you'll be exploring in your redirect?

9 MS. MCGINNIS: Table 4 in Dr. Kimmelshue's  
10 testimony, which is DWR-85.

11 CO-HEARING OFFICER DODUC: Can we bring up

12 Table 4 --

13 MS. MCGINNIS: Yes.

14 CO-HEARING OFFICE DODUC: -- before we decide

15 to allow you to redirect?

16 MS. MCGINNIS: Sure. Mr. Herrick helpfully  
17 pointed out some errors in the calculations in the tables  
18 were made.

19 CO-HEARING OFFICER DODUC: Yes, I remember

20 that.

21 MS. MCGINNIS: So I have a few questions to fix  
22 it.

23 CO-HEARING OFFICER DODUC: All right. Proceed.

24 MS. MCGINNIS: Okay.

25 ///

1 REDIRECT EXAMINATION BY

2 MS. MCGINNIS: So, Dr. Kimmelshue, do you  
3 remember earlier today when Dr. Herrick (sic) asked you  
4 about your Table 4?

5 CO-HEARING OFFICER DODUC: Was that yesterday?  
6 I thought it was earlier today.

7 MR. HERRICK: I believe she said Dr. Herrick.

8 MR. BERLINER: You got promoted.

9 CO-HEARING OFFICER DODUC: All right, people.  
10 It's getting late.

11 MR. HERRICK: Sorry.

12 MS. MCGINNIS: It is late. I will take a deep  
13 breath and get it together.

14 Okay. So, Dr. Kimmelshue, did you look at  
15 Table 4 over the break today?

16 WITNESS KIMMELSHUE: I did.

17 MS. MCGINNIS: And were there errors for the 10  
18 and 15 percent leaching fractions for yield reductions?

19 WITNESS KIMMELSHUE: There were.

20 MS. MCGINNIS: And did you recalculate the  
21 yield reductions for the 10 and 15 percent leaching  
22 fraction?

23 WITNESS KIMMELSHUE: I did.

24 MS. MCGINNIS: And were your recalculated yield  
25 reduction numbers still lower than those calculated by

1 Mr. Prichard?

2 WITNESS KIMMELSHUE: Yes.

3 MS. MCGINNIS: And do the recalculations you  
4 did affect the figures in the table for the 5 percent  
5 leaching fraction?

6 WITNESS KIMMELSHUE: No.

7 MS. MCGINNIS: Okay. And do the recalculations  
8 you did affect your conclusions regarding Mr. Prichard's  
9 testimony?

10 WITNESS KIMMELSHUE: No.

11 MS. MCGINNIS: Thank you.

12 CO-HEARING OFFICE DODUC: Thank you.

13 Any recross?

14 MR. BERLINER: I have actually redirect for  
15 Dr. Thornberg.

16 CO-HEARING OFFICER DODUC: Okay.

17 MR. BERLINER: I have two questions.

18 CO-HEARING OFFICER DODUC: And you need to get  
19 closer to the microphone or the microphone closer to you.

20 MR. BERLINER: I'm sorry.

21 REDIRECT EXAMINATION BY

22 MR. BERLINER: Dr. Thornberg, I have two  
23 questions now.

24 First question is: Do you -- Did your analysis  
25 look specifically at the crops used in Dr. Michael's

1 work, crops highly concentrated in the Delta itself?

2 WITNESS THORNBERG: Yes. While I appreciate  
3 that, we looked at countywide data, we did look at 17  
4 crops separately in our empirical analysis, and those  
5 include -- that analysis included a specific look at the  
6 six crops that Dr. Michael looked at, which I gather from  
7 some of the cross that that was -- those are crops that  
8 are heavily intensive right in the Delta area itself.

9 MR. BERLINER: And what did your results come  
10 up with? Did you find an impact of the salinity changes?

11 WITNESS THORNBERG: No. Those six crops were  
12 just like all the crops. In other words, we found no  
13 statistically negative relationship between levels of  
14 salinity in the Delta over the last 15 years or so and  
15 actual crop yields.

16 And, in fact, for all six of those crops, we  
17 found positive, although insignificant, results. Again,  
18 this suggests that, at least within this range of  
19 salinity, those crops have not seen any reduction in  
20 yield as a result of -- of higher salinity within the  
21 Delta waters.

22 MR. BERLINER: No further questions.

23 CO-HEARING OFFICER DODUC: Any recross?

24 Thank you.

25 This panel is dismissed.

1 (Panel excused.)

2 CO-HEARING OFFICE DODUC: We will resume  
3 tomorrow in Byron Sher at 9:30 with your remaining  
4 witnesses of Panel 2, and we will begin with Mr. Aladjem  
5 conducting his cross-examination.

6 And we will expect, Mr. Keeling, the material  
7 you promised us.

8 And we will give Petitioners, and other parties  
9 if they so wish, till --

10 MS. MCGINNIS: Friday morning?

11 CO-HEARING OFFICER DODUC: -- Friday before  
12 we -- or at the time we reconvene --

13 MS. MCGINNIS: Okay.

14 CO-HEARING OFFICER DODUC: -- to provide us  
15 with any responses or comments. Thank you.

16 MS. MCGINNIS: Thank you.

17 (Proceedings adjourned at 4:28 p.m.)

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1 State of California )  
2 County of Sacramento )

3

4 I, Candace L. Yount, Certified Shorthand Reporter  
5 for the State of California, County of Sacramento, do  
6 hereby certify:

7 That I was present at the time of the above  
8 proceedings;

9 That I took down in machine shorthand notes all  
10 proceedings had and testimony given;

11 That I thereafter transcribed said shorthand notes  
12 with the aid of a computer;

13 That the above and foregoing is a full, true, and  
14 correct transcription of said shorthand notes, and a  
15 full, true and correct transcript of all proceedings had  
16 and testimony taken;

17 That I am not a party to the action or related to a  
18 party or counsel;

19 That I have no financial or other interest in the  
20 outcome of the action.

21

22 Dated: May 16, 2017

23

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25

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Candace L. Yount, CSR No. 2737