BEFORE THE

CALIFORNIA STATE WATER RESOURCES CONTROL BOARD

CALIFORNIA WATERFIX WATER RIGHT CHANGE PETITION HEARING	)))

JOE SERNA, JR. BUILDING

CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY

COASTAL HEARING ROOM

1001 I STREET

SECOND FLOOR

SACRAMENTO CALIFORNIA

PART 2

Wednesday, April 11, 2018

9:30 A.M.

VOLUME 28

Pages 1 - 193

Reported By: Deborah Fuqua, CSR No. 12948
(A.M. Session)
Candace Yount, CSR No. 2737
(P.M. Session)

Computerized Transcription

APPEARANCES:

CALIFORNIA WATER RESOURCES BOARD

Division of Water Rights

Board Members Present

Tam Doduc, Co-Hearing Officer:
Felicia Marcus, Chair and Co-Hearing Officer:

Staff Present

Andrew Deeringer, Staff Attorney
Conny Mitterhofer, Senior Water Resources Control Engr.
Jean McCue, Staff Engineer
Hwaseong Jin, Staff

PETITIONERS

For California Department of Water Resources
Tripp Mizell, Senior Attorney
Duane Morris, LLP
By: Jolie-Anne Ansley, Attorney at Law

State Water Contractors
Becky Sheehan

PROTESTANTS

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

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

(Continued)

APPEARANCES (continued):

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

Delta Agencies and other parties
Dean Ruiz

California Water Research
Deirdre Des Jardins

FOR THE WITNESS
Hans Van Lighten, Attorney at Law

---o0o---

I N D E X

E X H I B I T S

(Further detailed listing of exhibits can be found at https://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/california_waterfix/exhibits/index.html)

(continued)

EXHIBITS

(continued)

CALIFORNIA WATER RESEARCH	PAGE
DDJ-234	190
DDJ-235	190
DDJ-236	190
DDJ-237	190
DDJ-238	190
DDJ-239	190
DDJ-240	190
DDJ-241	190
DDJ-242	190
DDJ-243	190
DDJ-244	190
DDJ-245	190
DDJ-246	190
DDJ-247	190
DDJ-248	190
DDJ-249	190
DDJ-250	190
DDJ-251	190
DDJ-252	190
DDJ-253	190
DDJ-254	190

(continued)

EXHIBITS

(continued)

CALIFORNIA WATER RESEARCH	PAGE
DDJ-255	190
DDJ-256	190
DDJ-257	190
DDJ-258	190
DDJ-259	190
DDJ-260	190
DDJ-261	190
DDJ-262	190
DDJ-263	190
DDJ-264	190
DDJ-265	190
DDJ-266	190
DDJ-267	190
DDJ-268	190
DDJ-269	190
DDJ-270	190
DDJ-271	190
DDJ-272	190
DDJ-273	190
DDJ-274	190

(continued)

EXHIBITS

(continued)

CALIFORNIA WATER FORUM	PAGE
DDJ-275	190
DDJ-276	190
DDJ-277	190
DDJ-275	190
DDJ-276	190
DDJ-277	190
DDJ-278	190
DDJ-279	190
DDJ-280	190
DDJ-281	190
DDJ-282	190
DDJ-283	190
DDJ-284	190
DDJ-285	190
STATE WATER RESOURCES BOARD	PAGE
SWRCB-66	190
SWRCB-106	190
SWRCB-107	190
SWRCB-108	190
SWRCB-109	190
SWRCB-111	190
SWRCB-112	190

Wednesday, April 11, 2018 9:30 a.m.

PROCEEDINGS

---O0O---

CO-HEARING OFFICER DODUC: Good morning, everyone. It is 9:30, and welcome back to the Water Right Change Petition Hearing for California WaterFix Project. I'm Tam Doduc. To my right is Board Chair and Co-Hearing Officer Felicia Marcus.

To my left -- did I say -- anyway.

MR. DEERINGER: You got it right.

CO-HEARING OFFICER DODUC: I got it right? Okay.

Anyway, to my left, Andrew Deeringer, Conny Mitterhofer and Hwaseong Jin. We're also being assisted by Mr. Hunt today.

I see maybe one or -- new faces. So three announcements. Please take a moment and identify the exits closest to you. In the event of an emergency, we will evacuate using the stairs. And I think in this room, the wall does close, so you'll have to go left to find the stairwell to exit did building. If you're not able to use the stairs, please flag down one of safety people, and they will direct you into a protective area.

We've had a couple of fire drills during

course of Part 2. If there is a fire drill, we will not evacuate immediately. We will wait for the announcement to come overhead telling us which floors are being drilled. If we are one of the floors, we will follow instructions. If not, we will stay put until the all-clear signal is given.

Secondly, this hearing is being recorded and webcasted. So as always, please speak into the microphone after making sure that the button is pushed and the green light is on. And please begin by stating your name and your affiliation.

Our court reporter is here with us today. We will make the transcript available at the conclusion of Part 2. If you wish to have it sooner, please make your arrangements directly with her.

And finally, especially for the newcomers and some of the old-comers, please take a moment and put all of your noise-making devices to silent, vibrate, do not disturb.

All right. Any housekeeping matters before we begin? Mr. Ruiz.

MR. RUIZ: Good morning. Mr. Brodsky just asked me to thank you for announcing the schedule yesterday that accommodates his witnesses and that he sent another e-mail this morning, asking for a minor

adjustment to that schedule. I just wanted to make you aware of that.

CO-HEARING OFFICER DODUC: Yes, he's asking to move one witness -- one other witness from the Friday to the Monday panel is my understanding.

MR. RUIZ: Yes.

CO-HEARING OFFICER DODUC: And that request is hearby granted.

MR. RUIZ: Thank you.

CO-HEARING OFFICER DODUC: All right. Not seeing any other housekeeping matter, at least for now, let me welcome Mr. Baxter and ask you to please stand and raise your right hand.

(Witness sworn)

RANDALL BAXTER,

called as Panel 1 witness for Group 37, having been first duly sworn, was examined and testified as hereinafter set forth:

CO-HEARING OFFICER DODUC: And Mr. Van Lighten, if you perhaps could introduce yourself for the record.

MR. VAN LIGHTEN: Good morning. My name is Hans Van Lighten. I'm an attorney representing Mr. Baxter.

CO-HEARING OFFICER DODUC: Thank you.

All right. Mr. Baxter is here upon subpoena by Ms. Des Jardins.

So, Ms. Des Jardins, we'll turn it over to you for your questions. Thank you, by the way, also, for submitting them. We'll start you off with 60 minutes to start. We'll see how it goes, and we hope for a productive discussion.

DIRECT EXAMINATION BY MS. DES JARDINS

MS. DES JARDINS: Thank you. My name is Deirdre Des Jardins. And I'm principal at California Water Research.

Mr. Hunt, could you bring up Exhibit DDJ-280.

And while we're doing that, you're Randall Baxter employed with Department of Fish and Wildlife?

WITNESS BAXTER: That's correct.

MS. DES JARDINS: Thank you. Mr. Baxter, is this a copy of the statement of qualifications you submitted for the 2010 Delta Flow Criteria Hearing?

WITNESS BAXTER: Yes, it is.

MS. DES JARDINS: And was it a correct statement of your qualifications in 2010?

WITNESS BAXTER: Yes.

MS. DES JARDINS: Are you still a Senior Biologist Supervisor at the California Department of

Fish and Wildlife?

WITNESS BAXTER: Yes. Yes, I am.

MS. DES JARDINS: Are you still supervisor for Young Fishes Unit for Region 3, Bay Delta?

WITNESS BAXTER: That's correct.

MS. DES JARDINS: And your 2010 statement of qualifications, let's scroll down a little more. It says you were a member of the Interagency Ecological Program, that you've been a member of the Interagency Ecological Program Pelagic Organism Decline Management Team since 2005?

MS. DES JARDINS: Are you still a member of that team?

WITNESS BAXTER: The team as it was originally founded doesn't currently exist, but the evolution of the team is into a group of management, analysis, and synthesis teams. And I am a member of those groups, several of those groups.

MS. DES JARDINS: Thank you. Please pull up Exhibit DDJ-281. And let's scroll out a little.

So, Mr. Baxter, this is a copy of the web page for the Interagency Pelagic Organism Decline Management Team. Do you recognize this web page?

WITNESS BAXTER: Yes.

MS. DES JARDINS: Can you describe what the

Interagency Ecological Program is?

WITNESS BAXTER: Interagency Ecological Program is a consortium of nine state and federal agencies that essentially combine resources and staff to investigate issues of management importance in the upper estuary in Sacramento and San Joaquin Delta.

MS. DES JARDINS: So by the "upper estuary" you mean -- what part of the Delta?

WITNESS BAXTER: San Pablo, Suisun Bays, Montezuma Sloughs, Suisun Marsh area, and the Delta.

MS. DES JARDINS: Thank you. So what agencies are members of the Interagency Ecological Program?

WITNESS BAXTER: Department of Fish and Wildlife, Department of Water Resources, State Water Resources Control Board, U.S. Fish and Wildlife Service, Bureau of Reclamation, National Marine Fishery Service, Army Corps of Engineers -- I'm missing a couple here once again. U.S. Geological Survey.

MS. DES JARDINS: Let's scroll down a little to the little logo here.

WITNESS BAXTER: US EPA, thank you.

MS. DES JARDINS: Okay. So -- and is Interagency Ecological Program abbreviated IEP?

WITNESS BAXTER: Yes, it is.

MS. DES JARDINS: Okay. And I'd like to

scroll back up to where this web page defines the pelagic organism decline as the unexpected decline of several pelagic open water fishes, Delta smelt, longfin smelt, juvenile striped bass, and threadfin shad in the freshwater portion of the estuary known as the Delta; is that correct?

WITNESS BAXTER: Yes.

MS. DES JARDINS: Is this how you understand and define the pelagic organism decline?

WITNESS BAXTER: It's pretty close. I would kind of define it as an almost simultaneous decline of the four upper estuary pelagic species. Each of the declines kind of had its own characteristics, but they're declining at about the same time in the year 2000.

MS. DES JARDINS: And the web page states that the IEP formed the Pelagic Organism Decline Management Team in 2005, correct?

WITNESS BAXTER: That's correct.

MS. DES JARDINS: And you became a member when the team was formed?

WITNESS BAXTER: Yes.

MS. DES JARDINS: Okay. I'd like to bring up Exhibit DDJ-282. And this is graphs of the fall midwater trawl data from the DF -- Department of Fish

and Wildlife website. Do you recognize these graphs?

WITNESS BAXTER: Yes.

MS. DES JARDINS: I'd like to first ask you some questions about the fall midwater trawl. What's the purpose of a fall midwater trawl?

WITNESS BAXTER: The original purpose was to census juvenile striped bass in the fall of the year. And subsequently it's been used to look at the relative abundance and abundance trends of a number of upper-estuary fishes, including the ones that we'll talk about here.

MS. DES JARDINS: What months is the fall midwater trawl done?

WITNESS BAXTER: September through December.

MS. DES JARDINS: And how is it done?

WITNESS BAXTER: For each month, 122 sampling locations are sampled with what's called the midwater trawl, which is a net that's about 12 by 12 feet when you stretch it out in the air. At each of those locations, a single tow is made by starting the net near the bottom of the channel and towing it obliquely for 12 minutes.

The fish and some invertebrates that are collected are counted and a subset measured. And from that information, we calculate what's called an

abundance index for each survey, representing one month each. And those monthly surveys are used to calculate an annual abundance index, which is what's portrayed here.

MS. DES JARDINS: So is the trawl designed particularly to sample pelagic -- these pelagic fishes to --

WITNESS BAXTER: The trawl is a design that's used to collect fish in the water column. And how well it does depends on the fishes themselves and the relative size of the fish versus the size of the meshes in the net.

So, for instance, if the fish is very small, the meshes might not retain it. And likewise, if the fish get large -- like, it does not collect adults very well because they can simply outswim the net.

MS. DES JARDINS: So it collects -- it more collects juvenile fishes?

WITNESS BAXTER: Correct.

MS. DES JARDINS: But perhaps not juvenile Delta smelt? Are they too small?

WITNESS BAXTER: When Delta smelt get to the fall, they're just at a pivotal size where the net retains them well. So it -- it's a difficult point to make clearly, but even fish that can fit through the

mesh don't always fit through the mesh, so the net can retain some fish that are -- that would normally go through. And the Delta smelt are just getting to that point. So we do a reasonable job at retaining them but not a perfect job.

MS. DES JARDINS: How long has the fall midwater trawl been done?

WITNESS BAXTER: Since 1967.

MS. DES JARDINS: And that provides you with a long record for comparing populations?

WITNESS BAXTER: Correct.

MS. DES JARDINS: Can you explain a little more about how the abundance indexes -- indices are calculated?

WITNESS BAXTER: So the abundance index is calculated as a catch per trawl. So each of the trawls, we use the same gear essentially and the same methodology every time we go out and pretty much have done since the start of the sampling. So catch per trawl is what we call a measure of catch-per-unit effort.

For the fall midwater trawl, there are a number of subregions. We average the catch per unit effort for each subregion and multiply it by a weighting factor that's approximately equal to the

water volume for each subregion and then sum those up.

And that constitutes the survey abundance index, and then those survey abundance indices are summed through the four months of sampling for the fall midwater trawl. And that is the calculation for the annual abundance index.

MS. DES JARDINS: So by summing over several months, you might even out any inconsistencies in catch?

WITNESS BAXTER: Yes. There's always -- you know, fishing is fishing, right? So you don't always catch fish that are there. And the idea is to repeat the process and better or increase the odds that you will detect and catch fish that are present in approximately the numbers that they're present in.

MS. DES JARDINS: Okay. So I wanted to now ask you about the abundance indices for specific fish.

So looking at -- this is -- the first graph here is the fall midwater trawl data for Delta smelt annual abundance indices from 1967 to 2016. Is that correct?

WITNESS BAXTER: That's correct.

MS. DES JARDINS: And is there an abrupt decline around 2002 in Delta smelt?

WITNESS BAXTER: I would say that the

abundance declines in 2002. If you look at the relative values, it's not an exceptional decline. You know, there's a decline in 2002.

MS. DES JARDINS: What about starting in around 2005 and those abundance indices?

WITNESS BAXTER: Those are quite low. And I believe in that time frame, we started encountering record low abundance levels.

MS. DES JARDINS: Is 2011 an exception to the record low abundance levels?

WITNESS BAXTER: Correct, it is.

MS. DES JARDINS: Was that tied in part to the high flows in that year?

WITNESS BAXTER: I think there were a number of conditions that occurred in 2011, the flows among them, cool water temperatures in particular that allowed an exceptionally long period of spawning for Delta smelt and produced relatively benign conditions, so survival of Delta smelt was high through that year.

MS. DES JARDINS: Looking at the following years, are there new lows in the drought years of 2014, 2015, 2016?

WITNESS BAXTER: Yes.

MS. DES JARDINS: Are you concerned that Delta smelt populations might have declined so much that they

can't recover?

WITNESS BAXTER: Yes, I am.

MS. DES JARDINS: And is there discussion that Delta smelt might have -- might be on the brink of going functionally extinct?

MR. VAN LIGHTEN: Can I object to the extent the question asks for a discussion I think is a little undefined, what she's asking for. And the remainder is vague as to the "brink of extinction" or whatever the terminology was. I'd just ask for clarification.

CO-HEARING OFFICER DODUC: Mr. Van Lighten, I need you to speak into the microphone and not turn your head. It's a bit sensitive.

MR. VAN LIGHTEN: I'll just state it, if you 'd like.

CO-HEARING OFFICER DODUC: Please.

MR. VAN LIGHTEN: Just as to the term -- is there a discussion regarding various topics is somewhat vague and ambiguous. I'm just unclear what she's asking for him to discuss, what he's being asked to testify to, which is the different than the question before, which was about his own personal concern.

CO-HEARING OFFICER DODUC: Ms. Des Jardins.

MS. DES JARDINS: If the Delta smelt populations don't recover -- let me reframe the

question -- will the Delta smelt be extinct?

MR. VAN LIGHTEN: And I'm just going to object that's an incomplete hypothetical; it asks him to assume a lot of facts.

But he can answer if he can.

CO-HEARING OFFICER DODUC: Logically if they don't recover, that means --

WITNESS BAXTER: Well, realistically we could continue catching them in small numbers forever, I guess. I mean, there's -- as you alluded to, there has been discussion of potential for extinction for Delta smelt and longfin smelt. And I think there's potential for extinction.

I mean, I don't -- I can't go any farther than that because I'm not sure what the final precipitating circumstance is likely to be. They've faced and survived some pretty harsh conditions up to this point, and most species are still hanging in there.

MS. DES JARDINS: Thank you. Let's go to -- scroll down to the second graph, which is longfin smelt. Is this the fall midwater trawl longfin smelt annual abundance indices from 1967 to 2016?

WITNESS BAXTER: Yes.

MS. DES JARDINS: Do you see an abrupt decline around 2001?

WITNESS BAXTER: Yes, there's a decline.

MS. DES JARDINS: And are there record lows starting in following years?

WITNESS BAXTER: Yes.

MS. DES JARDINS: And this decline in abundance of longfin smelt, is this part of the pelagic organism decline?

WITNESS BAXTER: Yes.

MS. DES JARDINS: And are there record lows in the drought years 2014, 2015, and 2016?

WITNESS BAXTER: Yes, I believe so.

MS. DES JARDINS: And I believe you've already mentioned that you're concerned about the possible extinction of this fish as well.

WITNESS BAXTER: Yes.

MS. DES JARDINS: Okay. Let's go to age-zero striped bass on Page 2. The top graph, is this the fall midwater trawl and data for age-zero -- or the fall midwater trawl abundance indices for age-zero striped bass from 1967 to 2016?

WITNESS BAXTER: Yes.

MS. DES JARDINS: Do you see a decline around 1995?

WITNESS BAXTER: Certainly the population is cycling and reaches a periodic low about 1995 or '96.

MS. DES JARDINS: And are the highs, are the highs in the cycle lower after 1995?

WITNESS BAXTER: I would -- yes, to some degree.

MS. DES JARDINS: Is there a decline to record lows around 2002?

WITNESS BAXTER: Yes, I believe so.

MS. DES JARDINS: And is this decline in abundance of age-zero striped bass a part of the pelagic organism decline?

WITNESS BAXTER: Yes.

MS. DES JARDINS: Let's go to the next graph.

Is this graph of the abundance indices of threadfin shad from the fall midwater trawl from 1967 to 2016?

WITNESS BAXTER: Yes.

MS. DES JARDINS: Do you see a fairly steep decline around 2002?

WITNESS BAXTER: Yes.

MS. DES JARDINS: And a decline to record lows around 2008?

WITNESS BAXTER: Yes.

MS. DES JARDINS: Is this decline abundance of threadfin shad part of the pelagic organism decline?

WITNESS BAXTER: Yes, it is.

MS. DES JARDINS: Do these fish have somewhat different life histories?

WITNESS BAXTER: Quite different.

MS. DES JARDINS: So was the combined decline of these four species of a major concern?

WITNESS BAXTER: Yes, it was.

MS. DES JARDINS: Okay. So I'd like to go back to Exhibit DDJ-281. And does the web page discuss designing and managing a comprehensive study to evaluate the causes of the pelagic organism decline?

WITNESS BAXTER: Yes, it does.

MS. DES JARDINS: And was doing this comprehensive study of the causes of a pelagic organism decline one of the reasons the POD management team was formed?

WITNESS BAXTER: Yes.

MS. DES JARDINS: And were comprehensive studies done?

WITNESS BAXTER: Pardon me. Could you repeat that?

MS. DES JARDINS: Was a comprehensive study of the pelagic organism decline done?

WITNESS BAXTER: Yes.

MS. DES JARDINS: Were you involved in the design and management of the comprehensive study?

WITNESS BAXTER: Yes, I was.

MS. DES JARDINS: Does the web page say that one of the purposes was also to synthesize and report the results?

WITNESS BAXTER: Yes, I believe that's true.

MS. DES JARDINS: And this was -- one of the purposes was to synthesize the results of the study?

WITNESS BAXTER: Yes.

MS. DES JARDINS: And were you involved in synthesizing and reporting the results?

WITNESS BAXTER: Yes, I was.

MS. DES JARDINS: Let's please bring up FOR-60.

Is this a copy of the Interagency Ecological Plan 2010 Pelagic Organism Decline Work Plan and Syntheses of Results?

WITNESS BAXTER: Yes.

MS. DES JARDINS: Are you listed as first author of this report?

WITNESS BAXTER: Yes, I am, but as you can see, it's alphabetical order.

MS. DES JARDINS: Okay. So you're one of the authors?

WITNESS BAXTER: I'm one of many authors.

MS. DES JARDINS: Okay. I'd like to go to

your conclusions on -- it's PDF Page 91, Page 90 of the document, Line 3971. And I'd like to ask you about the -- you -- this identifies the pelagic organism decline as a regime shift?

WITNESS BAXTER: I think it hypothesizes that all these factors at once could constitute a regime shift; that's correct.

MS. DES JARDINS: And it hypothesized that environmental drivers led to profound changes in biological populations in communities in the system?

WITNESS BAXTER: Yes, that characterizes it.

MS. DES JARDINS: And this is referring in part to the -- the "profound changes" refers in part to what we just described in the fall midwater trawl data?

WITNESS BAXTER: Yes.

MS. DES JARDINS: So I'd like to go to Figure 8, which is on Page 144. And do you recognize this graphic?

WITNESS BAXTER: I do.

MS. DES JARDINS: Did you contribute to this conceptualization of the regime shift?

WITNESS BAXTER: Not much. We discussed -- I was part of the discussion for whether we wanted to include that in the document or not.

MS. DES JARDINS: Okay. Does this graphic

show an old regime and a new regime for the estuary?

WITNESS BAXTER: Yes.

MS. DES JARDINS: And what does this graphic state about the biological community in the old regime? What -- like, what fish dominate?

WITNESS BAXTER: It creates kind of a generalization or a relative description that native fishes were more dominant in the old regime than they are currently.

MS. DES JARDINS: And it describes the food web -- food web composition as well?

WITNESS BAXTER: Yes.

MS. DES JARDINS: And what does it state about -- and the food web was mysids and large copepods and diatoms?

WITNESS BAXTER: And diatoms; that's correct.

MS. DES JARDINS: What does it describe about the fishes dominating in the new regime?

WITNESS BAXTER: That essentially invasive species are more dominant in the new regime.

MS. DES JARDINS: And what are edge and benthic fishes?

WITNESS BAXTER: Edge fishes are those fishes that survive along the shoreline and live their life, and benthic are fishes that live near the bottom or on

the bottom.

MS. DES JARDINS: And this is as opposed to pelagic fishes, which are open water fishes?

WITNESS BAXTER: Correct.

MS. DES JARDINS: And it discusses clams as one of the changes?

WITNESS BAXTER: Yes.

MS. DES JARDINS: And this is referring potamocorbula?

WITNESS BAXTER: Yeah, potamocorbula was the clam that had the biggest effect on the upper estuary.

MS. DES JARDINS: And then it also talks about small copepods and jellyfish. What about that change?

WITNESS BAXTER: So through this period, the copepod community is changed and now favors small copepods like limnoithona as opposed to some of the copepods that the smelts used to eat in more abundance than they're able to currently.

And jellyfish are another step in the food web, potentially a competitor for copepods and potentially a predator on some larval fish. So they're apparently more abundant now.

MS. DES JARDINS: These changes in the food web help drive the shift to invasive fish dominating? Do they affect the pelagic species?

WITNESS BAXTER: I think that they're more of an effect on pelagic species in the sense that food available in the open water is less nutritious and less beneficial than it was in the past.

MS. DES JARDINS: And finally it lists microcystis and aquatic weeds. Has there been an increase in the estuary?

WITNESS BAXTER: Yes, for both.

MS. DES JARDINS: Okay. So I also wanted to call your attention to the graphic that lists environmental drivers that were hypothesized to contribute to the regime shift. Are they listed in order of their hypothesized importance?

WITNESS BAXTER: Yes, that's -- we made an attempt to order them based on our knowledge at that time. We suspected that relative order might change over time.

MS. DES JARDINS: And at the time, the environmental drivers were listed as -- the first four listed as outflow, salinity gradient, landscape, and temperature?

WITNESS BAXTER: Yes, that's correct. That's the first four.

MS. DES JARDINS: And the next four were turbidity, nutrients, contaminants, and harvest?

WITNESS BAXTER: Yes.

MS. DES JARDINS: So I wanted to ask you about these drivers. So in the old regime, the outflow was seen as variable and high; is that correct?

WITNESS BAXTER: Yes, that's how we characterized it.

MS. DES JARDINS: Was that based on flow data, like, from the California Data Exchange Center?

WITNESS BAXTER: Yes. It's a -- it's kind of a relative characteristic, not an absolute characteristic.

MS. DES JARDINS: Yeah. And under the new regime, the outflow was variable and lower?

WITNESS BAXTER: Correct.

(Interruption in proceedings)

MS. DES JARDINS: And there you have our fire drills.

CO-HEARING OFFICER DODUC: Let's hope there's only one a day.

MS. DES JARDINS: So Mr. Baxter, what kind of effects does low outflow have on pelagic species?

WITNESS BAXTER: There's any -- there's quite a number of them. So low outflow reduces transport of young, reduces the size of what we call the low salinity zone, which is characterized as rearing

habitat for a number of the pelagic species. It can affect turbidity in the sense that high outflows often carry turbidity, low outflows don't.

It can influence nutrient concentration, contaminant concentration, and may be correlated in some cases with temperature. You know, the lack of rainfall often is associated with sunny conditions and perhaps warmer temperatures.

MS. DES JARDINS: So why did the POD team identify outflow as the most important driver, hypothesize that it could be?

WITNESS BAXTER: Primarily because it's kind of an overarching driver, as my previous answer indicated that outflow influences a lot of the other -- the other drivers. You know, we've pointed out salinity gradient, temperature, and turbidity -- each of those can be influenced by outflow or conditions that are creating the outflow. And similarly, nutrients and contaminants are influenced by outflow.

MS. DES JARDINS: Thank you. So next I'd like to ask you about the salinity gradient. Does it state that, under old regime, the salinity gradient was to the west and variable?

WITNESS BAXTER: Yes.

MS. DES JARDINS: And under the new regime,

it's to the east and constricted?

WITNESS BAXTER: That's correct.

MS. DES JARDINS: Was this also based on salinity data from monitoring the estuary?

WITNESS BAXTER: Yes.

MS. DES JARDINS: What are the effects of the salinity gradient on pelagic fishes?

WITNESS BAXTER: I'm not sure exactly what you mean by that.

MS. DES JARDINS: Okay. Never mind. I'll get to it.

I'd like to ask you about -- let's -- let's go to Page 25 of the POD synthesis report, Line 989. And I believe this discusses habitat suitability in relation to specific conductants and Secchi depth; is that correct?

MR. VAN LIGHTEN: Can we get that clarified? Are you referring to Line 989 or Line 989 and something else.

MS. DES JARDINS: The following line, Line 991 to Line 994.

MR. VAN LIGHTEN: Thank you.

WITNESS BAXTER: So, yes, both salinity and Secchi depth are factors that were used to -- or defined in the context of this publication, Feyrer, et

al. 2007 that were used to characterize habitat suitability.

MS. DES JARDINS: So is this the kind of changes in salinity gradient that affected the pelagic species?

WITNESS FRIES: I'm -- again, I'm not sure what you're asking me.

MS. DES JARDINS: Okay. So further on, on Line 995, it says the greatest changes in habitat suitability occurred in Suisun Bay in the San Joaquin River upstream of Three Mile Slough and in the southern Delta.

Is this referring to salinity and Secchi depth?

WITNESS BAXTER: Yes, in part.

MS. DES JARDINS: And that there's evidence that these habitat changes have had population level consequences for Delta smelt?

WITNESS BAXTER: Yes.

MS. DES JARDINS: Let's go -- I did pull up the paper. So let's go to Exhibit DDJ-283. So this is based on a study by Feyrer, et al., correct?

WITNESS BAXTER: Yes, mm-hm.

MS. DES JARDINS: And this is a copy of Frederick Feyrer, Matthew Nobriga, and Ted Sommer,

"Multidecadal trends for three declining fish species: habitat patterns and mechanisms in the San Francisco Estuary, California, USA," correct?

WITNESS BAXTER: Yes.

MS. DES JARDINS: And this is the paper that that section is based on?

WITNESS BAXTER: Contained in, yes.

MS. DES JARDINS: Yeah.

WITNESS BAXTER: Or, yes, "based on," you're correct.

MS. DES JARDINS: And does it state in the abstract that Secchi depth and generalized additive modeling revealed that Secchi depth and specific conductance were important predictors of occurrence for Delta smelt and striped bass?

WITNESS BAXTER: Yes.

MS. DES JARDINS: And is that your understanding currently?

WITNESS BAXTER: Yes, that pattern is persistent

MS. DES JARDINS: And that specific conductance and water temperature are important for thread- -- this also states that specific conductance and water temperature are important for threadfin shad?

WITNESS BAXTER: Yes.

MS. DES JARDINS: Is that your current understanding as well?

WITNESS BAXTER: I have not done any work with threadfin shad since this paper, so.

MS. DES JARDINS: Okay.

WITNESS BAXTER: I presume that the relationship has maintained itself, but I'm not a -- not certain.

MS. DES JARDINS: And in this paper found, continuing there, that the habitat suitability derived from the model depicted significant long-term declines for each species, correct?

WITNESS BAXTER: Correct.

MS. DES JARDINS: And this southeastern and western regions of the estuary exhibited the most dramatic changes?

WITNESS BAXTER: Correct.

MS. DES JARDINS: Is this your understanding as well?

WITNESS BAXTER: Yes.

MS. DES JARDINS: Is this part of what the graphic was describing about -- specific conductance is a surrogate for salinity, correct?

WITNESS BAXTER: Yes.

MS. DES JARDINS: So this is part of what the graphic was discussing about the change of -- the salinity gradient to the east constricted?

WITNESS BAXTER: Yes, these analyses contributed to the hypothesized information in that graphic.

MS. DES JARDINS: So let's go back to the graphic, which is, yeah, FOR-60, Page 144.

So there was also mentioned temperature and threadfin shad. I wanted to ask you, does Figure 8 show that the fourth driver is temperature?

WITNESS BAXTER: Yes.

MS. DES JARDINS: And that under the old regime temperatures were low and variable?

WITNESS BAXTER: Yes.

MS. DES JARDINS: And under the new regime they're high and uniform?

WITNESS BAXTER: Yes.

MS. DES JARDINS: What kind of effects do high and uniform temperatures have on Delta smelt?

WITNESS BAXTER: They tend --

CO-HEARING OFFICER DODUC: Hold on, please.

Mr. Bezerra.

MR. BEZERRA: Objection, vague and ambiguous as to what "high and uniform temperatures" actually

are.

CO-HEARING OFFICER DODUC: Ms. Des Jardins?

MS. DES JARDINS: This is a -- a --

CO-HEARING OFFICER DODUC: Ms. Des Jardins, let me suggest you ask Mr. Baxter his opinion of what "high and uniform" means in this table.

MS. DES JARDINS: What does "high and uniform temperatures" mean in this table?

WITNESS BAXTER: I guess I would characterize high temperatures as approximately 25 degrees centigrade. And maintaining them there in that vicinity creates a high metabolic demand for food, for energy, for Delta smelt that might not currently be supported in all areas of the estuary.

MS. DES JARDINS: Let's go -- I actually have something specific. Let's go to Page 56, Line 2412. And this refers to a study by Nobriga, et al., correct?

WITNESS BAXTER: Correct.

MS. DES JARDINS: And that the catch of Delta smelt began decreasing at temperatures above 20 degrees centigrade?

WITNESS BAXTER: Correct.

MS. DES JARDINS: And became almost zero another 25 degrees centigrade?

WITNESS BAXTER: Correct.

MS. DES JARDINS: And they suggest either avoidance of stressful conditions or high mortality?

WITNESS BAXTER: Correct.

MS. DES JARDINS: Does it state that temperatures near 25 degrees centigrade are likely to be near the lethal end of Delta smelt tolerance?

WITNESS BAXTER: I'd say that they're approaching physical tolerance, and they're -- probably a situation where it's very, very difficult for it to supply its energy needs with the resources in the Delta.

MS. DES JARDINS: And that this would certainly -- it -- the POD synthesis report states that it would certainly affect growth rates and metabolic activities after prolonged exposure?

WITNESS BAXTER: That's correct.

MS. DES JARDINS: And is that your understanding as well?

WITNESS BAXTER: Yes.

MS. DES JARDINS: And this cites the -- Jassby, a paper by Jassby in 2008 that noted a significant temperature increase in the Delta in recent years?

WITNESS BAXTER: It does.

MS. DES JARDINS: Is it your understanding

that there's a continuing temperature increase in the Delta?

WITNESS BAXTER: I'm not intimately familiar with that data, so I couldn't answer for certain.

MS. DES JARDINS: Okay. Besides Delta smelt, are other fish affected by high temperatures?

WITNESS BAXTER: Yes, high temperature varies for different species.

CO-HEARING OFFICER DODUC: Hold on, please.

Mr. Bezerra.

MR. BEZERRA: Yes, objection, move to strike. Vague and ambiguous as to what high temperatures are relative to, apparently, a wide variety of Delta fish.

MS. DES JARDINS: Are salmon affected by temperatures above 20 degrees centigrade, juvenile salmon?

WITNESS BAXTER: I suspect so, but I don't have any direct evidence. I know that salmon do not thrive in warmer temperatures. But I don't know what the cut-off is for that.

MS. DES JARDINS: What about longfin smelt?

WITNESS BAXTER: Yes, longfin smelt are more temperature sensitive than Delta smelt.

MS. DES JARDINS: And what about striped bass?

WITNESS BAXTER: Striped bass are less

temperature sensitive than Delta smelt, as juveniles.

MS. DES JARDINS: Okay. So let's go back again to Page 144.

And this shows -- does Figure 8 show that the fifth driver is turbidity?

WITNESS BAXTER: Yes.

MS. DES JARDINS: And that under the old regime turbidity was high and variable?

WITNESS BAXTER: Yes.

MS. DES JARDINS: And that under the new regime it is low and less variable?

WITNESS BAXTER: Yes.

MS. DES JARDINS: Why is turbidity ranked lower in importance than outflow, salinity gradient, and temperature.

MR. VAN LIGHTEN: Objection as to the use of the term "ranked." I think he's indicated it's a hypothesized graphic.

MS. DES JARDINS: In the hypothesized order of environmental drivers, turbidity is ranked fifth in importance, correct?

WITNESS BAXTER: I don't remember that discussion, so I can't really answer that question.

MS. DES JARDINS: All right. So then I'd like to go to your 2010 Delta flow recommendations.

And that's -- can we go to Exhibit DDJ-284? And this is -- is this a copy of "Effects of Delta Inflow and Outflow on Several Native, Recreational, and Commercial Species"?

WITNESS BAXTER: Yes.

CO-HEARING OFFICER DODUC: Ms. Des Jardins, if I can interrupt you for a minute, I see several people straining to look at the screen.

There are actually three small screens on the table behind Mr. Baxter. If you want to just lift them up, turn them around, you can see the documents easier.

Mr. Baxter you should have your own big screen -- oh, you were just helping others. Thank you. All right.

Sorry about that, Ms. Des Jardins. Please continue.

MS. DES JARDINS: It's okay.

So do you recall -- this do you recall this report?

WITNESS BAXTER: Yes.

MS. DES JARDINS: Did you participate in the 2010 -- can you confirm that the report was produced for the State Water Resources Control Board's 2010 Delta flow criteria informational hearing?

WITNESS BAXTER: Yes, it was.

MS. DES JARDINS: Did you appear at that hearing?

WITNESS BAXTER: I believe so.

MS. DES JARDINS: Yes. Did this report assess the effects of Delta inflow and outflow on several species of fish in the Delta?

WITNESS BAXTER: Yes.

MS. DES JARDINS: So I go -- I'd like to go down to Section 2.1 on Page 1 of the -- it's actually Page 2 of the report, PDF Page 2. And scroll down a little more.

So there was recommendations for Chinook salmon in the report, correct?

WITNESS BAXTER: I can see the section. I did not write that part of the report, so I'll presume that there were, but I'm not positive.

MS. DES JARDINS: Okay --

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

Ms. Ansley.

MS. ANSLEY: Jolie-Anne Ansley for the Department of Water Resources.

I was going to interpose an objection that she's failed to lay the foundation for sections of this

report he's been involved with and which species.

MS. DES JARDINS: Yeah.

Which sections of the report did you author? Or were you involved in --

WITNESS BAXTER: Most everything, with very little involvement in the Chinook salmon and other salmonids and very little involvement with the sturgeon. But otherwise, I'm generally familiar to very familiar with the rest.

MS. DES JARDINS: I would like to ask you just about the statement in the report here that it cites a 1987 study that survival of smolts is found to be positively correlated to flow and negatively correlated to water temperature.

Are you familiar with this conclusion about salmon?

WITNESS BAXTER: I believe I've heard that in the past. But I couldn't tell -- if you were to put me on the spot and ask me where that came from, I couldn't cite any specific report or publication.

(Interruption in proceedings)

MS. DES JARDINS: So I'd like to go to Page 14 of the recommendations. And let's scroll down, please. It might be on Page -- yeah.

I'd like to ask you about the Delta smelt

section. Did you contribute to the Delta smelt section?

WITNESS BAXTER: Yes.

MS. DES JARDINS: Let's scroll down a little bit, please.

So down towards the bottom, I believe it states that flows that locate X2 into the shallow waters of Suisun Bay are noted to result in high survival rates; is that correct?

WITNESS BAXTER: I haven't -- I know that they result at least in some years of high abundance, but I'm not familiar with the idea of -- or have not calculated survival rates specifically. Presumably that's one of the mechanisms or a mechanism for high abundance, but --

MS. DES JARDINS: But it does result in high abundance of Delta smelt as cited for the --

WITNESS BAXTER: It has periodically in the past, yes.

MS. DES JARDINS: And you cited to Jassby? It cites to Jassby, et al.?

WITNESS BAXTER: Yes.

MS. DES JARDINS: Are you familiar with that paper?

WITNESS BAXTER: I am.

MS. DES JARDINS: Is it peer reviewed?

WITNESS BAXTER: Yes.

MS. DES JARDINS: Finally, I'd like to ask you about Page 96.

CO-HEARING OFFICER DODUC: This document only has 40 pages.

MS. DES JARDINS: Oh, sorry. Let me ask you just before we go on to the next one, this states that freshwater outflow during the spring affects distribution of water by carrying them to low salinity habitat, correct?

WITNESS BAXTER: Yes.

MS. DES JARDINS: And you referred to this -- did you refer to this earlier? Is this your understanding?

WITNESS BAXTER: My understanding of what?

MS. DES JARDINS: Is it your understanding as well, that outflow -- spring outflow carries Delta smelt larvae to low salinity habitat?

WITNESS BAXTER: Yes, it carries a portion of the population --

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

Mr. Bezerra.

MR. BEZERRA: Yeah, vague and ambiguous as to

what levels of outflow, what areas of low salinity habitat. There's insufficient factual basis for the question.

CO-HEARING OFFICER DODUC: Ms. Des Jardins, are you referring to a particular sentence or finding in this document?

MS. DES JARDINS: Yes, there's a sentence in the summary.

Is this a summary about -- there's a sentence in the summary where it says -- at the beginning of the last paragraph.

CO-HEARING OFFICER DODUC: Can we see where that is? Where that is, Ms. Des Jardins, what page?

MS. DES JARDINS: Page 14.

CO-HEARING OFFICER DODUC: Okay.

WITNESS BAXTER: First sentence of the last paragraph?

MS. DES JARDINS: Yes.

CO-HEARING OFFICER DODUC: And your question is whether Mr. Baxter agrees with that?

MS. DES JARDINS: Yes.

WITNESS BAXTER: Yes.

MS. DES JARDINS: And is having the larvae carried into low salinity and rearing there, is that one of the hypothesized mechanisms for increase in

abundance when X2 is in Suisun Bay?

WITNESS BAXTER: Yes.

MS. DES JARDINS: Thank you.

Okay. So now I would like to go to Exhibit SWRCB-25. And I'd like to go -- and this is the State Water Resources Control Board Delta Flow Criteria Report. Are you familiar with this document?

WITNESS BAXTER: I know it was produced.

MS. DES JARDINS: Let's go to Page 96, please.

CO-HEARING OFFICER DODUC: Perhaps we might let Mr. Baxter complete his answer.

How familiar are you with this? You know it was produced, but . . .

WITNESS BAXTER: I haven't read it, and I'm not familiar with its contents. I did not review it for factual basis or anything like that or review it to improve my knowledge of circumstances controlling the Delta water quality or anything like that.

MS. DES JARDINS: Well, I just wanted to ask you -- let's scroll back. Can we scroll back? We had it on the table. Go up. I just wanted to ask -- it's on Page 109 somehow. Can you please go back to Page 96.

Oh, I meant PDF Page 96. I understand now. Sorry.

So I just wanted to ask you about this table was based on Department of Fish and Game's recommendation for starry flounder in the 2010 --

MR. VAN LIGHTEN: Objection, calls for speculation. I think she's asking for somebody else's table -- she's asking for a table prepared by another agency. It says it was prepared on Department data, but I don't think he would know that since he didn't prepare the report.

CO-HEARING OFFICER DODUC: Are you familiar with this table, Mr. Baxter?

WITNESS BAXTER: This is the first time I saw it. It didn't come from the report that we produced.

CO-HEARING OFFICER DODUC: Is there a specific question you wish to ask Mr. Baxter about this table?

MS. DES JARDINS: Yes, I just wanted to ask, do you recall making the DFG recommendations for starry flounder, included very high outflows in wet years?

WITNESS BAXTER: I don't know that anything that I was involved in made a specific recommendation about flow. Certainly the relationship between outflow and starry flounder abundance doesn't affect the --

CO-HEARING OFFICER DODUC: Hold on, please.

Apparently someone really wants to come in.

(Interruption in proceedings)

CO-HEARING OFFICER DODUC: Then they heard it was the WaterFix hearing.

MS. DES JARDINS: Clearly.

So is there a correlation between abundance and starry flounder and high outflows, very high outflows during wet years.

WITNESS BAXTER: Yes.

CO-HEARING OFFICER DODUC: Ms. Ansley.

MS. ANSLEY: I'd like to say I don't think that she's necessarily laid a foundation for his knowledge and extent of his studies of starry flounder specifically. So if she could ask those questions first.

CO-HEARING OFFICER DODUC: What is your knowledge, Mr. Baxter, of the starry flounder and the necessary outflow for their protection?

WITNESS BAXTER: Well, I know starry flounder ecology in the San Francisco Estuary. I have reproduced the outflow and abundance relationships numerous times in my career. And I have hypothesized and looked at a number of mechanisms that could account for the outflow abundance relationships.

But I don't believe I've ever made a statement or produced any information that actually defined criteria for success or --

MS. DES JARDINS: Let's put the specific criteria aside, I just wanted to ask about your understanding of flow, abundance relationships for starry flounder. Are they more abundant in years of very high outflow?

WITNESS BAXTER: Generally, yes. Not in every circumstance.

MS. DES JARDINS: What is your hypothesized reason for their abundance during those years?

WITNESS BAXTER: There's several reasons. One, the adults tend to spawn offshore, so high flow sends a signal, a freshwater signal, out into the marine environment that could be used by young to follow back to the estuary.

Secondly, high flow generates what's called gravitational currents, which in the case of the marine side, create bottom currents, moving upstream that facilitate starry flounder movement.

And, finally, starry flounder seem to do best in relatively warm shallow brackish-water habitats. And those areas are expanded in high flow years.

MS. DES JARDINS: Do longfin smelt also use brackish water habitats?

WITNESS BAXTER: Yes.

MS. DES JARDINS: And are their populations

similarly expanded during high outflow years?

WITNESS BAXTER: The distribution of larvae and early juveniles changes quite dramatically in high flow years.

MS. DES JARDINS: What about bay shrimp? Are bay shrimp populations correlated with high outflow?

CO-HEARING OFFICER DODUC: Hold on, please.

Ms. Ansley.

MS. ANSLEY: I believe we're off the direct questions submitted by Ms. Des Jardins. And if we're moving on to other species such as bay shrimp, perhaps she could point out where these comes from.

CO-HEARING OFFICER DODUC: Yes. We have completed an hour of Ms. Des Jardins' questions and the questions that she provided.

MS. DES JARDINS: Okay. That was just -- that was the last marine species, and I apologize that I didn't --

CO-HEARING OFFICER DODUC: That's fine. Let's go ahead and ask Mr. Baxter to answer if he's able.

MS. DES JARDINS: Yeah. So are these kind of high outflows associated with increased populations of bay shrimp?

WITNESS BAXTER: Yes.

MS. DES JARDINS: And do they use similar

brackish water habitat?

WITNESS BAXTER: Yes.

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

MS. DES JARDINS: That concludes my question.

CO-HEARING OFFICER DODUC: Thank you, Ms. Des Jardins.

Before we take a short morning break, let me run through the list of cross-examination that I have, and we'll make any necessary adjustments. I have the Department of Water Resources requesting 60 to 90 minutes.

Is that still the case Ms. Ansley?

MS. ANSLEY: I think we're closer now to 60, and we'll endeavor to be even more streamlined.

CO-HEARING OFFICER DODUC: All right. Mr. Bezerra, 60 minutes?

MR. BEZERRA: Yes, although I think it will be less time than that.

CO-HEARING OFFICER DODUC: All right. Ms. Nikkel, 20 minutes? That was a nod from Ms. Nikkel.

I do not see Ms. Meserve, but she did request 15 minutes. And I see Mr. Ruiz, Mr. Herrick requested 30 minutes on your behalf.

MR. RUIZ: Probably 20.

CO-HEARING OFFICER DODUC: Okay. Mr. Keeling I don't see either, but he did request 30 minutes.

And Mr. Jackson, 60 minutes?

MR. JACKSON: Yes, I think I can do it in 60 minutes.

CO-HEARING OFFICER DODUC: All right. We will -- I'm not sure which clock to look at now. We will take a break until 10:50. And during that time, I'll ask the Department to come up and set up for cross-examination.

(Recess taken)

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

It is roughly 10:50. We are back in session. And we've -- at least I've heard from Mr. Ruiz that Ms. Meserve will not be attending, so we can cross that off. It always happens that, when I threaten to keep people really, really late into the evening, things somehow get more streamlined and efficient.

So right now, I'm looking about roughly four hours of cross-examination. And then, depending on whether there's any -- how do we do that? Is there redirect when there's --

CO-HEARING OFFICER MARCUS: Yes.

CO-HEARING OFFICER DODUC: Okay. There is?

So we may not be staying until 7:00 p.m. as I threatened.

MR. JACKSON: You evidently scared the guy from Stanford, because he won't be hear today either.

CO-HEARING OFFICER DODUC: All right. So we're now down to less than four hours of cross-examination. I should threaten people more often.

CO-HEARING OFFICER MARCUS: There's at least one person missing today.

CO-HEARING OFFICER DODUC: Yes, my Cal buddy.

All right. With that, we will now turn to -- so is this now a joint cross by State Water Contractor -- no just DWR.

MS. ANSLEY: This is just for DWR.

CO-HEARING OFFICER DODUC: And if you might give us a list of the topics you'll be covering.

MS. ANSLEY: Sure. So today what we're going to do is we have some initial questions on documents and studies that Mr. Baxter has been involved in, just sort of a foundational series of questions. We have some questions that go directly to the topics raised by Ms. Des Jardins in terms of pelagic organism decline, longfin smelt, some of the exact same documents that

she raised and studies that were referenced and paragraphs that she pulled up on the screen, which would be Feyrer and Jassby; so we're going to stick to that.

And then we have questions regarding longfin smelt, the correlation with X2, entrainment, and effects of the North Delta diversions.

CO-HEARING OFFICER DODUC: All right. Please proceed.

CROSS-EXAMINATION BY MS. ANSLEY

MS. ANSLEY: Good morning, Dr. Baxter.

WITNESS BAXTER: Just mister. I'm not a doctor.

MS. ANSLEY: Oh -- Mr. Baxter.

My name is Jolie-Anne Ansley, and I'm here with the Department of Water Resources, and with me today is Mr. Tripp Mizell.

So you're appearing here today as a representative of the CDFW?

WITNESS BAXTER: Yes.

MS. ANSLEY: Were you involved in the drafting of the Fish and Wildlife Service and the National Marine Fishery Service 2008 and 2009 Biological Opinions?

WITNESS BAXTER: No.

MS. ANSLEY: Did you provide any comments on those Biological Opinions on behalf of the CDFW?

WITNESS BAXTER: Good question. Not that I recall.

MS. ANSLEY: Is your involvement in the implementation of the existing Biological Opinions on the projects limited to the smelt working group?

WITNESS BAXTER: Yes.

MS. ANSLEY: Were you involved in the drafting of the current CDFW consistency determinations for the operation of the State Water Project?

WITNESS BAXTER: No.

MS. ANSLEY: Were you involved in the effects analysis for the existing ITP for the State Water Project?

WITNESS BAXTER: Yes.

MS. ANSLEY: In that effects analysis, was your participation limited to longfin smelt?

WITNESS BAXTER: Yes, I believe so. I think that was the gist of that document.

MS. ANSLEY: And pardon me. I have that note right there, that it was longfin smelt.

Did you participate in the creation of the ITP for the CWF, for the California WaterFix?

WITNESS BAXTER: Yes, but very limited. I

believe that we reviewed -- or I -- well, we, but I reviewed as well the Delta smelt, and I believe it was called the Biological Basis. And that was pretty much the extent of my participation.

MS. ANSLEY: Limited to Delta smelt as opposed to longfin smelt?

WITNESS BAXTER: Yeah, they hadn't finished the longfin section when they asked us to review and the rest of it wrapped up rapidly.

MS. ANSLEY: Were you involved in any way in the creation of the Adaptive Management Program for the California WaterFix?

WITNESS BAXTER: No.

MS. ANSLEY: Were you involved in the drafting of the October 18th, 2017 clarification memo for the California WaterFix ITP?

WITNESS BAXTER: No.

MS. ANSLEY: That concludes our first topic.

We're moving on now to topics raised by Ms. Des Jardins.

If we could call up FOR-60, which is the 2010 pelagic organism decline work plan and synthesis of results that Ms. Des Jardins questioned you about. And obviously you recall that questioning?

WITNESS BAXTER: Yes.

MS. ANSLEY: And I would like to just confirm the nature and bounds of this work plan. This work plan describes various conceptual models; is that correct?

WITNESS BAXTER: Yes.

MS. ANSLEY: And these conceptual models were provided as a framework for future IEP, Interagency Ecological Program, investigations, correct?

WITNESS BAXTER: Correct. It also provides kind of a framework for discussion of the information that we had at hand.

MS. ANSLEY: The information to date, at the time this was drafted?

WITNESS BAXTER: At the time of publication.

MS. ANSLEY: Didn't the 2010 -- and if I say "Pelagic Organism Decline Work Plan," can we agree that that's this document?

Didn't the 2010 Pelagic Organism Decline Work Plan conclude that the pelagic organism decline was likely caused by multiple interacting drivers?

WITNESS BAXTER: I think that was our working hypothesis at that time, yes.

MS. ANSLEY: And the purpose of the pelagic organism decline studies was to investigate how various possible causes of the pelagic organism decline acted

and interacted on various time scales; is that correct?

WITNESS BAXTER: Yes.

MS. ANSLEY: And Ms. Des Jardins talked a lot about Figure 8, Page 144 of this report. We had it earlier, sorry. Okay.

Doesn't the 2010 Pelagic Organism Decline Work Plan describe the ecological regime shift as a conceptual model?

WITNESS BAXTER: Yes. And this is one of the graphics that attempts to explain that.

MS. ANSLEY: That lays out this conceptual model?

WITNESS BAXTER: Yes.

MS. ANSLEY: And I just want to confirm that I heard you correctly earlier that, when Ms. Des Jardins asked you about the relative ranking of these environmental drivers, you stated that that was a ranking that was potentially subject to change due to new information.

WITNESS BAXTER: Correct.

MS. ANSLEY: And did this 2010 Pelagic Organism Decline Work Plan indicate that further study was needed?

WITNESS BAXTER: Yes, I believe that was concluded at the end.

MS. ANSLEY: And that was because pelagic organism decline, that the drivers were still as yet unknown at that time?

WITNESS BAXTER: I think it might be more accurate to say that the specific effects of many of the drivers were still being investigated and the interacting effects.

MS. ANSLEY: And do you recall that -- perhaps we can bring up DDJ-283.

Do you recall Ms. Des Jardins asking you questions about this report by -- and please correct my pronunciation. Is it Feyrer?

WITNESS BAXTER: I pronounce is Feyrer.

MS. ANSLEY: Feyrer.

WITNESS BAXTER: Because I believe the last R is silent.

MS. ANSLEY: Okay. Feyrer 2007?

WITNESS BAXTER: I do remember that.

MS. ANSLEY: And are you familiar with this paper?

WITNESS BAXTER: Yes.

MS. ANSLEY: And is it your understanding that this paper has been questioned statistically, the approach has been questioned by the National Academy of Sciences in 2010?

WITNESS BAXTER: Yes, I was aware of that.

MS. ANSLEY: And that National Academy of Science panel review, which is in the record here as SWRCB-54, concluded that this analysis was associated with undisclosed uncertainty?

WITNESS BAXTER: I believe that was one of the statements that they made.

MS. ANSLEY: And have you heard at least some criticism of this early work by Feyrer that it was the use of the linear additive model that produced results such that zero adults in one year could still yield some young in following years? Was that the nexus of the criticism?

WITNESS BAXTER: I don't know that specific detail.

CO-HEARING OFFICER DODUC: Please hold on, Ms. Ansley.

Ms. Des Jardins.

MS. DES JARDINS: Objection, this assumes facts not in evidence. There's a lot of hand waving about the National Academy of Sciences report. And there's no evidence that these statements are actually in the report.

MS. ANSLEY: My questions went to whether he understood that the National Academy of Sciences had

criticized that. We can certainly bring that up, but my questions actually have already been answered by Mr. Baxter.

CO-HEARING OFFICER DODUC: They have.

MS. ANSLEY: So I'm happy to move on to the next paper.

CO-HEARING OFFICER DODUC: Mr. Jackson.

MR. JACKSON: Yes, obviously a question is not evidence, so it would actually be a little clearer if she'd just ask a question and not try to get somebody to confirm the statement to which there is no evidence in the record.

CO-HEARING OFFICER DODUC: I believe she pointed to the document as an exhibit. In any case, overruled.

Please move on to your next line of questions, Ms. Ansley.

MS. ANSLEY: And you were also asked about -- by Ms. Des Jardins about Jassby, et al., 1995?

WITNESS BAXTER: Yes.

MS. ANSLEY: And this is a paper that describes the winter-spring X2 relationship with the fall midwater trawl abundance for several species; is that correct?

WITNESS BAXTER: Yes.

MS. ANSLEY: Now can we also bring up DWR-1155, which would be on the -- I believe the thumb drive that we provided to Mr. Hunt.

Are you familiar with this study as well by Kimmerer in 2013?

WITNESS BAXTER: Yes, yes.

MS. ANSLEY: Okay. So you're familiar with the Jassby, et al., 1995 and the Kimmerer study here that is shown on the screen. Isn't it true that Jassby and Kimmerer as well as others have evaluated the X2 abundance relationships over time and have concluded that Delta smelt abundance is not correlated with winter-spring X2; is that correct?

WITNESS BAXTER: It's correct in the sense that there is not a continuous increase with increased outflow, yes.

MS. ANSLEY: And related more to Ms. Des Jardins's questions, didn't Kimmerer, et al., 2013, what we have here on the screen as DWR-1155, conclude that X2 alone was not a good descriptor of Delta smelt habitat?

WITNESS BAXTER: Yes, I believe that's correct.

MS. ANSLEY: And didn't Kimmerer in this study also conclude -- and if you need a moment and if you

need to look at a particular page, what I'm looking at is Page 13. But -- I assume that you're familiar with this paper.

But didn't Kimmerer, et al., in this paper determine that, given the difficulty in determining the controls of the Delta smelt population, it is not surprising that a single descriptor such as X2 would be an inadequate description for this species?

WITNESS BAXTER: I don't recommend that -- or "recommend" -- I don't remember that specific quote there, but it seems consistent with what I remember of the paper.

MS. ANSLEY: Okay. And the area I'm looking at, you know, feel free to take a look, is the -- of the four highlighted paragraphs, I'm looking at the second one on the left column. And -- where he says, "Given the difficulty in determining the controls in the Delta smelt population, it is not surprising." So it's not really meant to be a trick. Please feel free to go ahead and review that paragraph.

WITNESS BAXTER: Yeah, I agree that characterizes that paragraph.

MS. ANSLEY: And do you recall that he concluded that the volume or area of physical habitat as defined by salinity is not a strong influence on

abundance of many -- on abundance; is that correct?

WITNESS BAXTER: I recall him making a statement that, for longfin, that the relationship between increased area and flow and the longfin outflow abundance relationship didn't have the same slopes; they didn't go up in parallel.

But I don't know about -- I'm not clear on what you're saying is in this document.

MS. DES JARDINS: I wanted to object, again. If you'd like to ask him about a specific statement, if she could go to it instead of just hand waving and saying it's in there.

CO-HEARING OFFICER DODUC: I believe she just pointed out the statement.

MS. ANSLEY: I'd like to move on now to asking you about longfin entrainment.

WITNESS BAXTER: Okay.

MS. ANSLEY: And do you recall the conceptual model described in the 2009 longfin smelt incidental take permit application regarding a potential relationship between freshwater and transport of longfin larvae downstream?

WITNESS BAXTER: Say that again. Is this the effects analysis? Or what are we dealing with?

MS. ANSLEY: Yes. Can we look at DWR-1157

which is the 2009 ITP effects analysis.

WITNESS BAXTER: Okay.

MS. ANSLEY: And I think, if we go to Page 3.

And I was just simply asking if you recalled the conceptual model described in the 2009 longfin smelt incidental take permit application, the effects analysis, regarding a potential relationship between freshwater and transport of longfin larvae downstream.

WITNESS BAXTER: Yes.

MS. ANSLEY: For a shorthand, could we agree that I can refer to that as the larval transport theory?

WITNESS BAXTER: Okay.

MS. ANSLEY: Okay.

And if I refer -- so this larval transport theory describes the potential mechanism underlying the X2 abundance relationship. And would that mean -- would that be correct to say that this is a model that shows spring outflow carrying newly hatched larvae into the low salinity zone?

WITNESS BAXTER: Yeah. So larvae hatch from winter through spring. And one of the mechanisms for potential increase in abundance is for flows to transport larvae away from the regions where they might have been entrained otherwise.

MS. ANSLEY: And this would be a conceptual model for longfin smelt spawning in the Delta; is that correct, in this analysis?

WITNESS BAXTER: It would be the conceptual model for larvae surviving from longfin smelt spawning in the Delta and hatching there.

MS. ANSLEY: And that's what the I- -- the CWF ITP -- now we're talking about the Cal WaterFix ITP -- also focused its analysis on longfin smelt in the Delta; is that correct?

WITNESS BAXTER: I'm not familiar with what they've produced.

MS. ANSLEY: Oh, is that because earlier you testified that you concentrated on Delta smelt for the Cal WaterFix ITP?

WITNESS BAXTER: So I only reviewed --

MR. VAN LIGHTEN: Why don't you ask him what he did because I think you need to go back and establish that. It's a little different, as I recollect, what he stated on the record. You might want to clarify that.

MS. ANSLEY: I'm going to clarify that right now.

I'm sorry. Did you -- when you -- in terms of the Cal WaterFix ITP, was your focus limited to Delta

smelt, was that what you testified?

WITNESS BAXTER: And very limited, even on Delta smelt, to a review of kind of the biological basis information as opposed to the -- whatever criteria might have been proposed.

MS. ANSLEY: Now I'd like to ask you some recent information that's come out.

You testified earlier with -- when we were talking about the conceptual model in the 2010 work plan, that new information could obviously change the relative ranking of the environmental drivers behind the pelagic organism decline. And I'd like to ask you about some new information that's come out on longfin smelt for the recent IEP Conference. And you were one of the chairs or the organizers of that conference?

WITNESS BAXTER: I was a session chair for a longfin session, yes, longfin smelt session.

MS. ANSLEY: And at that conference, the session that you chaired, some of the more recent research results regarding longfin smelt spawning and species utilization of areas outside the Delta was presented; is that correct?

WITNESS BAXTER: Yes.

MS. ANSLEY: And one of the papers presented at the IEP, was Grimaldo, et al, 2017; is that correct?

Can we call that up as DWR-1158.

WITNESS BAXTER: So Lenny presented some visuals from this -- or from the sampling that went into this document.

MS. ANSLEY: And you're familiar with this document as well?

WITNESS BAXTER: Yes.

MS. ANSLEY: And didn't this paper and some of the results you presented at the IEP conference show that longfin smelt larvae were present downstream of the Delta?

WITNESS BAXTER: Oh, yes. It's not a surprise.

MS. ANSLEY: And did Grimaldo, et al., 2017, the paper you see on the screen, as well as what you presented at the IEP also show that larvae were found present in the Napa River?

WITNESS BAXTER: Yes.

MS. ANSLEY: Haven't CDFW surveys found that larvae were also present in the Napa River?

WITNESS BAXTER: Yes.

MS. ANSLEY: Isn't it true that even more recently, Grimaldo, et al. have also found larvae present in Petaluma River; that would in the 2018 research?

WITNESS BAXTER: I'm not sure that he was the one that found them there. But I know Jim Hobbs has found longfin in the Petaluma River.

MS. ANSLEY: Can we call up DWR-1160. And this is the 2018 information from Grimaldo that I was referencing, if that helps refresh your recollection, regarding finding larvae in the Petaluma River.

WITNESS BAXTER: Yeah, he could. It's not out of the realm of possibility. They're apt to use a number of the small tributaries in the estuary.

MS. ANSLEY: And you just testified now that it is your recollection that Hobbs, et al. also presented information regarding longfin smelt spawning downstream of the Delta?

WITNESS BAXTER: Yes.

MS. ANSLEY: And Hobbs, et al. also showed that longfin smelt were present in the South Bay?

WITNESS BAXTER: Correct.

MS. ANSLEY: And these findings by Grimaldo and Hobbs, they gave some indications that longfin smelt could be spawning in the tributaries downstream of the Delta; is that correct?

WITNESS BAXTER: That's correct.

MS. ANSLEY: You also did otolith work with Dr. Hobbs in 2010; is that correct?

WITNESS BAXTER: Say that again, please?

MS. ANSLEY: You also yourself did otolith work with Dr. Hobbs in 2010; is that correct?

WITNESS BAXTER: I facilitated collection of fish that contributed to his ability to look at otoliths.

MS. ANSLEY: Based on your understanding of that otolith study, did that also show that longfin smelt that spawned in bay tributaries were surviving to contribute to the adult population?

WITNESS BAXTER: I don't think that we've come full circle on that yet. In terms of the otolith work, you know, we have recognized that longfin adults have been collected in some bay tributaries, and larvae or small juveniles have been found in those same tributaries. Whether they live to survive is a result pending Jim Hobbs's analyses.

MS. ANSLEY: Okay. And didn't Grimaldo, et al. show in their work that approximately 50 percent of the larvae found in the CDFW surveys from 2009 to 2013 were found in Suisun Bay?

WITNESS WILDER: I don't remember the specific number, but certainly when larvae hatch, they're at the whim of net flows. And as long as net flows move out of the Delta, they're going to move into Suisun Bay.

So that doesn't seem like an unreasonable estimate.

MS. ANSLEY: If you'd just give me a moment, I'm going to skip through some questions that I was going to ask.

If you could just give me a moment, I'm crossing out questions based on his answer of his involvement with Cal WaterFix ITP. So if I could have just a moment, I will move it along even faster then.

All right. We are on our final couple questions. I thank you for your patience about that. I was trying not to ask you things that you'd already testified to or were not involved in.

So are you aware of the Nobriga and Rosenfield 2016 paper? And we can bring that up. I believe it's NRDC-36.

WITNESS BAXTER: Yes, I'm familiar with it.

MS. ANSLEY: And did you review the paper in your official capacity as a Department employee?

WITNESS BAXTER: I was not a peer reviewer on that paper. And I don't believe that I was asked to read it for any particular reason. Does that answer your question?

I did read it. It's part of the longfin literature, and it's important for me to know.

MS. ANSLEY: Okay. I'm fine with that,

obviously.

Did they find that recruitment-juveniles-per-spawners, is possibly correlated with Delta outflow in this paper, to your memory?

WITNESS BAXTER: Yes, I believe so.

MS. ANSLEY: Did they consider other flow variables, such as the Napa River flow or the Petaluma River flow?

WITNESS BAXTER: They modeled a whole bunch of different variables, but I can't say yes or no to those. Those are really small tributaries. So the relative effects of flow from those tributaries are pretty small, you know, almost miniscule relative to the Delta.

MS. ANSLEY: Do you recall if they consider flows into the South Bay?

WITNESS BAXTER: No, I don't believe they did.

MS. ANSLEY: Did they consider the importance of longfin rearing in regions and habitats downstream of Suisun Bay and the Delta in their discussions.

WITNESS BAXTER: Yikes. I don't know whether they did or didn't. But it certainly is important.

MS. ANSLEY: And do you recall if they found evidence for density dependant morality between age zero and age 2 fish?

WITNESS BAXTER: I believe that was one of their findings or one of the aspects that they believed was true.

MS. ANSLEY: Does that complete your answer?

WITNESS BAXTER: Yeah.

MS. ANSLEY: That concludes our questions for Mr. Baxter. Thank you for your time.

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

Mr. Bezerra.

What I would like to do is take our lunch break after Mr. Bezerra concludes his cross-examination. That should take us a little after noon.

MR. BEZERRA: I'm hoping we'll get done by noon.

CO-HEARING OFFICER DODUC: That would be wonderful.

MR. BEZERRA: Give it a shot.

CROSS-EXAMINATION BY MR. BEZERRA

MR. BEZERRA: Good morning, Mr. Baxter. My name is Ryan Bezerra. I represent the Cities of Folsom and Roseville, Sacramento Water District, and primary attorney for the whole Sacramento Valley Water Users group for purposes of this cross-examination, just for

background.

WITNESS BAXTER: Good morning.

MR. BEZERRA: Good morning. So the three topics I plan to discuss are the fall midwater trawl methodology, turbidity changes in the Delta, and statistical analyses of the trawl data.

So if we could please pull up DDJ-282.

And Mr. Baxter, these results -- well, let's start with the one on the screen, the Delta smelt annual abundance indices.

This result is an index of relative abundance of Delta smelt, correct?

WITNESS BAXTER: That's correct.

MR. BEZERRA: And the other results in this exhibit -- if we could scroll down to the next one, please, which I believe is for longfin. Is it similarly for longfin; it's an index of relative abundance?

WITNESS BAXTER: Yes, correct.

MR. BEZERRA: Okay. And I believe you stated previously that the actual trawl nets are better at catching some life stages of fish than others; is that correct?

WITNESS BAXTER: Yes.

MR. BEZERRA: What life stages are they better

at catching?

WITNESS BAXTER: It depends upon kind of the size of the fish. Right? So, to say "life stage" may be not as accurate as the size. So for striped bass, the net retains virtually all the striped bass young-of-the-year, in the fall.

For Delta smelt, which are getting to sub-adult stage as we qualify them, it's not retaining all the fish, you know, until November, perhaps sometimes even December. Some fish are slim enough, small enough that they slip through or can slip through the nets. So we have an incomplete retention of Delta smelt and, similarly, longfin smelt by the fall midwater trawl for the young-of-the-year fish.

MR. BEZERRA: So the actual trawl nets allow some juvenile longfin smelt and Delta smelt to get out of the net, correct?

WITNESS BAXTER: Correct.

MR. BEZERRA: And the index, however, is based on the fish that you catch, correct?

WITNESS BAXTER: Correct.

MR. BEZERRA: Okay. So these --

WITNESS BAXTER: That's why we say it's a relative index as opposed to a population, estimate of population size. We're not assuming 100 percent

effectiveness for the sample we take.

MR. BEZERRA: So just to clarify what I think you just said, these abundance indices from the fall midwater trawl are not an index of these fishes' populations in the Delta, correct?

WITNESS BAXTER: I would call them an index of the population, not an estimate of the exact population size.

MR. BEZERRA: Okay. Let me make sure I've got it. So these indices don't tell you how large the actual population of these fishes in the Delta is, correct?

WITNESS BAXTER: Correct.

MR. BEZERRA: Okay. Thank you. So these indices, they are not raw sampling data, correct?

WITNESS BAXTER: Correct.

MR. BEZERRA: And CDFW provides certain weighting factors to the raw data to calculate these indices, correct?

WITNESS BAXTER: Correct.

MR. BEZERRA: Okay. If we could please pull up Exhibit BKS-263, which is a paper, Newman 2008. Thank you.

And Mr. Baxter, are you familiar with this paper?

WITNESS BAXTER: Yes.

MR. BEZERRA: Could we please go down to the fourth PDF page, which is Page 3. Okay.

Do you see the map there on this page?

WITNESS BAXTER: Yes.

MR. BEZERRA: Do you understand what the map is showing?

WITNESS BAXTER: The map is showing the sub-regions that Newman used to calculate an estimate of abundance based on fall midwater trawl data.

MR. BEZERRA: In calculating the abundance index, CDFW applies certain weighting factors to the fish caught in each of these regions, correct?

WITNESS BAXTER: Yes.

MR. BEZERRA: How does that weighting work?

WITNESS BAXTER: To my understanding, the weighting historically was based on the volume of water in each of those regions. And I'm not sure how accurate it was. It's just a -- currently, it's just a multiplier that we've used for consistency. We're in the process of investigating whether those values need to be updated for current channel dimensions and things like that.

MR. BEZERRA: So the abundance indices, these weights assigned to these regions, they don't depend on

the actual volume of water that the trawl samples in collecting fish, correct?

WITNESS BAXTER: Correct.

MR. BEZERRA: Does the actual volume of water that the trawl samples vary from year to year?

WITNESS BAXTER: Probably. I don't have, you know, explicit memory. I believe that we looked at that in the tabs.

MR. BEZERRA: Okay. For each of these regions, has CDFW used a constant weighting factor --

WITNESS BAXTER: Yes.

MR. BEZERRA: -- over time?

And do you know how long it's been since that factor was adjusted?

WITNESS BAXTER: I believe that we're still using the same factors that were originally calculated.

MR. BEZERRA: Okay. And that weighting for each of these regions doesn't depend on how many fish are caught in any given region, correct?

WITNESS BAXTER: No.

MR. BEZERRA: Okay. Thank you. Has the weighting ever changed to reflect potential changes in the fishes' use of habitat within these regions?

WITNESS BAXTER: No.

MR. BEZERRA: Okay. Now, when CDFW conducts

the trawl, do you sample at some stations that are not used in calculating the abundance index?

WITNESS BAXTER: Yes.

MR. BEZERRA: And where are those non-index sampling areas generally located?

WITNESS BAXTER: They tend to be in the eastern Delta, the North Delta, principally, the Sacramento River above Isleton, and the North Delta in Cache Slough deep water channel area.

MR. BEZERRA: Okay. You kind of anticipated my question. So some of these non-index stations are located in the Cache Slough area, correct?

WITNESS BAXTER: Yes.

MR. BEZERRA: So on this map, those areas are sort of adjacent to this Area 15; is that accurate?

WITNESS BAXTER: Yeah, they're upstream of it or north of it.

MR. BEZERRA: And the fish that are caught in Cache Slough are not included in CDFW's calculation of the fall midwater trawl abundance index, correct?

WITNESS BAXTER: Correct, as it's been historically calculated.

MR. BEZERRA: To the best of your knowledge, have there been any trends in the Delta smelt's use of the Cache Slough complex as habitat?

WITNESS BAXTER: I'm trying to remember what I've seen. So the Delta smelt has used it. They do use that area. I can't say that I recall a trend, but there have been some years where use of the North Delta has been substantially greater than previous years.

We have investigated this and the contribution of the North Delta will be part of abundance index reviews in the future.

MR. BEZERRA: But as of now, Delta smelt caught in the Cache Slough complex are not included in calculating the fall midwater trawl abundance index, correct?

WITNESS BAXTER: They're not -- they're not part of the index that we calculate to compare relative abundance from '67 to current. But since the fall midwater trawl started sampling there in 2011, we have begun to calculate a contribution to the index for those regions.

MR. BEZERRA: And as to longfin smelt, do you know -- to the best of your knowledge, have there been any trends in longfin smelt's use of the Cache Slough complex?

WITNESS BAXTER: Longfin in the fall barely use that area.

MR. BEZERRA: Okay.

Okay. Now, this paper which is marked as Exhibit BKS-263, you said you were familiar with it. And the author is Newman. The author was employed by the United States Fish and Wildlife Service, correct?

WITNESS BAXTER: Correct.

MR. BEZERRA: Could we please scroll to the third PDF page, which is 2, and particularly under the heading "Criticism of the Indices."

Are you aware of Newman's criticisms of the indices as expressed here?

WITNESS BAXTER: Yes.

MR. BEZERRA: To the best of your knowledge, had CDFW altered the fall midwater trawl methodology in response to these criticisms?

WITNESS BAXTER: No.

MR. BEZERRA: Could we please pull up Exhibit DDJ-284.

And we discussed this previously, this is the Department's submission to the State Board's 2010 Delta flow criteria --

WITNESS BAXTER: Yes.

MR. BEZERRA: Could we please go to Page 11. Thank you. And -- yes.

These graphs, this figure, which is Figure LF1, correct?

MR. BEZERRA: Yes. Okay. These figures display a statistical correlation between the fall midwater trawl abundance index for longfin smelt in December to May Delta outflows, correct?

WITNESS BAXTER: Yes.

MR. BEZERRA: And these figures are based on the calculated abundance index from the fall midwater trawl, correct?

WITNESS BAXTER: Yes.

MR. BEZERRA: So that's subject to the various qualifications we just discussed, correct?

WITNESS BAXTER: Yes.

MR. BEZERRA: These correlations are not based on raw sampling data from the trawl, correct?

WITNESS BAXTER: Correct.

MR. BEZERRA: These correlations reflect in CDFW's weighting methodology in calculating the abundant index, correct?

WITNESS BAXTER: Yes.

MR. BEZERRA: And these abundance indices do not reflect any fish caught at CDFW's non-indexed sampling locations, correct?

WITNESS BAXTER: Yes.

MR. BEZERRA: Thank you.

Could we please go to Page 9 in this document,

and the second full paragraph. And there's a sentence in about the middle of that paragraph that states, "The Cache Slough complex is also an important spawning area, particularly during low outflow periods," correct?

WITNESS BAXTER: Yes.

MR. BEZERRA: And that applies to longfin smelt?

WITNESS BAXTER: Yes

MR. BEZERRA: Why is the Cache Slough complex an important spawning area for longfin smelt?

WITNESS BAXTER: I'd to have speculate, but as the outflow gets lower, because longfin larvae are buoyant and transported, the adults tend to move farther into the Delta to spawn.

And in dry years -- you know, so the adults are trying to -- anthropomorphizing, are trying to position the eggs so that, when their larvae hatch, they'll have a certain amount of development time before they get to low salinity, and more development time before they reach salinities that are potentially lethal to them.

So one of the patterns that we've seen is for the fish to move farther and farther upstream in their -- in their spawning as flow reduces in their

winter-early spring spawning period.

MR. BEZERRA: And that would be into the Cache Slough complex?

WITNESS BAXTER: That's part of it. Same relationship exists for the San Joaquin River as well.

MR. BEZERRA: Okay. Could we please go to Page 10 and the first paragraph. And there is a sentence in the middle there that begins, "Outflow during the December through May period" -- or reads, "Outflow during the December through May period continues to have a positive" -- "significant positive relationship to longfin smelt abundance." Do you see that sentence?

WITNESS BAXTER: Yes.

MR. BEZERRA: And that's referring to that Figure LF1 that we discussed previously, correct?

WITNESS BAXTER: That's correct.

MR. BEZERRA: So the conclusion this sentence is based on the Department's calculated fall midwater trawl index, correct?

WITNESS BAXTER: Yes.

MR. BEZERRA: Okay. And if we can scroll back up to Page 9, towards the bottom of that page. There's a -- do you see the sentence that reads, "Both low salinity habitat and increased turbidities are

functions of outflow"?

WITNESS BAXTER: I don't -- oh, yes.

MR. BEZERRA: So increased turbidity is associated with -- tends to be associated with wetter hydrology correct?

WITNESS BAXTER: For the time period that we're speaking of, yes, which is the winter and spring.

MR. BEZERRA: So winter and spring increases in turbidity tends to be associated with precipitation, correct?

WITNESS BAXTER: With?

MR. BEZERRA: Precipitation?

WITNESS BAXTER: I'd say with outflow rather than precipitation.

MR. BEZERRA: Okay.

WITNESS BAXTER: Sometimes precipitation is captured and doesn't create anything. Well, I shouldn't say that. That's kind of flippant, I guess.

But it doesn't -- it doesn't carry turbidity with it if it's not moving through the system.

MR. BEZERRA: Okay. If we could please pull up Exhibit FOR-60, which is the 2010 Interagency Ecological Program, Pelagic Organism Decline Work Plan. I'm going to try to call this the 2010 work plan, to be consistent. And Ms. Ansley gave us an example of how

to do that.

You are an author of this report, correct?

WITNESS BAXTER: Yes.

MR. BEZERRA: Could we please go to Page 94 and, specifically, the sentence that begins on Line 4132.

And for the record, it reads, "Wright and Schoellhamer (2004) showed that peak sediment concentrations in Sacramento River water associated with particularly strong flood events of 1964, 1986, and 1997 have been declining from one strong flood event to the next due to reduced sediment yield from watershed."

Is it important to analyze sediment concentration in flood years because turbidity tends to increase with natural inflows into the Delta?

WITNESS BAXTER: I'd say yes, just leave it at that.

MR. BEZERRA: Thank you.

Okay. Could we now, please, go to the bottom of Page 25 of this report -- or this work plan.

And do you see the sentences that begin on Line 1025, and actually, if we could scroll down a little. They kind of take over. Thank you.

In these sentences, the Department -- excuse

me -- the work plan relies on Feyrer 2007, which we previously discussed, correct?

WITNESS BAXTER: Yes.

MR. BEZERRA: Okay. And do you see on Line 1025 it says, "The importance of Secchi depth in the long-term changes in pelagic fish habitat suitability was more surprising." Secchi depth is a measure of turbidity, correct?

WITNESS BAXTER: It's a measure of water clarity.

MR. BEZERRA: Could you explain the difference between Secchi depth and turbidity?

WITNESS BAXTER: Secchi depth tends to decrease as turbidity increases. So it's an inverse relationship.

MR. BEZERRA: Okay. Thank you. If we could scroll up a little higher on this page to the sentence that begins on line 991.

Do you see that the sentence indicates that long-term habitat suitability declines for Delta smelt and striped bass are defined by lowered probability with -- of occurrence in changes in Secchi depth?

WITNESS BAXTER: Yes.

MR. BEZERRA: This means that long-term declines in habitat suitability for Delta smelt and

striped bass have been associated with lower turbidity in the Delta, correct?

WITNESS BAXTER: Yes, in the fall.

MR. BEZERRA: In the fall. Thank you.

Could we please go to Page 93 and the paragraph that begins on Line 4120.

And in this paragraph, the Interagency Ecological Program identified turbidity as one of the drivers of the pelagic organism decline in the 2000s, correct?

WITNESS BAXTER: Yes.

MR. BEZERRA: And in the sentence that starts on line -- well, on Line 4129, it refers to the IEP, correct?

WITNESS BAXTER: Yes.

MR. BEZERRA: And that's the Interagency Ecological Program?

WITNESS BAXTER: Correct.

MR. BEZERRA: Okay. Why did the IEP conclude that declining total suspended solids in the Delta could be related to the pelagic organism decline?

WITNESS BAXTER: My recollection is it went back to the Schoellhamer paper stating that, in part, that sediment input to the Delta dramatically dropped about 2000.

It also includes the idea that much of the sediment in the Central and South Delta is being removed from the water column by the current effects of aquatic vegetation. And that this lack of input and sequestering, if you will, has created regions that are less suitable because of less turbidity or higher Secchi depth.

MR. BEZERRA: Thank you.

Could we please scroll down to the next page and the sentence that starts on Line 4135.

Do you see that sentence that starts, "In an analysis of total suspended solid data"?

WITNESS BAXTER: Yeah.

MR. BEZERRA: This indicates that Jassby 2005 showed that turbidity in the Delta decreased sharply following the 1982 to 1983 El Nino, correct?

WITNESS BAXTER: Yes.

MR. BEZERRA: And that it has not recovered since that time, correct?

WITNESS BAXTER: That's what it says.

MR. BEZERRA: Okay. And then as to the next two sentences that begin on Line 4139, those sentences indicate that the 1997 to 1998 El Nino may have triggered further declines and reduction in total Delta turbidity, correct?

WITNESS BAXTER: Yes.

MR. BEZERRA: Okay. And as indicated on Line 4132 on this page, the IEP relied on the work of Dr. Schoellhamer, in part, in reaching these conclusions, correct?

WITNESS BAXTER: Yes.

MR. BEZERRA: I'd like to pull up Exhibit BKS-266. For the record, this is a 2011 paper publish by Dr. Schoellhamer in the Journal of Estuaries and Coasts. And I'll give you a hard copy so it's a little easier to read.

Dr. Schoellhamer works for the United States Geological Survey, correct?

WITNESS BAXTER: Yes.

MR. BEZERRA: And the U.S. Geological Survey is a member of the Interagency Ecological Program, correct?

WITNESS BAXTER: That's correct.

MR. BEZERRA: Are you familiar with this paper?

WITNESS BAXTER: Yes.

MR. BEZERRA: If I could refer to you the abstract on Page -- actually, it's on the first page.

Do you see that Dr. Schoellhamer uses the term "SSC" to refer to suspended sediment concentrations?

WITNESS BAXTER: Yes.

MR. BEZERRA: And that would mean suspended sediments in Delta water, correct?

WITNESS BAXTER: Or general, yes

MR. BEZERRA: Yes, in general, thank you.

Okay. If we could please go to Page 888, which is the fourth PDF page.

And specifically the paragraph in the left-hand column that begins with, "SSC at most sites." Do you see that discussion, Mr. Baxter?

WITNESS BAXTER: Yes.

MR. BEZERRA: Do you understand from this discussion that Dr. Schoellhamer concluded that there was a step decrease in SSC in the Delta?

WITNESS BAXTER: Yes.

MR. BEZERRA: And that that step decrease occurred in 1999, after the 1997 to 1998 El Nino?

WITNESS BAXTER: Yes.

MR. BEZERRA: And this conclusion is consistent with the statement in the IEP's 2010 work plan that that El Nino may have caused a significant decline in Delta turbidity, correct?

WITNESS BAXTER: I believe there was something to that effect, yes.

MR. BEZERRA: Okay. Thank you.

Could we please go to the next page in BKS-266 and specifically the paragraph in the left-hand column that starts with, "The step decrease in SSC," do you see that paragraph?

WITNESS BAXTER: Yes.

MR. BEZERRA: Okay. Do you understand from this discussion that Dr. Schoellhamer concluded that, after the 1999 step decrease, SSC in the Delta did not return to pre-1999 levels even in the wet year of 2006?

WITNESS BAXTER: Yes, I believe that was.

MR. BEZERRA: Thank you. Could we please go to Page 896, which is the 12th page of the PDF and specifically the paragraph that begins at the very bottom of the right-hand column. And I'll read it because it's a little -- it's a little cut up, due to the page break.

It reads, "Reduced SSC may be one of several factors contributing to collapse of several San Francisco Bay estuary fish species that occurred around 2000."

This statement is consistent with the IEP's recognition in the 2010 work plan that reduced turbidity was one of the drivers of the pelagic organism decline, correct?

WITNESS BAXTER: Correct.

MR. BEZERRA: Okay. Could we please pull up Exhibit DDJ-283, which is Feyrer 2007.

And as we previously discussed, the IEP relied on this paper in the 2010 work plan, correct?

WITNESS BAXTER: The IEP cited the paper in the 2010 work plan.

MR. BEZERRA: Okay. Thank you. Could we please go to Page 727, which is Page 5, and the last page [sic] in right-hand column.

Do you see where this paper discusses the use of the -- I think it's statistical technique AIC?

WITNESS BAXTER: Yes.

MR. BEZERRA: Are you familiar with that statistical technique?

WITNESS BAXTER: In general.

MR. BEZERRA: Do you see where it indicates that the AIC differences provide a level of empirical support for each model and is evaluated relative to other models?

WITNESS BAXTER: Yes.

MR. BEZERRA: You understand that this reference to a model refers to different possible environmental factors?

WITNESS BAXTER: Yes.

MR. BEZERRA: And do you see there on Page 727

where it states that an AIC difference greater than 10 indicates that a model has virtually no support?

WITNESS BAXTER: I see that, yes.

MR. BEZERRA: And in contrast, an AIC value of zero indicates that that is the best model for a given set of statistical data, correct?

WITNESS BAXTER: Yes.

MR. BEZERRA: Okay. I'd like to pull up Exhibit BKS-262, which is a 2016 paper published by Dr. Robert Latour in the "Journal Estuary and Coasts."

Are you familiar with this paper?

WITNESS BAXTER: Yes.

MR. BEZERRA: I'd like to go to Page 232, which is the third PDF page and specifically the first full paragraph in the right-hand column.

And it would be -- that sentence reads, "This study builds on previous empirical analyses by examining how measures of CPUE in the Delta statistically relate to a broad sweep of abiotic and biotic variables," and it continues on from there.

Do you understand what CPUE is?

WITNESS BAXTER: Yes.

MR. BEZERRA: And can you explain what that is?

WITNESS BAXTER: It's a general term for catch

per unit of effort. And it applies to fishing data where the unit of effort can be a tow, the volume of a tow, the -- how long a stationary net has been set and how big it is. So it's a term that needs to be defined in the context.

MR. BEZERRA: Do you see in this sentence in Dr. Latour's paper that it refers to raw field observation, CPUE -- excuse me. I'm going to go back.

Do you see in this sentence where it refers to this CPUE analysis as being conducted from the perspective of raw field analysis?

WITNESS BAXTER: Yeah. I believe he used catch per tow.

MR. BEZERRA: And catch per tow from the fall midwater trawl, correct?

WITNESS BAXTER: Yes.

MR. BEZERRA: You anticipated my question, so -- okay. So just to clarify for the record, Dr. Latour's analysis is based on a CPUE analysis from of the raw sampling data from the Department's fall midwater tow -- trawl, correct?

WITNESS BAXTER: Yes.

MR. BEZERRA: Thank you.

Can we please go to Page 243 of this paper, which is PDF Page 12 and specifically Table 2. Okay.

Thank you.

Do you see that this table contains Delta AIC values for 26 annual covariates?

WITNESS BAXTER: Yes.

MR. BEZERRA: And you understand that all of these covariates are environmental factors that could affect fish in the Delta?

WITNESS BAXTER: Yes.

MR. BEZERRA: And do you see that variable A8 it is total suspended solids?

WITNESS BAXTER: Yes.

MR. BEZERRA: And total suspended solids is related to turbidity, correct?

WITNESS BAXTER: Yes.

MR. BEZERRA: And increased total suspended solids generally reflects increased turbidity, correct?

WITNESS BAXTER: Generally, yes.

MR. BEZERRA: Do you see -- if we could scroll up a little so we can see the whole table. I guess scroll down. Thank you.

Do you see that environmental variables or covariates A11 through A26 are all variables related to Delta flows in one form or another?

WITNESS BAXTER: Yes.

MR. BEZERRA: And all of those variables, A11

to A26 refer to flows between January and June of given years, correct?

WITNESS BAXTER: Yes.

MR. BEZERRA: And some of them are March to May flows, correct?

WITNESS BAXTER: Yes.

MR. BEZERRA: Do you see that this table compares all of those environmental factors relative to Delta smelt, longfin smelt, age zero striped bass, and threadfin shad?

WITNESS BAXTER: Yes.

MR. BEZERRA: Do you see that the total suspended solids variable has a Delta AIC value of zero for all four of the indicated Delta fish species?

WITNESS BAXTER: Yes.

MR. BEZERRA: Is it your understanding that this Delta AIC value of zero means that total suspended solids is the environmental factor that best explains variations in abundance of all four of those species?

WITNESS BAXTER: I think it best explains the ability to detect those four species during the course of fall midwater trawl.

MR. BEZERRA: Okay. Could we please scroll up to the -- all right -- get the whole table on to the screen.

Okay. Do you see that in Table 2 all of the flow factors have a Delta AIC value that exceeds 100?

WITNESS BAXTER: Yes.

MR. BEZERRA: And that is for all four of the fish species?

WITNESS BAXTER: Yes.

MR. BEZERRA: And do you recall that Feyrer 2007 stated that a Delta AIC value exceeding 10 means that an environmental factor has no empirical support relative to the factor with the value of zero?

WITNESS BAXTER: Yes.

MR. BEZERRA: Okay. Thank you.

I'd like to go back to Exhibit FOR-60, which is a 2010 IEP work plan, and to Page 26 and the sentence that begins on Line 1029.

And in this sentence, the IEP stated that one of the primary mechanisms causing reduced turbidity in the Delta was sediment washout from very high inflows during the 1982-1983 El Nino, correct?

WITNESS BAXTER: Yes.

MR. BEZERRA: Could we please go to Page 94 and the sentence that begins on line or -- and in the paragraph from Line 4132 to 4143, the IEP discussed how the 1982-83 and 1997-98 El Nino events appear to have significantly reduced sediments that contribute to

turbidity in the Delta, correct?

WITNESS BAXTER: Yes.

MR. BEZERRA: And we previously discussed in his 2011 paper, Dr. Schoellhamer found there was a step decrease in suspended sediment concentration in the Delta beginning in 1999, correct?

WITNESS BAXTER: About 1999, yeah

MR. BEZERRA: Thank you. And Dr. Latour's statistical analysis from the fall midwater trawl raw sampling data indicated that variations in total suspended solids were the best fit factor for all four Delta fish species, correct?

WITNESS BAXTER: I don't know what you mean. Fit factor for what?

MR. BEZERRA: That's fine.

WITNESS BAXTER: Fit factor for catch? So one of the points that I wanted to make is that Dr. Latour looked at what affects the catch at the time of the sampling versus what affects the abundance of the fish at the time of the sampling. Two separate --

MR. BEZERRA: And did you understand Dr. Latour analyzed the entirety of the raw sampling data from the trawl?

WITNESS BAXTER: Yeah, I know what he did.

MR. BEZERRA: He did not rely on a calculated

abundance index, correct?

WITNESS BAXTER: That's correct.

MR. BEZERRA: Okay. Thank you.

Can we please go back to Exhibit DDJ-282.

WITNESS BAXTER: His values were related to whether an individual species was located at that particular location at that -- at the time of sampling based on --

MR. BEZERRA: In the raw sampling data --

WITNESS BAXTER: Yes.

MR. BEZERRA: -- from the fall midwater trawl, correct?

WITNESS BAXTER: Yes.

MR. BEZERRA: Thank you.

Do you see -- if we co scroll up a little bit to the -- there we go, to the Figure 4, Delta Smelt Abundance Index.

The fall midwater trawl abundance index for Delta smelt generally began a significant decline after 1980, correct?

WITNESS BAXTER: There was a period of decline after -- in the mid '80s.

MR. BEZERRA: Do you know when it was listed under the Federal Endangered Species Act?

WITNESS BAXTER: I want to say -- I should

know this. I don't, off the top. It's not coming back.

MR. BEZERRA: Do you recall if it was during that 1987 to 1992 drought?

WITNESS BAXTER: I don't believe it was.

MR. BEZERRA: Okay. So based on the abundance index indicated here, much of the decline in Delta smelt has occurred after the 1982 to 1983 El Nino, correct?

WITNESS BAXTER: Yeah, quit a bit after. I mean, certainly the -- the population did not recover to historical numbers in the late '90s, when flows were better.

MR. BEZERRA: Okay. Thank you. And the pelagic organism decline began in about the year 2000, correct?

WITNESS BAXTER: I think we used 2002 as --

MR. BEZERRA: 2002? And that was --

WITNESS BAXTER: -- as the general start.

MR. BEZERRA: That was about four years after the 1997 to 1998 El Nino, correct?

WITNESS BAXTER: Yes.

MR. BEZERRA: And that 2002 occurred after the step decrease in Delta suspended sediment documented by Dr. Schoellhamer, correct?

WITNESS BAXTER: Yes.

MR. BEZERRA: Okay. Thank you.

That completes my cross-examination.

CO-HEARING OFFICER DODUC: Thank you, Mr. Bezerra. Your timing is impeccable.

We will take a lunch break and return at 1:00 o'clock.

(Whereupon, the luncheon recess was taken at 11:59 a.m.)

Wednesday, April 11, 2018 1:00 p.m.

PROCEEDINGS

CO-HEARING OFFICER DODUC: All right. It is 1 o'clock. We're back.

Please make sure your noise-making devices are on silent, vibrate, do not disturb.

And Miss Nikkel.

MS. NIKKEL: Thank you.

CROSS-EXAMINATION BY

MS. NIKKEL: Good afternoon, Mr. Baxter.

I am --

WITNESS BAXTER: Good afternoon. Sorry. I'm turning off my noise-making device.

MS. NIKKEL: A good reminder to all of us.

All set?

WITNESS BAXTER: I am.

MS. NIKKEL: My name is Meredith Nikkel. I'm here on behalf of the North Delta Water Agency.

WITNESS BAXTER: Okay.

MS. NIKKEL: First, just a preliminary question:

Mr. Baxter, did you have any contact with a representative of the Department of Water Resources regard to your testimony today?

WITNESS BAXTER: What do you mean by

"contact"? Do you mean --

MS. NIKKEL: Any type of contact --

WITNESS BAXTER: -- did I speak to them?

MS. NIKKEL: -- written or oral.

WITNESS BAXTER: Yes.

MS. NIKKEL: And what was that -- the contact or -- I'm sorry.

Who was that contact with?

WITNESS BAXTER: Tripp from DWR.

MS. NIKKEL: Tripp Mizell?

WITNESS BAXTER: Yeah.

MS. NIKKEL: And what was the contents of your communication with Mr. Mizell?

WITNESS BAXTER: The -- It was essentially a discussion of what documents I had contributed to and which I hadn't.

MS. NIKKEL: And so approximately when did this communication occur?

WITNESS BAXTER: Yesterday.

MS. NIKKEL: And was it by e-mail or an oral conversation?

WITNESS BAXTER: Oral. Phone.

MS. NIKKEL: Was there anything else you spoke to him about other than documents that you contributed to?

WITNESS BAXTER: I -- Not that I can think of currently.

MS. NIKKEL: And approximately how long was your conversation?

WITNESS BAXTER: Less than an hour.

MS. NIKKEL: Okay. Thank you.

Mr. Baxter, in response to questions from Ms. Ansley, you testified that you reviewed the Delta Smelt biological basis for the Incidental Take Permit that was issued by CDFW for the California WaterFix Project; is that correct?

WITNESS BAXTER: That's correct.

MS. NIKKEL: And who prepared the biological basis document that you reviewed?

WITNESS BAXTER: I don't know specific names. It was just sent to me from folks at the Water Branch in my Department.

I don't -- I don't know who specifically authored it.

MS. NIKKEL: Do you know what entity authored it, as in, was it authored by staff at the California Department of Fish and Wildlife?

WITNESS BAXTER: I believe so.

MS. NIKKEL: But you don't know exactly who?

WITNESS BAXTER: I didn't.

MS. NIKKEL: And did you provide any comments on that document?

WITNESS BAXTER: I did, but I -- You know, it's been awhile so I'm not sure. I can't give you specifics.

It seemed like there were a number of small details that deserved comment.

MS. NIKKEL: And you provided those comments in writing?

WITNESS BAXTER: Yes.

MS. NIKKEL: And who did you provide those comments to?

WITNESS BAXTER: I'm not entirely sure but I think it was Chad Dibble. But I'd have -- I'd have to look.

MS. NIKKEL: You also -- I think I also heard you testify this morning that you were not involved in the Longfin Smelt portion of the Incidental Take Permit for the California WaterFix; is that correct?

WITNESS BAXTER: That's correct.

MS. NIKKEL: Given your expertise on Longfin Smelt that you have testified about today, do you know why you were not involved in that analysis?

WITNESS BAXTER: No.

MS. NIKKEL: And were you surprised that you

weren't involved?

MR. VANLIGTEN: Objection: Relevance.

MS. NIKKEL: I'll move on.

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

MS. NIKKEL: Mr. Baxter, I think I also heard you testify that the Longfin portion of the Permit came together rapidly.

What did you mean when you said that?

WITNESS BAXTER: I believe that we were -- We reviewed the Delta Smelt portion and were thinking that, within the next week or so, we were going to see the Longfin portion. And I believe that the review timeframe was up right within a week after that.

So, you know, three weeks between when we supplied comments and the document I -- was finalized, I believe, internally.

MS. NIKKEL: So, let me just understand better the chronology here.

Are you talking about three weeks prior to the issuance of the Incidental Take Permit is when you submitted your comments on the biological basis for Smelt?

WITNESS BAXTER: I don't know that it was the -- the actual issuance of the -- the Permit, but we

were told that, and it wrapped up internally.

MS. NIKKEL: Do you remember approximately what month that was occurring in?

WITNESS BAXTER: No. I'm sorry.

MS. NIKKEL: Do you know if it was in the first part of 2017?

MR. VANLIGTEN: That's an "if you know" question.

WITNESS BAXTER: I don't.

MS. NIKKEL: Was it last fall?

WITNESS BAXTER: I don't think so.

MS. NIKKEL: So, after you submitted the -- your comments on the biological basis, did you receive any -- any further communication or request to review any documents related to Longfin Smelt?

WITNESS BAXTER: No.

MS. NIKKEL: Okay. If you know, who -- who was involved in the analysis of the Longfin Smelt aspect of the Incidental Take Permit?

WITNESS BAXTER: I don't know.

MS. NIKKEL: Do you know if it was anybody outside of the Department of Fish and Wildlife?

WITNESS BAXTER: I don't.

MS. NIKKEL: Mr. Baxter, have you been asked to review any aspects of the Incidental Take Permit

since July of 2017?

WITNESS BAXTER: I don't believe so.

MS. NIKKEL: So you don't recall, as you sit here today, whether you've been asked to review any aspect of the Permit?

WITNESS BAXTER: I -- I would say that, no, I haven't.

I get -- I review a whole lot of things coming from a lot of different directions, and so I'm thinking, but, no, I don't believe I reviewed anything on the Incidental Take Permit.

MS. NIKKEL: In general, in your experience as a -- a staff person for the Department of Fish and Wildlife, does the Department generally interpret Conditions of Approval in an Incidental Take Permit based on the language of that Condition of Approval?

MR. VANLIGTEN: Objection: It seems to call for some kind of an expert opinion for which he's not necessarily qualified; and calls for speculation; and may not lack -- may not have personal knowledge, either, since she hasn't established that he knows anything about how Incidental Take Permits are interpreted or implemented given what he does, which is not in that group.

CO-HEARING OFFICER DODUC: Miss Nikkel, let's

establish the foundation.

MS. NIKKEL: The question was prefaced based on his experience, so he's hap -- I'm happy for him to clarify or --

WITNESS BAXTER: Can you repeat that again? I wasn't sure I understood what you're asking me.

MS. NIKKEL: Sure.

Based on your experience as a staff person at the Department of Fish and Wildlife, do you know if the Department generally interprets Conditions of Approval of an Incidental Take Permit based on the language of that Condition of Approval?

MR. VANLIGTEN: Same objection.

WITNESS BAXTER: So, are you . . .

Are you talking about . . .

Sorry. I'm not even sure what the context is. It's not -- It's not -- You're not asking me about what's happening in the field. You're asking me about the process of approving the Incidental Take Permit internally?

MS. NIKKEL: I'm -- No. I'm asking you about the -- I'm asking about Incidental Take Permits.

I believe I heard you testify this morning that you were involved in the preparation of the Incidental Take Permit that applies to the State Water

Project generally.

So referring to that experience -- not to that experience directly, but based on that -- Let me back up and have a better understanding of your experience.

Are you generally familiar with the -- the terms of Incidental Take Permits issued by the Department of Fish and Wildlife?

MR. VANLIGTEN: Objection: It's vague and ambiguous; and incredibly broad.

CO-HEARING OFFICER DODUC: Yes, it is. It was meant to be.

Miss Nikkel, I think I understand where you're going. And since you've established that he was involved in the Incidental Take Permit that was issued for this Project, perhaps you can fine-tune it by referencing what you meant in this particular Permit that you are trying to ask him about as a -- in terms of precedent in other Incidental Take Permits.

MS. NIKKEL: I'm not asking about a specific Permit. That's the problem here.

I'm asking for his understanding of -- based on experience at the Department, whether he has an understanding of how the Department interprets its own Permits.

WITNESS BAXTER: The only other --

CO-HEARING OFFICER DODUC: Are you able to answer?

WITNESS BAXTER: The only other Incidental Take Permit that I had any involvement in was the current Incidental Take Permit for the operation of the State Water Project.

And that Permit, I was not involved with writing the criteria for it, although I was asked about it prior to initia -- implementing the Permit.

And as part of the Smelt working group, I am part of the people that interpret, you know, where we are in that Permit, and -- and what conditions apply, and whether we've reached the criteria or not.

And I'm not sure that that's responsive to what you're --

MS. NIKKEL: That's very --

WITNESS BAXTER: -- asking.

MS. NIKKEL: -- helpful.

And so based on that experience that you described, is it your understanding that the interpretation of the terms of the Incidental Take Permit that you're involved in is done based on the actual language of the Permit itself?

CO-HEARING OFFICER DODUC: Miss Ansley.

MS. ANSLEY: I would like to just add in that

she's asking for how the Department interprets conditions that both could be calling for a legal conclusion on how they -- the Department will interpret, and -- I guess we're speaking generally, not to any specific Permit -- how it might interpret a condition in a Permit.

And, second, I don't believe there's still yet been an adequate foundation that he is in some way responsible for determining how the Department itself has a policy or guideline for interpreting Permit conditions.

So I think that there's -- I see what she's trying to get at, whether he himself has some understanding, but I'm not sure that there's a foundation laid that he has an understanding of how the Department generally, in terms of a policy, interprets such things.

CO-HEARING OFFICER DODUC: Miss Des Jardins.

MS. DES JARDINS: I just wanted to say that I believe the role of Department Biologists and experts --

CO-HEARING OFFICER DODUC: Are you testifying or are you making an objection?

MS. DES JARDINS: I support Ms. Nikkel asking the question because of that.

CO-HEARING OFFICER DODUC: Thank you.

Ms. Nikkel.

MS. NIKKEL: Can I try a different formulation of the question?

CO-HEARING OFFICER DODUC: Please do.

MS. NIKKEL: Mr. Baxter, in your experience, how do you interpret the terms of the Incidental Take Permit for which you have experience?

WITNESS BAXTER: Very straightforward.

MS. NIKKEL: Based on the language of the Permit itself?

WITNESS BAXTER: Yes.

MS. NIKKEL: And are you aware of any policy at the Department about how individual staff of the Department are to interpret terms of the Incidental Take Permits that it -- the Department issues?

WITNESS BAXTER: I'm not aware of any policy in that regard.

MS. NIKKEL: Are you aware -- aware of the position Director for the Delta at the Department of Fish and Wildlife?

WITNESS BAXTER: I've never heard that.

MS. NIKKEL: So you don't have an understanding of what role that position might have at the Department?

WITNESS BAXTER: I'm not even sure that there is such a position at the Department.

MS. NIKKEL: Okay. All right. Mr. Baxter, I think I heard you testify this morning that you were not involved in the preparation of the October 18th, 2017, memo regarding a clarification of the Incidental Take Permit for the California WaterFix; is that --

WITNESS BAXTER: That's correct.

MS. NIKKEL: -- that right?

Do you know who was involved in the preparation of that?

WITNESS BAXTER: I don't.

MS. NIKKEL: Had you ever read that document?

WITNESS BAXTER: I have not.

MS. NIKKEL: Are you aware of any commitment by the Department of Fish and Wildlife that it will interpret the Incidental Take Permit of the WaterFix based on that document?

WITNESS BAXTER: No.

MS. NIKKEL: And are you aware of any commitment by the Department of Fish and Wildlife that it will never require the Department of Water Resources to take measures other than reducing exports in order to meet the conditions of the Incidental Take Permit issued for the California WaterFix?

WITNESS BAXTER: No, I'm not.

MS. NIKKEL: Thank you.

Nothing further.

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

Mr. Ruiz.

MR. RUIZ: Good afternoon. Dean Ruiz for the South Delta Water Agency Protestants.

And my questions are getting shorter and shorter based on what I've been hearing so far so I've probably got 15 minutes or so, and that really relates to -- the topics are pretty basic, that relate to the Figure 8, the new regime/old regime report. I have a couple questions about that.

WITNESS BAXTER: Okay.

MR. RUIZ: With respect to the drivers that are discussed therein, specifically outflow salinity; and just a question about the Delta Smelt abundance indices.

WITNESS BAXTER: Okay.

MR. RUIZ: Okay?

CROSS-EXAMINATION BY

MR. RUIZ: Looking at Figure 8, which is -- Figure 8 that we refer to is from Miss Des Jardins' questions, which is Exhibit Friends of the River 60.

If we can have that up. It's the --

(Exhibit displayed on screen.)

MR. RUIZ: It was Page 7 of the testimony that -- or the questions that Miss Des Jardins presented, the chart.

MS. DES JARDINS: It's on Page 144.

MR. RUIZ: Thank you.

(Exhibit displayed on screen.)

MR. RUIZ: And just looking at that, I just had a couple questions I wanted to understand a little bit better.

So you've indicated this is a conceptual model or conceptual plan at this point with regard to the ordering of these environmental drivers; correct?

WITNESS BAXTER: Yeah. It was judgment at the time.

MR. RUIZ: All right. And you say that additional information is needed relative to potentially maybe reordering these drivers; is that correct?

WITNESS BAXTER: We felt at the time that we hadn't received every result that was expected from the Project and that there was a potential that some of the results might have influenced our ranking.

MR. RUIZ: Have you ever received any other

information since that time that influences your rankings?

WITNESS BAXTER: We never revisited this as a group, so I would just say no to that.

I mean, I -- Obviously, there's been new information but we never went through the process of reranking them.

MR. RUIZ: All right. So, at this time, since you haven't gone through the process, you stand by the ranking that outflow is the primary, the paramount, environmental driver at this point in time?

WITNESS BAXTER: I would agree that, as I mentioned earlier, that it's kind of an overarching driver, and that it influences a number of the other ones that we listed below.

MR. RUIZ: Can you conceive of any reason or any information, in your view, that would cause a reordering of the drivers such that outflow would, for some reason, not be ranked first?

MR. VANLIGTEN: Objection: That calls for speculation.

MR. RUIZ: It does.

CO-HEARING OFFICER DODUC: It does. Based on his experience.

Mr. Baxter?

WITNESS BAXTER: Not in our current world. In a future world, I think temperature could trump it all.

MR. RUIZ: Temperature could trump it all? Is that what you said?

WITNESS BAXTER: For -- For Delta Smelt, yes, certainly.

MR. RUIZ: What about for the other species you testified about today?

WITNESS BAXTER: Just, I guess, depends on how -- how warm it gets.

But, yes, they could potentially be challenged, Longfin first and the others in the distant future, of much warmer temperatures.

MR. RUIZ: Do you have an understanding of how the CWF Project will reflect -- or, I'm sorry -- will affect outflow?

MR. VANLIGTEN: I'm sorry. Objection.

What do you mean "CWF Project"?

MR. RUIZ: The California WaterFix Project.

Sorry. Sorry. We've been using acronyms for a couple years in this.

WITNESS BAXTER: Not -- not really. I mean, outside of a different point of diversion, my understanding was that the spring X2 standards, meaning the current water quality standards that are part of

operations, will remain the same, so . . .

I would say that perhaps it wouldn't affect outflow.

MR. RUIZ: What about an understanding as to how California WaterFix will affect flows through the Delta in terms of volumes of flows through the Delta?

WITNESS BAXTER: I don't have specific knowledge of what was modeled and what the operations are.

But my understanding was that if carriage water wasn't needed to maintain salinities for South Delta exports, that there may be some change to Delta throughflow. But I couldn't tell you what that -- what that would be, you know. If we're still having to maintain X2 standards, it seems like it would balance out.

MR. RUIZ: Relative to -- Relative to your -- the work that you did do -- and I -- with regard to the ITP --

WITNESS BAXTER: Um-hmm.

MR. RUIZ: -- for California WaterFix.

You did some work on that, you testified; right?

WITNESS BAXTER: It was basically text review for the biology portion of Delta Smelt.

MR. RUIZ: All right. So you did -- Did you make any assumption -- assumptions with regard to outflow or the Project's effect on salinity levels?

WITNESS BAXTER: No.

MR. RUIZ: Referring to the same figure and looking at the second item, salinity gradient.

You testified a little bit about that with regard to Miss Des Jardins' questions, but I just wanted to get a clarification.

What specifically is meant by "salinity gradient"?

WITNESS BAXTER: In that context, I think they were -- we were discussing what's now currently called the salinity Zone and where that was located along the estuary access.

So the low-salinity zone in the east would be up in the Western Delta, and obviously to the west would be in Suisun Bay.

MR. RUIZ: And when you say the salinity gradient environmental driver that's ranked second, how does that relate to or does it relate to X2?

WITNESS BAXTER: It's another . . .

X2 is within that salinity gradient and moves with the salinity gradient, I guess would be the quickest way to answer that.

MR. RUIZ: And do you have a -- an understanding or an opinion as to how or whether salinity level increases in the Delta affect the fish species that you testified about here today?

Generally.

CO-HEARING OFFICER DODUC: Miss Ansley.

MS. ANSLEY: I would say that's vague and ambiguous and compound.

All the species with their different life cycles and their gradient at any location in the Delta? I think that's just begging for an unclear answer as well.

So I think vague and ambiguous and, as stated, calls for speculation.

CO-HEARING OFFICER DODUC: Mr. Ruiz.

MR. RUIZ: Yes.

Well, we can break it down by -- We can break it down for -- take Smelt. Then you can take Salmon.

Do you have an opinion or an understanding as to how -- to what -- as to how increase in salinity levels in the Delta affect the health of -- take Salmon?

WITNESS BAXTER: You know, I -- I -- I think that it's a pretty big question, and I'm not sure how long you want the answer to go, because it's a -- it

has seasonal ramifications.

So, if salinity encroached substantially into the Delta, one outcome could be a substantial reduction in vegetation -- aquatic vegetation cover and reduction in food source for non-native fishes and habitat for non-native fishes, so not since it could be beneficial.

Those conditions during migration suggest that there's little outflow and little throughflow, and the speed at which currently juvenile Smelt can move through the Delta is -- is facilitated by Delta throughflow, which would tend to freshen the Delta and reduce salinity. So, in that sense, it would be a negative.

So there's pluses and minuses to -- to that -- to that for -- even for Chinook.

MR. RUIZ: All right. I realize that was a -- it's a -- it's a broad question and it would take a lot longer for you to answer all of my -- What I'm asking you, and I want to be clear -- maybe you already just stated this -- but are you saying that there are increases -- potential increases in effect of salinity in the Delta as a result of the California WaterFix Project can be beneficial to certain fish species?

CO-HEARING OFFICER DODUC: Miss Ansley.

MS. ANSLEY: I think that the witness has

testified that he wasn't aware of any specific results and modeling of the California WaterFix.

So now Mr. Ruiz is not asking a general biological question. He's asking specifically about impacts of the California WaterFix, which this witness has already testified he's not aware of.

CO-HEARING OFFICER DODUC: I -- Mr. Ruiz, was that a hypothetical?

MR. RUIZ: Well, it was a generality. I haven't -- I didn't ask him about specific modeling.

I'm saying that, from the way he answered the last question, it appeared that he indicated that, under certain conditions, that increased salinity could have a positive benefit on -- we were speaking of Salmon specifically.

I'm asking, in general, are you -- are you -- are you testifying that increases in salinity in the Delta --

CO-HEARING OFFICER DODUC: In general.

MR. RUIZ: -- in general -- not as a result of CWF, in general -- are beneficial for any currently threatened or endangered species?

WITNESS BAXTER: I would state that there are times and places where increases in salinity in the Delta could result in circumstances that would be

beneficial to one or more of the endangered species.

MR. RUIZ: And what are -- What specifically are you referring to in terms of times and circumstances?

WITNESS BAXTER: I'm referring to what might have been historical natural hydrology where the salinity Zone was naturally moving well into the Delta through some period of the year before it was shifted back by outflow in the winter.

So summer and fall potentially could result in -- in some -- some beneficial outcomes.

MR. RUIZ: Okay.

WITNESS BAXTER: This gets at the less variable aspect of currently moving X2 upstream.

It's upstream and -- but then we treat the -- the Delta as a reservoir as opposed to a cycling Delta where it's salty in some -- in some months and fresh in others.

MR. RUIZ: Could we look at real briefly DJJ-282 (sic)?

(Exhibit displayed on screen.)

MR. RUIZ: Oh, there it is.

Looking at the first chart, the first graph, the indices are -- are measured -- measured annually; is that right?

WITNESS BAXTER: Yes.

MR. RUIZ: Okay. When you're looking at -- Or as a Fisheries Biologist, what timeframes generally do you consider in looking at increases in salinity with respect to that effect or its potential effect on fish species? And you look at it on an annual basis or over a long-term average?

WITNESS BAXTER: I think that it -- the period of view would -- would be dependent on kind of a -- the question.

So if we were looking at salinity with respect to reproduction, then it would be a narrow term of months.

If we're looking at salinity in terms of rearing habitat, then it's going to be half a year to perhaps a year worth of data at the time.

MR. RUIZ: Do long-term averages over decades, for example, are they -- do they help or in any way inform any analysis that you do with respect to the effects of salinity on threatened or endangered species?

WITNESS BAXTER: That's not something that I've been directly involved in individually.

But those types of measurements have been used by others to look at habitat suitability, for example,

in the Federal paper, so there is value.

MR. RUIZ: I'm sorry. In what -- In what paper?

WITNESS BAXTER: The paper on habitat suitability.

MR. RUIZ: Looking at the same chart, the first graph, in 2011, I think you testified that there was an exception -- looks like there's an exception to the otherwise consistent downturn that began in about 2002; correct?

WITNESS BAXTER: Yes.

MR. RUIZ: But I didn't quite understand or hear your opinion or analysis as to what the -- what caused the exception.

WITNESS BAXTER: Well, currently, a number of things are -- are being looked at.

So, obviously, it was a wet year. Along with being wet, it was very cool into the summer and, I don't know, maybe not quite the fall, which allowed Delta Smelt to spawn repeatedly over a longer period.

The high flows and conditions in 2011 -- The quickest response that I could say is that they tended to be really benign.

So fish that hatched late in the spring and early in the summer tend to die, in many years, because

of temperature, competition, you know, who knows exactly what, and Delta Smelt in 2011 tended to survive in those timeframes.

So there was a much broader reproductive period and much greater early survival of the fish in the circumstances of 2011.

MR. RUIZ: Which you indicated was a wet year.

WITNESS BAXTER: It was a wet year.

MR. RUIZ: Just a couple quick questions with regard to the 2010 Delta Flow Recommendations Report that I believe you -- you testified about earlier.

Do you recall that report?

WITNESS BAXTER: Yes.

MR. RUIZ: Do you still stand by the information that was provided in that report?

MR. VANLIGTEN: That's vague and ambiguous by what you mean by "stand by" --

MR. RUIZ: Sure.

MR. VANLIGTEN: -- "the information that was included in that report."

CO-HEARING OFFICER DODUC: Mr. VanLigten, you do need to get closer to the microphone.

MR. VANLIGTEN: Objection: It's vague and ambiguous as to the use of the term "standby the information provided in that report."

Is it the data? Is it the conclusions of the recommendations? Is it his? Is it the group's? There's a lot built into that that's a little overbroad.

CO-HEARING OFFICER DODUC: Sustained.

Mr. Ruiz, clarify, please.

MR. RUIZ: Yes.

Do you -- Do you still stand by the conclusions from that report?

MS. ANSLEY: And --

CO-HEARING OFFICER DODUC: Actually, I can hear the objection now.

Go ahead, Miss Ansley.

MS. ANSLEY: Well, the same objection of vague and ambiguous.

But I also believe that Mr. Baxter testified earlier that he wasn't responsible for the entire report; that he testified earlier as to portions of which he was responsible.

So I think Mr. Ruiz will have to narrow it down to the portions that maybe Mr. Baxter was personally familiar with.

CO-HEARING OFFICER DODUC: And, Mr. Ruiz, a clarification, please:

Are you referring to the Board's report or the

report that the Department of -- then -- Fish & Game submitted to the Board?

MR. RUIZ: The latter, yes.

CO-HEARING OFFICER DODUC: And they submitted several exhibits.

MR. RUIZ: Right.

CO-HEARING OFFICER DODUC: Was there one in particular?

MR. RUIZ: Yes. It was . . . It was . . . the 2010 Delta flow recommendations, which I -- which was DJ -- DDJ-284, what I was referring to.

CO-HEARING OFFICER DODUC: That would be the one on outflow?

MR. RUIZ: Yes.

WITNESS BAXTER: I'm sorry?

MS. ANSLEY: Is there a question pending? I'm confused.

WITNESS BAXTER: Did you --

MR. VANLIGTEN: Can we make sure we're talking about the same thing before he answers.

Can we pull up the front page of that report so, when the question comes, we're all talking about the same thing.

(Exhibit displayed on screen.)

MR. RUIZ: Yeah. It's -- It's a general

question to the extent that you were involved in this report and the extent that you provided analysis.

Is there anything that's changed with respect to the -- the analysis and the information that you provided in this report that changes your opinions or recommendations with regard to same?

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

And you're asking, Mr. Ruiz, specifically on only opinion -- the opinions or analysis that Mr. Baxter did --

MR. RUIZ: Correct.

CO-HEARING OFFICER DODUC: -- not on the entirety of this report.

MR. RUIZ: That's correct.

Thank you.

WITNESS BAXTER: Yeah. I don't have any information that -- that changes substantially any of those -- the information that we submitted and -- and wrote about in that report.

MR. RUIZ: Okay. I don't have anything further.

CO-HEARING OFFICER DODUC: Thank you.

Mr. Jackson, please come up.

And as Mr. Jackson is coming up, let's take care of a housekeeping matter.

We received yet another request from Mr. Volker to change his panels around. Frankly, I'm getting tired of it. We've been extremely accommodating, but he's on the verge of abusing that privilege. And at this time, I don't even know now what his original order was that he requested.

So, Mr. Volker, you have until 3 p.m. today to submit to what that specific order is for your witnesses that you are now proposing to present on Monday.

And anyone else who has concerns/objections to that proposal may have until 5 p.m. today to file that.

And if there is any objection, Mr. Volker's request will be denied.

Mr. Jackson, your turn.

CO-HEARING OFFICER MARCUS: Go bears.

MR. JACKSON: Thank you.

CROSS-EXAMINATION BY

MR. JACKSON: Mr. Baxter, my name is Mike Jackson, and I represent the CSPA parties -- CSPA, C-WIN and AquAlliance -- in this particular hearing.

The . . .

You did summarize your educational background and professional experience at the start of the hearing, so I'll be fairly specific.

How many peer-reviewed papers have you contributed to that are related to the Delta or your work in the Delta?

WITNESS BAXTER: I'd say somewhere between half a dozen and a dozen.

I'm sorry. I don't have a calendar. I don't keep track of that stuff.

MR. JACKSON: All right. But you've worked with most of the experts and scientists who have worked in the Delta over the last 20 years?

WITNESS BAXTER: Yes.

MR. JACKSON: And you're familiar with . . . most of the scientific literature on the Delta within that period of time?

WITNESS BAXTER: I would say I have more familiarity with reference to Delta centric fishes as opposed to the migratory fishes, like Salmonids and -- What's a good work for it?

I try to avoid that, to some degree, you know, just to -- to limit these kinds of activities to what I can concentrate on, but yes otherwise.

MR. JACKSON: All right. You've -- You've related your role in the WaterFix ITP.

Did you participate in the EIR/EIS that supports the WaterFix program?

WITNESS BAXTER: Not that I can recall.

MR. JACKSON: Comment letters of any kind?

WITNESS BAXTER: (Shaking head.)

Not that -- Not that I can recall.

MR. JACKSON: What was your role in the 2010 CDF -- CDFW report "Quantifiable Biological Objectives in Flow Criteria" in the 2010 process?

WITNESS BAXTER: So, in the 2010 process, I was involved in another -- in the exhibit that updated the flow relationships for fishes and invertebrates in the Delta and Bay that have such relationships, and in pulling that document together.

I believe there was actually an -- an overall document that made recommendations and -- and I didn't have any involvement in that.

MR. JACKSON: Did you attend the hearings on behalf of DFG?

WITNESS BAXTER: I believe I was part of an expert panel at that -- at that point, but that was talking about fishes as opposed to talking about the -- the Department products.

MR. JACKSON: All right. The . . .

Did you review the aquatic species biological goals for the 2010 CDFW document?

WITNESS BAXTER: I don't recall doing that.

MR. JACKSON: All right. Do you remember the goals of that document that talk about halting species population declines?

WITNESS BAXTER: No.

MR. JACKSON: You have to answer out loud.

WITNESS BAXTER: Yeah, yeah. I recognize that. Sorry.

MR. JACKSON: All right.

All right. I'm going to ask you some questions specifically in regard to Delta and Longfin Smelt.

WITNESS BAXTER: Okay.

MR. JACKSON: You are an expert in that regard; are you not?

WITNESS BAXTER: One of them, yes.

MR. JACKSON: Well, I -- I didn't --

WITNESS BAXTER: Yeah.

MR. JACKSON: -- mean to indicate the only one, but . . .

So, assume we built the North Delta diversion for the purposes of these questions.

Could the North Delta diversion affect the spawning distribution for Delta Smelt?

MR. VANLIGTEN: Objection: I think that's an incomplete hypothetical.

I am not exactly sure if it's got all the facts that the witness would need to answer.

Also, to the extent it calls for speculation on his part.

I would object on those grounds.

CO-HEARING OFFICER DODUC: Miss Ansley.

MS. ANSLEY: I'd also join in the objection as to speculation because this witness has testified that he was not involved in the effects analysis of the California WaterFix, and there's been no foundation laid that he has an opinion or has looked specifically at the effects of the North Delta diversions.

CO-HEARING OFFICER DODUC: Mr. Jackson.

MR. JACKSON: Yes.

I'm talking about a diversion added to the Delta at a location on the Lower Sacramento River.

Could such a diversion have the potential for affecting the spawning distribution of Delta Smelt?

MS. ANSLEY: And I would say assumes facts not in evidence; incomplete hypothetical.

MR. VANLIGTEN: Same objections.

CO-HEARING OFFICER DODUC: Are you able to answer, Mr. Baxter?

WITNESS BAXTER: I think it -- Certainly, if it diverted the major portion of the flow, then, yes,

there's going to be changes.

But, you know, my understanding was that we're still maintaining the same water quality standards.

And if that were the case, then there would be much less of an effect, if we could even detect one at all.

MR. JACKSON: If the North Delta diversion -- or three of them -- were placed in the Lower Sacramento River, would . . .

Are Delta Smelt strong --

WITNESS BAXTER: In -- Never mind. Go ahead.

MR. JACKSON: Are Delta Smelt strong swimmers?

WITNESS BAXTER: No.

MR. JACKSON: Do they have a larval stage?

WITNESS BAXTER: Yes.

MR. JACKSON: Do they drift in the current?

WITNESS BAXTER: They -- Yes.

MR. JACKSON: Do they go with the flow sort of?

WITNESS BAXTER: Those are -- Many probably are at the mercy of currents some period of time early in their life, yes.

MR. JACKSON: So some part of the current goes into the diversion?

WITNESS BAXTER: They tend to move that way.

MR. JACKSON: And they intend -- They tend to go into the diversion.

WITNESS BAXTER: Yes.

MS. ANSLEY: Objection: Assumes facts not in evidence.

Now, we're talking generally. It calls for speculation: "They tend to go into the diversion"?

Now we're not talking about any specific diversion or facts about that diversion, so I say calls for speculation.

CO-HEARING OFFICER DODUC: Mr. Jackson.

MR. JACKSON: I don't believe it calls for speculation.

I'm talking about: If you built a diversion in a river and take out a portion of the river, do you also take out a portion of the critters in the flow?

WITNESS BAXTER: Well, I --

CO-HEARING OFFICER DODUC: It depends if they're there.

WITNESS BAXTER: If the -- If the critters are in the flow above the diversion, then, yes, there's a possibility.

If they're below the diversion, obviously, there's less to no possibility depending upon the reverse effects it would have on -- on flow direction.

MR. JACKSON: Correct.

The . . . So assuming a diversion in the North Delta -- Actually, we don't need to assume a diversion.

Let's talk about the Cross Channel Gates.

Do they take a portion of the flow into the Central Delta?

WITNESS BAXTER: Yes.

MR. JACKSON: Do . . . Does that limit the extent of the spawning habitat to below the Cross Channel Gates?

WITNESS BAXTER: Not that I'm aware of.

MR. JACKSON: What?

WITNESS BAXTER: Not that I'm aware of.

MR. JACKSON: So larval stages can -- are not diverted into the Cross Channel?

MR. VANLIGTEN: Objection: Misstates his testimony.

WITNESS BAXTER: Well --

MR. VANLIGTEN: Misstates your prior question.

Misstates your prior question as well.

CO-HEARING OFFICER DODUC: Can -- Mr. Baxter, could you please correct?

WITNESS BAXTER: I would say very few Delta Smelt spawn over the Cross Channel Gate, so there's

very few, if any, larvae to be diverted at that point.

MR. JACKSON: How about Longfin Smelt?

WITNESS BAXTER: The same.

MR. JACKSON: The same. They were . . .

Does the . . . Could a new diversion affect larval transport?

MS. ANSLEY: Objection.

MR. VANLIGTEN: Same objection: Calls for speculation.

"Could" -- Doesn't have any definition as to location, size, volume, time, time of year, operational rules or anything else.

Calls for complete speculation.

CO-HEARING OFFICER DODUC: Sustained.

MR. JACKSON: If the California WaterFix is built with three new diversions on the Sacramento River, could those diversions affect larval transport of Delta Smelt in the Lower Sacramento River channels?

MR. VANLIGTEN: Same objection.

CO-HEARING OFFICER DODUC: Mr. Baxter, to what extent are you familiar with the Proposed Project?

WITNESS BAXTER: I -- I -- I know that there are going to be diversions upstream in the vicinity of Hood.

I don't know what the operations --

CO-HEARING OFFICER DODUC: And you don't know the timing. You don't know what the volume or timing of diversions might be?

So are you able to --

WITNESS BAXTER: Not -- Not really, no.

CO-HEARING OFFICER DODUC: Are you able to speculate with any confidence regarding potential impacts?

WITNESS BAXTER: Well, I mean, the -- the obvious aspects are:

If Sacramento River flow is substantially changed during the hatching period for Delta Smelt, then there is going to be, you know, coincidental change in transport flows for -- for Delta Smelt and . . .

CO-HEARING OFFICER DODUC: But you don't know sitting here today whether or not that would or that could take place with the Proposed Project.

WITNESS BAXTER: I -- I have no information on planned operations for the diversion.

MR. JACKSON: Well, let's -- let's suppose that the planned operation is to take water from the Lower Sacramento River in the winter and spring.

Could that affect larval transport of Delta Smelt?

WITNESS BAXTER: Yes.

MR. JACKSON: If -- Would the same be true about Longfin Smelt?

WITNESS BAXTER: Yes.

MR. JACKSON: Could a -- the North Delta diversions affect the low-salinity zone in the Lower Sacramento River in the winter and spring?

MR. VANLIGTEN: Objection: Calls for speculation in the hypothetical; it lacks definitions to the location and operations about -- of the Delta structures.

CO-HEARING OFFICER DODUC: Let's agree that most of Mr. Jackson's questions do call for speculation based on Mr. Baxter's experience and expertise.

So let's -- let's just not keep repeating that objection but acknowledge that they are speculative in nature and will go to the weight of Mr. Baxter's responses.

But, Mr. Baxter, to the extent that you can answer the question, please do.

WITNESS BAXTER: I --

CO-HEARING OFFICER DODUC: And if you cannot, based on lack of information, you may say that as well.

WITNESS BAXTER: Well, I would say that if the diversions are substantial, that they would change the

locations over what it would have been if the diversion was not there; right? I mean, it's -- it's all physics and hydrodynamics.

MR. JACKSON: Would changes in outflow affect Longfin Smelt recruitment?

WITNESS BAXTER: Yes.

MR. JACKSON: Would changes in X2 location affect Longfin Smelt recruitment?

WITNESS BAXTER: Yes.

MR. JACKSON: Would the low -- Would the low salinities on . . . have . . . changes in Longfin Smelt --

If the low-salinity zone changes, would that affect Long -- Longfin Smelt recruitment?

WITNESS BAXTER: So, you're saying if the water -- if those salinities are moved upstream into --

MR. JACKSON: Moved east.

WITNESS BAXTER: -- the Delta or something along those lines?

MR. JACKSON: Yes.

WITNESS BAXTER: Yes, that would have an effect on Longfin Smelt.

MR. JACKSON: Do you have an understanding as to the effect of the proposed diversions on Delta inflow in the winter and spring?

WITNESS BAXTER: I have a crude understanding that it would potentially be lower.

Not in every year.

MR. JACKSON: So if . . .

Assuming inflow is lower, does that mean that outflow would be lower?

MS. ANSLEY: Objection: The witness has already testified that he's not aware of the operating -- exact operations of the California WaterFix, so this calls for speculation.

CO-HEARING OFFICER DODUC: It does, and it does to a level that truly minimizes the weight that we can give to Mr. Baxter's answer so --

WITNESS BAXTER: Yeah.

CO-HEARING OFFICER DODUC: Mr. Jackson, help me here.

Where are you trying to go? And --

MR. JACKSON: I'm trying to -- I'm trying to go through the -- the elements that could be changed by putting three new diversions on the Sacramento River.

CO-HEARING OFFICER DODUC: But Mr. Baxter, by his own testimony, has very little, if any, understanding of how operations under the Proposed Project might impact those parameters.

MR. JACKSON: Mr. Baxter is one of the

preeminent scientists in the Delta with the most experience on these -- on these two fish and I -- I think he is perfectly capable of describing what the effects will be of changes in inflow to the Delta.

CO-HEARING OFFICER DODUC: Without the assertion that those changes are as a result of the post-Project because he does not have that fact. He does not have that information.

So if you are describing general changes to inflows to . . . whatever.

MR. JACKSON: X2 to low-salinity zone.

CO-HEARING OFFICER DODUC: And not necessarily ascribing it to the Proposed Project.

Is that what you're doing, Mr. Jackson?

MR. JACKSON: That's what I'm doing.

CO-HEARING OFFICER DODUC: All right. It goes to weight.

Miss Ansley.

MS. ANSLEY: Okay. And I -- I understand that.

But I do interpose objection -- objections as to vague and ambiguous, because the way he's phrasing these questions of, just generally does low salinity have an impact on, let's say, Longfin Smelt.

But he's --

CO-HEARING OFFICER DODUC: I understand.

MS. ANSLEY: It assumes facts not in evidence in terms of location, timing, season, other conditions, other --

CO-HEARING OFFICER DODUC: Miss Ansley, we understand that perfectly. We are certainly capable of understanding the nuances or lack of nuances and specificity in the questions that are being asked and will weigh the answers accordingly.

MS. ANSLEY: I understand. I do not mean to imply that. I mean to make objections for the record for --

CO-HEARING OFFICER DODUC: Understood.

MS. ANSLEY: -- the purposes of this testimony.

Thank you.

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

WITNESS BAXTER: So where are we?

MR. JACKSON: I think you're allowed to answer the question.

Do you want me to ask it again?

WITNESS BAXTER: Please.

MR. JACKSON: Would changes in . . . Delta inflow and outflow in winter and spring in the Lower

Sacramento River potentially affect Delta Smelt?

WITNESS BAXTER: So, you're . . .

Yes. Flow through the system affects Delta Smelt.

MR. JACKSON: And the same would be true of Longfin Smelt?

WITNESS BAXTER: Yes.

MR. JACKSON: In the 2010 report -- I guess I could put that up.

Can I have what we've listed as SCAN1 .pdf on the thumb drive?

(Exhibit displayed on screen.)

MR. JACKSON: That's not what I thought I had.

No. Let's go to DDJ-285.

(Exhibit displayed on screen.)

MR. JACKSON: And that's not it, either.

Okay. I -- Take down the thumb drive information.

I'm sorry about that.

CO-HEARING OFFICER DODUC: Your microphone is off, Mr. Jackson.

MR. JACKSON: I'm sorry about that.

In the 2010 report, Fish and Wildlife recommended that . . . that the low-salinity habitat for Longfin Smelt would be protected by maintaining X2

between 64-kilometers and 75-kilometers between January and June; correct?

MR. VANLIGTEN: Could we have a -- a better identification of which 2010 report, because we've talked about there are two.

MR. JACKSON: The Biological Opinion --

MR. VANLIGTEN: And could we have a page and line reference that the witness can actually refer to the document rather than apparently memorizing it from the same documents?

CO-HEARING OFFICER DODUC: Which document are you referring to, Mr. Jackson?

MR. JACKSON: I'm referring to the . . . recommended biological objectives and -- that DFG produced for the hearing.

CO-HEARING OFFICER DODUC: And could you actually give us a reference number, an exhibit number, anything?

WITNESS BAXTER: I think it's that document (indicating).

CO-HEARING OFFICER DODUC: Miss Des Jardins, perhaps you could come to the rescue.

MS. DES JARDINS: If he's referring to the 2010 Biological Goals and Objectives, I believe that was SWRCB-66.

CO-HEARING OFFICER DODUC: Let's pull that up and see if that is indeed the case.

(Exhibit displayed on screen.)

CO-HEARING OFFICER DODUC: Mr. Jackson, is this the document?

MR. JACKSON: This is the document.

CO-HEARING OFFICER DODUC: All right. Do you have a page number?

MR. JACKSON: It would be . . .

CO-HEARING OFFICER DODUC: Well, first of all, let's establish:

Mr. Baxter, are you familiar with this document?

WITNESS BAXTER: I've seen it, yes.

I did not contribute substantially to the writing of this document. I contributed information by way of the previous exhibit that we were speaking of, this Exhibit 1.

MR. JACKSON: So you were not familiar with the recommendations for Long Smelt -- Longfin Smelt in this document?

WITNESS BAXTER: I believe I've seen them once or twice, but I did not write them nor review them prior to issuance.

MR. JACKSON: Well, let's see if you recognize

them.

(Reading):

"Provide low salinity habitat for Longfin Smelt in Suisun Bay (and farther downstream) by maintaining X2 between 64 kilometers and 75 kilometers between January and June."

WITNESS BAXTER: I've heard that discussed and -- and that's not my criteria, if that's what you're asking.

And certainly X2 in that range would be much better than X2 at 81.

MR. JACKSON: Let's switch to the -- Are you familiar with Old and Middle River flows?

WITNESS BAXTER: Yes.

MR. JACKSON: Are you familiar with the recommendation that Old and Middle River flows be more negative than -5,000 cfs during the period between December and May?

WITNESS BAXTER: Less negative?

MR. JACKSON: Less negative.

WITNESS BAXTER: Yes. That's in our current Incidental Take Permit as well.

MR. JACKSON: All right. So if -- if . . .

If the South Delta diversion continues, would

that be your recommendation to stick to that number?

WITNESS BAXTER: That that number continue?

Yes.

Or more positive.

MR. JACKSON: During critical and dry years, when Longfin Smelt -- when the Longfin Smelt Index is more than 500, Old and Middle River flows should be more po -- more positive than -1500 cfs between April and May?

WITNESS BAXTER: I'm not familiar with that criteria.

MR. VANLIGTEN: Your microphone.

WITNESS BAXTER: Oh, sorry.

I'm not familiar with that criteria.

I would like to see Longfin indexes more than 500, though.

MR. JACKSON: You would?

WITNESS BAXTER: We're not -- We're not in that -- in that index range.

MR. JACKSON: Anymore.

WITNESS BAXTER: Yeah.

MR. JACKSON: What index range are we in now?

WITNESS BAXTER: Double digits and triple digits for the low ones.

MR. JACKSON: Low triple digits or high double

digits.

WITNESS BAXTER: Yeah.

MR. JACKSON: So, as a scientist, what do you think it ought to be?

MR. VANLIGTEN: Vague and ambiguous as to what "it ought to be."

MR. JACKSON: What do you think the flow recommendation changed to reflect the fact that a lot of these species have gone since then. What should -- what -- In -- What number should it be?

CO-HEARING OFFICER DODUC: Are you able to answer that, Mr. Baxter?

WITNESS BAXTER: I --

MS. ANSLEY: Vague and ambiguous as to what species we're talking about now. And I can't be -- Obviously, I'm not looking at --

MR. JACKSON: Longfin Smelt.

MS. ANSLEY: Oh, Longfin Smelt specifically?

MR. JACKSON: Yes.

MS. ANSLEY: Lack of foundation whether he's -- He hasn't been able to see these objectives that he's reading off extensively, so whether he has an opinion on this because of his own work.

CO-HEARING OFFICER DODUC: Mr. Baxter.

WITNESS BAXTER: Well, you know, obviously, I

would like to see what the system could bear in terms of outflow for Longfin Smelt. I mean, that's . . .

In -- In the best world, we would -- we would be pushing -- pushing back hard in that regard.

I don't have a specific volume, but certainly we see the best results for Longfin Smelt when the low-salinity zone is partially pushed into San Pablo or completely pushed into San Pablo Bay, so -- And that's some point between, say, January and May. And if it can persist there longer, all the better.

I don't know if that was responsive but, you know . . .

Trying to set individual criteria in individual water years and things like that is a little bit beyond me at this point.

MR. JACKSON: Now, I don't remember from your testimony whether or not you've reviewed the ITP or not.

WITNESS BAXTER: The current one --

MR. JACKSON: Yeah.

WITNESS BAXTER: -- for the WaterFix? No.

MR. JACKSON: Is there, at -- From what you know, at the North Delta diversions, is there an increased vulnerability to predation caused by placing screens?

WITNESS BAXTER: I . . . I am -- I have no knowledge of that.

MR. JACKSON: And -- Actually, I'm reading from the ITP.

Would taking a substantial, let's say, 20 percent of the flow of the Sacramento River in -- in the summer period have effect -- potential effect on the -- on the Longfin Smelt?

WITNESS BAXTER: No, not a substantial effect at that timeframe.

MR. JACKSON: In the fall, would taking --

WITNESS BAXTER: Depends on your -- your definition when -- when fall ends for you.

MR. JACKSON: I'm talking September, October, November.

WITNESS BAXTER: Currently, probably not.

MR. JACKSON: Could I see Friends of the River 60 at Page 144.

(Exhibit displayed on screen.)

MR. JACKSON: Figure 8 seems to reflect a -- a change in regimes. And I've -- I've got some questions about both the new regime and the old regime as it relates to Delta Smelt and Longfin Smelt and, potentially, other fish as I go through the list.

Do you agree that the new regime is a lower

outflow than there was in the older regime?

MS. ANSLEY: Objection:

One, that's vague and ambiguous.

Two, Mr. Baxter testified earlier today that this is a conceptual model for pelagic organism design -- or decline, not necessarily an actual regime that exists.

CO-HEARING OFFICER DODUC: Yes, but as far as the concept is concerned, I believe, under new regime outflow, it actually says lower.

So, is the question -- Does Mr. Baxter agree with that?

MR. JACKSON: Yes.

CO-HEARING OFFICER DODUC: Mr. Baxter.

WITNESS BAXTER: That's what we were hypothesizing looking at recent data -- then recent data.

MR. JACKSON: And could you describe that recent data.

WITNESS BAXTER: I believe that we were looking from 2002 to 2009 in terms of flow data and comparing it.

MR. JACKSON: And you found that the flows were lower during that period of time.

WITNESS BAXTER: I believe that winter/spring

flows were lower.

MR. JACKSON: Did you -- Did the group attempt to make . . . to determine why the flows were lower?

WITNESS BAXTER: I don't recall. I wasn't specifically involved in that -- in that portion.

MR. JACKSON: Were you involved in the salinity gradient, finding that the new regime was more constricted?

MR. VANLIGTEN: Objection to the use of the word "finding."

I believe this was a hypothetical explanation for the current conditions.

MR. JACKSON: I -- I believe this whole Project is a concept.

The . . .

This description . . . is one that Mr. Baxter recognizes, one that he worked on. And I'm simply asking what does "constricted" mean in this context?

CO-HEARING OFFICER DODUC: Mr. Baxter, are you able to answer?

WITNESS BAXTER: Yeah.

So, "constricted" means from one end of the low -- low-salinity zone to the other, and that it's constricted that way, and it was also constricted in terms of the placement in West Delta channels as

opposed to the -- the broader north-south channel in Suisun Bay.

MR. JACKSON: And so the fish -- the Delta Smelt in particular -- goes with the . . . goes with the movement of the . . .

WITNESS BAXTER: Low-salinity Zone.

MR. JACKSON: Low-salinity zone to the east; correct?

WITNESS BAXTER: Yes.

MR. JACKSON: And the reason for that? Was that determined?

WITNESS BAXTER: Well, I suspect that the low-salinity zone is -- is a very efficient place to make a living.

And, certainly, when it's further down in the Suisun Bay, the resuspended sediments create a situation where not only low salinity but turbidity comes into play as a component in the Smelt habitat, and they seem to seek out more turbid wire -- more turbid water. Excuse me.

MR. JACKSON: If an appreciable portion of the . . . the area that is where the salinity gradient is appropriate for Delta Smelt is constricted, does that prevent or make it possible that you cannot restore the Smelt?

WITNESS BAXTER: I would say that that is -- creates poor habitat for Delta Smelt and makes the chances of better-than-average numbers lower.

MR. JACKSON: And, in that regard, if more water is taken out to the east of the Sacramento River, fresh water, does that cause a change in the low-salinity zone?

CO-HEARING OFFICER DODUC: Miss --

MR. VANLIGTEN: Objection: That's an incomplete hypothetical.

CO-HEARING OFFICER DODUC: Miss Ansley.

MS. ANSLEY: Same.

Assumes facts not in evidence as to when we're talking about.

MR. JACKSON: Let's say we're talking about winter and spring.

MS. ANSLEY: Also . . .

CO-HEARING OFFICER DODUC: Are you able to answer, Mr. Baxter?

WITNESS BAXTER: Yes.

So, in winter and spring, typically we're not finding low-salinity Zone in the West Delta.

And I'm not sure that, unless we get into a critical or dry year, that flows would be low enough to influence -- or to position the low-salinity zone or X2

in -- in the Delta.

And I thought that we're still working under current water quality criteria which wouldn't allow that.

MR. JACKSON: Yeah, I -- I understand that.

So, the hypothetical part of the question is: If additional fresh water was taken out, would that cause the constriction to be worse?

WITNESS BAXTER: If the low-salinity zone, by whatever volume, was taken out, was moved into the Western Delta, then our current understanding is that would be very problematic for Delta Smelt survival.

MR. JACKSON: In regard to temperature, the new regime seems to be high temperature and uniform.

Do you know what's meant here by "uniform"?

WITNESS BAXTER: Not exactly, but . . .

So, in many cases, some of the -- these were reflective of perhaps regional changes. And my understanding was that, while high temperatures could be global warming, which is one of the issues we dealt with, high temperatures also for the South Delta were resulting from clearing water and the ability for light to penetrate further and warm throughout the water column.

So, that's my extent of interpretation of --

of that.

I'm not sure exactly what the "uniform" was referring to.

MR. JACKSON: In regard to nutrients, the shift seems to be from a high phosphorus to a low nitric -- from high phosphorus low nitrogen to low phosphorus high nitrogen.

What effect does that have on Smelt -- Longfin Smelt?

WITNESS BAXTER: Not a direct effect. It influences the food web more specifically.

So, we believe that it's not simply the high nitrogen but the form of the nitrogen as ammonium that is favoring some of the harmful algal blooms and disfavoring diatoms that seem to be able to utilize nitrate better than -- than ammonium.

MR. JACKSON: And so that results in a change in the food web?

WITNESS BAXTER: Yeah. Reduction in productivity that is felt at higher stages in the food web.

MR. JACKSON: And was there any hypothesis of why that had happened?

WITNESS BAXTER: The phosphate was a change in regulation and removal from detergents. And the

ammonium I think was primarily a -- a result of effluent from Sac Regional treatment, and I believe they're working to change that.

MR. JACKSON: Did you look at the San Joaquin River in the course of this analysis?

WITNESS BAXTER: Look at it in terms of what?

MR. JACKSON: In -- Look at it in terms of whether it was -- whether there had been a change in the -- in the amount of water coming in from the Sac -- from the San Joaquin, and that that had some effect on the . . .

WITNESS BAXTER: I'm pretty sure we did, and I don't -- You know, San Joaquin is typically, you know, 20 percent or so of the inflow. And I don't recall any specific changes that occurred to San Joaquin flow.

MR. JACKSON: For contaminants, the change was from few and low to many and high.

Do you remember what the contaminants were?

WITNESS BAXTER: Not exactly. There's -- There's quite a few, everything from pesticides to . . . human care products that came through the treatment system, so I -- This was another situation where I think it's just a -- it's a relative -- a relative measure.

MR. JACKSON: And it's relative -- In terms of

your ranking of the environmental drivers, is it fair to say that, given the description of the new regime, outflow is still the main environmental driver?

WITNESS BAXTER: I -- I would say, from -- from my personal opinion, yes.

MR. JACKSON: One moment.

And you indicate -- You indicated that you are -- you are not a Salmon expert?

WITNESS BAXTER: Correct.

MR. JACKSON: How about Pacific Herring?

WITNESS BAXTER: I know some of the aspects of their life history and -- and am familiar with the potential linkages for outflow and -- and their recruitment.

MR. JACKSON: Would you describe those linkages.

WITNESS BAXTER: For Pacific Herring, egg survival tends to do better at salinities below those of marine conditions.

So some -- Many Herrings spawn in situations where their eggs are apt to be reduced in salinity by three, four, five parts per thousand, which could be at the lower end of big estuaries or just outside small ones or something like that.

MR. JACKSON: So outflow from the Sacramento

River and from the Delta is important to Pacific Herring in the Bay.

WITNESS BAXTER: Yes.

MR. JACKSON: Are Herring important food sources for other critters?

WITNESS BAXTER: Yes.

MR. JACKSON: And what are they?

WITNESS BAXTER: Marine mammals, Sea Lions in particular, Harbor Seals. Bigger Salmon eat younger Herring.

Herring is a very nutritionous (sic) -- nutritional food source for many organisms. Some species of Whales, which I am not sure which of which, eat Herrings as well.

MR. JACKSON: So a . . .

Ecologically, the Delta and the Bay are one estuary?

WITNESS BAXTER: Yes.

MR. JACKSON: So outflow from the inland portion of the estuary, the Delta, is inflow -- freshwater inflow into the Bay; correct?

WITNESS BAXTER: Yes. There's local runoff as well.

MR. JACKSON: And is that the main source of fresh water in the Bay?

WITNESS BAXTER: I think it's a dominant source, yeah.

MR. JACKSON: All right. So a lowering of what we're calling outflow in the Delta is a lowering of inflow into the Bay; correct?

WITNESS BAXTER: Yes, that's what happens.

MR. JACKSON: So, to your knowledge, has there been any review of -- that you've taken part of, in the . . . in how much inflow the Bay portion of the estuary needs from the Delta?

WITNESS BAXTER: So, we've created relationships for a number of Bay species that look at the relationship between measures of abundance and -- and outflow and hypothesized or used literature to link others, such as Pacific Herring, to lower salinity, which, again, could be an outflow-related result.

But I am not -- I've not been involved in any that specifically made individual recommendations for how much flow was needed under what conditions to maintain the populations.

MR. JACKSON: Is it generally understood in the scientific community that present inflow into the Bay is -- should be improved?

WITNESS BAXTER: I guess, from my perspective, we've been using the Bay fishes as additional support

for the need for flow.

And for wet period, it's -- appears to be most beneficial as opposed to using or identifying them individually and saying it's sufficient or not.

So I'm -- I -- You know, I'm not familiar with the discussions that went into the recommendations that we have, for example, for Starry Flounder which I was just informed of recently.

MR. JACKSON: Well, that -- that's kind of on my list, and I'll get back to that.

The Prickly Sculpin is a . . . a species that was identified in the informational proceeding to develop flow criteria necessary to protect public trust resources in 2010.

Are you familiar with that particular species?

WITNESS BAXTER: I am. There's not a lot written about it, but . . .

MR. JACKSON: Have you reviewed that material?

WITNESS BAXTER: I've -- I've read most of what I am aware is available.

MR. JACKSON: Where does the Prickly Sculpin reproduce?

WITNESS BAXTER: Throughout the lower rivers and in the Delta, typically in freshwater portions, as far as I know. I'm not sure whether there -- I've not

seen many in brackish water, or any.

MR. JACKSON: So the Sculpin is constrained by its ability to go west into more brackish water.

WITNESS BAXTER: The larvae tend to be much more tolerant than older individuals, and they're . . . being -- They, too, are pelagic.

They're being dispersed and transported downstream, and many recruit into the low-salinity zone and then make their way back upstream to find marine habitat.

MR. JACKSON: And they do that in the Sacramento River; correct?

WITNESS BAXTER: Sacramento River into Suisun Bay, yes.

MR. JACKSON: All right. So anything that would hypothetically take fresh water out of the Lower Sacramento River might have an effect on their ability to find suitable water to reproduce.

WITNESS BAXTER: I think they're reproducing well upstream in fresh water.

It seems like their recruiting habitat on the low end has expanded, and that's what we were thinking about when we were making that connection.

So it's an expansion of the low-salinity zone for larval survival and juvenile recruitment.

MR. JACKSON: You did indicate that you're familiar with the Starry Flounder?

WITNESS BAXTER: Yes.

MR. JACKSON: Where does it reproduce?

WITNESS BAXTER: Typically outside the Golden Gate.

MR. JACKSON: And what is its -- Does it have a life stage that depends upon . . . outflow from the Delta and inflow to the Bay?

WITNESS BAXTER: So, Starry Flounder typically rear in brackish to freshwater habitat for the first two to three years.

And we hypothesize that, to find that habitat, they were using cues from outflow that were getting through the Golden Gate and the -- perhaps the adults are cuing in in terms of their spawning. We do know that they move inshore to spawn.

But we suspect and have some observational results indicating that early-stage larvae are moving into the estuary and using bottom currents that are stimulated by tide outflow in addition to tides to move upstream to rearing habitats.

MR. JACKSON: So changes in flows in the Lower Sacramento River into the Bay potentially could have an effect on Starry Flounder.

WITNESS BAXTER: Yes.

MR. JACKSON: Now, you indicated that -- I think you said you had expertise on one of the Sturgeons and not the other?

WITNESS BAXTER: (Shaking head.)

MR. JACKSON: No.

WITNESS BAXTER: Not really. I mean, I listen to what is talked about in the office, but I don't write about them. I don't review literature to a great degree on them.

MR. JACKSON: And what about the two Lampreys, the Pacific Lamprey and the River Lamprey?

WITNESS BAXTER: The same.

MR. JACKSON: Do you know whether or not they need appropriate flow for their life stages in the -- from the Sacramento River to the Golden Gate, freshwater flow?

WITNESS BAXTER: I don't.

MR. VANLIGTEN: All right. Is flow important to American Shad?

WITNESS BAXTER: Yes.

MR. JACKSON: Outflow from the Delta to the Bay?

WITNESS BAXTER: That's a -- another question. I think, currently, we're suspecting that flow

is acting on the early life history of American Shad.

Certainly, they spend some months, a few months, rearing in the rivers, then make their way through the Delta and out into the rain waters within their first year or so of life. So I presume that there's benefits all along the way, but . . .

MR. JACKSON: Benefits to more flow --

WITNESS BAXTER: Yes, correct.

MR. JACKSON: -- all along the way.

And is the same thing true about Striped Bass?

WITNESS BAXTER: Yes.

There's -- At least recently, I believe, we're back to an outflow abundance relationship with Striped Bass.

MR. JACKSON: Back to?

WITNESS BAXTER: Yeah. I think it flattened out during the -- the POD period. There was not good recruitment relative to higher flows.

MR. JACKSON: Are we getting better recruitment now relative to higher flows?

WITNESS BAXTER: I think marginally, yes.

MR. JACKSON: All right. So you still see a flow relationship.

WITNESS BAXTER: I think it's -- I think if you were to look at the post-POD period, that there

would be a -- I believe that there is a statistically significant but low-angle outflow abundance relationship.

MR. JACKSON: Now, in 2010, DFG reported that their current science-based conceptual model was that placement of X2 in Suisun Bay from February to June represents the best interaction of water quality and landscape for fisheries production given the current estuary geometry.

Is that still your understanding?

WITNESS BAXTER: I think that that period gives us the most benefit for the effort, certainly, if you're going to point to individual species that we might shift the -- shift the flow around a little bit.

But, yes, I guess I would agree with that -- that range.

MR. JACKSON: One of the questions that the State Board asked DFG to answer in the 2010 hearings was . . . what level of scientific certainty -- What is the level of scientific certainty regarding the foregoing information? And the answer is that this degree of acceptance is quite high.

Do you agree with that?

MR. VANLIGTEN: Hold on.

What -- What was the -- Where was the question

asked? Of whom? Can we have some -- And do you have a copy -- You must have something you can refer him to. You're asking --

MR. JACKSON: Sure.

MR. VANLIGTEN: I mean, I think it's unfair to ask the witness that question with no background.

WITNESS BAXTER: Yeah --

MR. JACKSON: Well --

WITNESS BAXTER: -- I'm not sure what he's asking.

CO-HEARING OFFICER DODUC: Let's establish the background, Mr. Jackson.

MR. JACKSON: Yes.

It's the informational proceeding to develop flow criteria for the Delta ecosystem, and it's the California Department of Fish & Game's written summary which they gave to the Board.

WITNESS BAXTER: Okay. I don't think I need that, but . . .

CO-HEARING OFFICER DODUC: Do you recall that document?

WITNESS BAXTER: I -- I was part of the expert panel for that --

CO-HEARING OFFICER DODUC: Ah.

WITNESS BAXTER: -- proceeding and some -- I

don't recall. I could make a guess, but I hate to point to somebody if it wasn't correct.

MS. ANSLEY: And I'd like to lodge an objection: Vague and ambiguous as to "foregoing."

Part of that question was "foregoing information." I'm not sure the witness has any idea of the scope of what he's answering.

CO-HEARING OFFICER DODUC: Sustained.

MR. JACKSON: Another question that the Board asked for DFG to respond to was:

When determining Delta outflows necessary to protect public trust resources, how important is the source of those flows?

Do you understand that question?

WITNESS BAXTER: Yeah.

And I would say it varies by species, but . . . you know, certainly Chinook migrating in the San Joaquin are going to care more about San Joaquin flows than Sacramento flows in most circumstances.

So I'm not sure what all you're getting at.

MR. JACKSON: Thank you.

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

At this point, this concludes the cross-examination for Mr. Baxter.

Miss Des Jardins, as the person who initially called Mr. Baxter, don't assume that you get to ask questions.

I would like to know what specifically you want to explore on any potential redirect that I might approve.

MS. DES JARDINS: I would like to ask Mr. Baxter a little bit more about the turbidity analysis.

And also about the breadth of the basis for the conclusions about factors affecting the pelagic organism decline as reflected in the Pelagic Organism Decline Synthesis Report.

CO-HEARING OFFICER DODUC: So let me better understand.

Your first line of questioning regarding turbidity, that is in response to which cross-examination?

MS. DES JARDINS: That cross-examination by Mr. Bezerra about the Latour article.

CO-HEARING OFFICER DODUC: About what? I'm sorry.

MS. DES JARDINS: About the Latour work, by Robert Latour.

CO-HEARING OFFICER DODUC: All right. I will

allow that one.

And what was the second line of questioning?

MS. DES JARDINS: The second one was about the breadth of the research that was relied on in the pelagic organism decline --

CO-HEARING OFFICER DODUC: And that --

MS. DES JARDINS: -- such as --

CO-HEARING OFFICER DODUC: -- was in response to which cross-examination?

MS. DES JARDINS: Again, to -- to the cross-examination of -- by DWR, by Mr. Bezerra, that focused on the one paper that I did produce.

And I -- There was quite a -- quite a few more, I believe, that the report relied on.

CO-HEARING OFFICER DODUC: And those are the two -- only two areas.

MS. DES JARDINS: Yes.

CO-HEARING OFFICER DODUC: All right. I will allow you to do so after we take a break.

MS. DES JARDINS: Yay.

CO-HEARING OFFICER DODUC: We've been going for a while.

We will return at 2:50.

(Recess taken at 2:38 p.m.)

(Proceedings resumed at 2:50 p.m.:)

CO-HEARING OFFICER DODUC: All right. It is 2:50 and we are back in session for Miss Des Jardins' redirect.

We don't typically put a time limit but we, of course, always strongly encourage efficiency.

Proceed, Miss Des Jardins.

MS. DES JARDINS: I'd like to bring back up FOR-60.

(Exhibit displayed on screen.)

MS. DES JARDINS: And could we go to .pdf Page 25, please.

(Exhibit displayed on screen.)

REDIRECT EXAMINATION BY

MS. DES JARDINS: And, Mr. Baxter --

Let's scroll down a little more.

(Exhibit displayed on screen.)

MS. DES JARDINS: That's fine.

Scroll back up to Line 989.

(Exhibit displayed on screen.)

MS. DES JARDINS: Isn't it true that the conclusion that fall habitat suitability is associated with salinity, and specifically X2, is based on more than just FEIR's 2007 paper?

WITNESS BAXTER: You're talking about habitat

suitability in the fall for . . .

MS. DES JARDINS: Yeah. I have a -- Yeah.

Long -- They talked about a long-term decline in fall habitat suitability.

MR. VANLIGTEN: Are you talking about the second sentence of that paragraph right there, on Line 991, the sentence that --

MS. DES JARDINS: Yeah.

I asked you about that paper, but isn't there more information that's discussed further on in this paragraph and the next one about -- specifically, for example, it mentions a 2010 paper by Feyrer -- and relationships at the end of the paragraph (reading):

". . . Relationships of population abundance indices with X2 for many species."

Didn't the pelagical --

WITNESS BAXTER: Yes.

So Feyrer's -- Feyrer's work went on after 2000 -- after the 2007 paper. There was a bit of back and forth between he and some other researchers.

And -- And you point out that there was a followup paper. It essentially used the same information, to my knowledge.

MS. DES JARDINS: Okay. And it came to

similar conclusions about habitat suitability?

WITNESS BAXTER: The constituents of habitat suitability, yes.

MS. DES JARDINS: Yeah.

And those constituents' work on specific conductance and Secchi depth?

WITNESS BAXTER: Yes.

MR. VANLIGTEN: And it also mentions -- Were there any -- Was -- Was there any other research that the POD team considered in evaluating the relationship -- evaluating the relationship between X2, Fall X2, and habitat suitability?

CO-HEARING OFFICER DODUC: Miss Ansley.

MS. ANSLEY: Yeah.

I'm going to object: It's vague and ambiguous.

Is she asking if there's things that aren't cited here in these two paragraph that were considered to when the pelagic team did its work?

CO-HEARING OFFICER DODUC: Is that what you're asking, Miss Des Jardins?

MS. DES JARDINS: Yes.

CO-HEARING OFFICER DODUC: Mr. Baxter --

WITNESS BAXTER: Yeah.

CO-HEARING OFFICER DODUC: -- are you able --

WITNESS BAXTER: Not that --

CO-HEARING OFFICER DODUC: -- to answer?

WITNESS BAXTER: Not that I'm aware of. I was trying to think if there was something out there that was half-baked at that time, and I can't think of anything.

MS. DES JARDINS: Is there -- So, it does also discuss the relationships between Population Abundance Indices with X2 for -- for many species.

But it -- So it had -- Is there -- So . . .

Are there relationships between Population Abundance Indices and X2 for many species --

WITNESS BAXTER: Yes.

MS. DES JARDINS: -- seen here?

WITNESS BAXTER: And most of them were updated in our Exhibit 1 for the 2010 submission.

MS. DES JARDINS: And so you see those -- the relationships that were shown in -- in Exhibit DFG-1 between log outflow and abundance?

WITNESS BAXTER: Correct.

MS. DES JARDINS: Okay. The next thing --

I'd like to scroll down to 1025.

(Exhibit displayed on screen.)

MS. DES JARDINS: You were questioned about Secchi depth, and that that was surprising.

But if you read further on the next page, it describes primary mechanisms for increasing water clarity.

Do you see that on Section -- sentence 1029 to 1033?

WITNESS BAXTER: (Examining document.) Yes.

MS. DES JARDINS: And doesn't it also mention biological filtering by submerged aquatic vegetation as one of the mechanisms?

WITNESS BAXTER: Yes.

MS. DES JARDINS: Can we scroll down further, please.

(Exhibit displayed on screen.)

MS. DES JARDINS: Doesn't it indicate down in -- that -- down in section . . . between 10 -- sentence 1055 to 1056 that (reading):

"The expansion of invasive SAV in the Delta can explain 21 to 71 percent of the total increasing trend in water clarity in the Delta . . ."

WITNESS BAXTER: (Examining document.)

Yes, it says that.

MS. DES JARDINS: It -- Are -- Are you familiar with this correlation between submersed -- SAV submerged and aquatic vegetation and water clarity?

WITNESS BAXTER: I was unfamiliar with this specific line in terms of how much, but I think I've spoken to the idea that aquatic vegetation and turbidity were kind of inversely related with respect to salinity in the South Delta could knock down plants and increase turbidity.

That was an earlier comment of mine.

MS. DES JARDINS: And also, doesn't -- In sentence 1053 to 1054 cites some research by Hestir that (reading):

". . . Delta submerged aquatic vegetation grows best at annual water velocities below a .9 -- .49 meters per second."

Correct?

WITNESS BAXTER: Yeah.

MS. DES JARDINS: Is it your understanding that lower velocities are associated with better growth of submerged aquatic vegetation?

WITNESS BAXTER: Just from what I read, yeah.

When Velocity's too high, the vegetation tends to not reach the surface as frequently and, you know, getting into light levels, and it's hard to stay rooted.

MS. DES JARDINS: So -- So . . . So -- So water velocity -- lower water velocities could have

contributed to the spread of the submerged aquatic vegetation in the Delta?

WITNESS BAXTER: Yes.

MS. DES JARDINS: And to the kind of --

WITNESS BAXTER: It seems like that's -- The low velocities is where it starts out at and expands from there. Sometimes it can create its own habitat.

MS. DES JARDINS: And -- And then you start getting areas that are clearer because of the vegetation?

WITNESS BAXTER: The vegetation tends to slow velocities, which tends to cause suspended sediment to drop out, and -- Yeah. That's a . . .

MS. DES JARDINS: So that's a feedback cycle.

WITNESS BAXTER: . . . relatively well-known process, yes.

MS. DES JARDINS: And if the water's clearer, isn't it warmer as well?

WITNESS BAXTER: There has been that finding, yes.

MS. DES JARDINS: Does -- Does that also help growth of the submerged aquatic vegetation?

WITNESS BAXTER: I would guess so. I don't know whether there are temperature ranges plant tolerance to take into consideration but I would guess

so.

MS. DES JARDINS: And so . . . And so this could -- This was -- If we go back to Page 144 --

(Exhibit displayed on screen.)

MS. DES JARDINS: -- and the graph.

Let's scroll back out a level.

(Exhibit displayed on screen.)

MS. DES JARDINS: But you mention that the -- The graphic mentions Aquatic Weeds as one of the changes in -- in the regime shift; correct?

WITNESS BAXTER: Yes.

MS. DES JARDINS: And -- And so the Aquatic Weeds have other effects like reducing turbidity and potentially increasing temperature?

WITNESS BAXTER: Yes.

MS. DES JARDINS: And -- And that, in turn . . .

But does that favor other species like more invasive fishes more?

WITNESS BAXTER: Yes.

MS. DES JARDINS: What -- What species of invasives does it favor?

WITNESS BAXTER: Certainly the Sunfish, Largemouth Bass, those types of fishes.

There are site feeders, and vegetation

improves their early life history and -- and recruitment.

Those are the -- Those are the obvious ones.

MS. DES JARDINS: Are those edge fishes?

WITNESS BAXTER: Yes.

MS. DES JARDINS: And so the spread of submerged aquatic vegetation sort of -- Would it be a correct statement that it increases edge habitat?

WITNESS BAXTER: Yes, improved edge habitat.

MS. DES JARDINS: And potentially reduces pelagic open water habitat?

WITNESS BAXTER: It would to the degree that, once plants are established, they are better able to kind of control their environment. And so they tend to encroach. And sometimes encroachment in one area improves habitat dramatically downstream from that.

And so they can kind of create their --

MS. DES JARDINS: So --

WITNESS BAXTER: -- environment to --

MS. DES JARDINS: So they can keep spreading.

WITNESS BAXTER: Yeah.

MS. DES JARDINS: And -- And it -- Hasn't there been a huge spread of Egeria all over the Delta at one --

WITNESS BAXTER: There's certainly --

CO-HEARING OFFICER DODUC: Miss Ansley.

Hold on, please.

MS. ANSLEY: Yeah. I'd like to object: This is getting beyond the scope of cross.

Now we're talking about -- I think she just mentioned the species Egeria, but we're talking about -- not talking necessarily now turbidity impacts, which I was at least thinking was linked to Mr. Bezerra's turbidity line of questioning that led to the Latour study.

But now we're talking about habitat and submerged aquatic vegetation beyond the limits of turbidity and -- and moving into wider habitat effects and species effects.

So I think this is going broader than the scope of cross.

CO-HEARING OFFICER DODUC: Miss Des Jardins.

MS. DES JARDINS: I just was -- I believe that this is correlated, that the -- that this -- Mr. Baxter clearly testified that this Weed is correlated with turbidity, and to the extent it's correlated with these other kinds of facts, and -- and there's been a spread, and there's been a change, that I think it is -- is responsive to that because the turbidity change was, as he testified, associated with the change with the

spread of -- potentially with the spread of this vegetation.

MS. ANSLEY: I think, linkwise, that she's pointing to a sentence that talked about the submerged aquatic vegetation having an impact on turbidity, which was certainly something that Mr. Bezerra talked about.

But now what we're doing is kind of flipping and talking about the other impacts of submerged aquatic vegetation on habitat.

And now I heard her going into, like, edge species, and -- and I think what we're doing is straying beyond turbidity impacts.

CO-HEARING OFFICER DODUC: All right. Let's stick with turbidity.

And you made a tenuous link, but let's not go further than that, Miss Des Jardins.

MS. DES JARDINS: Well . . .

Mr. Baxter, so does Robert Latour's paper make you think that the -- The conclusions about correlations, do you think those correlations imply that turbidity is the only relevant driver?

WITNESS BAXTER: So, I think Robert Latour's paper was relating the catch, the magnitude of catch, at a single location to all these other factors.

And turbidity, obviously, had a strong

relationship to the catch period effort at a specific location, whereas some of these other bigger factors happened at different times at different locations. And they may have influenced -- or, arguably, they did influence the number of fish overall in that region, the number of the particular species that might be present there.

But they didn't influence the likelihood of catch at that -- at that specific location, so they had a weaker relationship.

So, it's not saying that there's no relationship between outflow and abundance, that turbidity is -- is the only effect. It's saying that turbidity was the effect of -- that contributed to a large catch at that particular location at that particular time.

MS. DES JARDINS: So, if I'm understanding you correctly, you're . . .

It's -- It might be -- That turbidity is -- might be associated with -- with -- Are fish attracted to turbidity, the Delta Smelt?

WITNESS BAXTER: Delta Smelt are attracted to turbidity. And I believe that the inverse is -- is true as well, that they -- they don't like clear habitats, and that they don't survive well in clear

habitats.

That matter is a supposition, but --

MS. DES JARDINS: Is there predation -- Does some -- Is there an issue with not surviving in clear habitats? Is that partly the result of predation?

WITNESS BAXTER: It's partly the result of predation, yeah.

MS. DES JARDINS: What other -- What other factors would cause not to survive in clear habitats?

WITNESS BAXTER: There's potentially relationships with -- with food, and potentially temperature, you know, minute temperature differences.

Certainly major temperature differences in the South Delta -- in clear water in the South Delta, simply because it's been progressing downstream. The more water clarity allows more sunlight penetration, the more deep warming.

MS. DES JARDINS: So, in developing . . . the pelagic organism decline developed this suite of environmental drivers, they took into account the kinds of biological understanding that you're explaining in evaluating what the -- what the different -- the suite of drivers?

In developing this hypotheses, you took into account the understanding of biological mechanisms.

WITNESS BAXTER: Correct.

MS. DES JARDINS: And some of them are what you were describing?

WITNESS BAXTER: Yes.

MS. DES JARDINS: In your understanding of biological mechanisms, would it make sense that turbidity was the only driver for ecosystem changes?

WITNESS BAXTER: No.

MS. DES JARDINS: Would it make sense that just, for example, adding a great deal of sediment to the Delta would bring fish back?

WITNESS BAXTER: No.

MS. DES JARDINS: So, there are interactions between, for example, Aquatic Weeds and turbidity between -- that are reflected in this conceptual model?

WITNESS BAXTER: Yes.

MS. DES JARDINS: And between Aquatic Weeds and invasive fishes?

WITNESS BAXTER: Yes.

MS. DES JARDINS: And between . . . the -- things like temperature and survival of pelagic fishes?

WITNESS BAXTER: Yes. Temperature influences survival.

MS. DES JARDINS: Yeah.

And -- And so -- Also, there was a -- there

was some negative correlate -- There was an absence of correlations in Latour's work where he found, for example, that outflow -- spring outflow wasn't correlated with Smelt abundance; correct?

WITNESS BAXTER: (Shaking head.)

MS. DES JARDINS: Or the --

WITNESS BAXTER: I believe --

MS. DES JARDINS: -- spring catch --

WITNESS BAXTER: -- that was one of his findings.

There are a number of findings in that paper that totally baffle me, so . . .

MS. DES JARDINS: All right. So those aren't -- Those aren't consistent with other research that you've seen?

WITNESS BAXTER: Correct.

MS. DES JARDINS: Is the conclusion that the salinity gradient is not correlated with abundance of pelagic species? Is that not consistent?

WITNESS BAXTER: I -- I don't . . .

The . . . That's a -- It's a challenging paper to read, and it's a challenging paper to understand what a lot of his variables were or how he composed them.

And I haven't read it since just after it came

out, so -- and it was one of those frustrating papers that I planned to reread and tear apart, and I just never did, so I -- I can't provide a lot of information on it.

MS. DES JARDINS: So your sense of tearing it apart, was that driven by -- that it was different from your --

WITNESS BAXTER: It was --

MS. DES JARDINS: -- understanding?

WITNESS BAXTER: Correct.

It was different from my knowledge of the dataset that he had at hand to analyze.

MS. DES JARDINS: So -- So you had knowledge of both the dataset and correlations, and you looked at those?

WITNESS BAXTER: Yes.

I'm not sure that I -- I, obviously, did not look at them the way he did.

MS. DES JARDINS: But there was something in sort of a -- your sense of having looked -- You looked quite a bit at correlations between things like datasets, like outflow, salinity gradient, and temperature, abundance?

WITNESS BAXTER: I've spent a lot of time with information that is in this synthesis report document,

and all those components are -- are in there.

MS. DES JARDINS: Okay. And so you've developed a sense of what factors are important from -- from looking -- from spending that time?

WITNESS BAXTER: Yes.

MS. DES JARDINS: And -- And wasn't one of the purposes of the POD Management Team to really understand what the factors were?

WITNESS BAXTER: That was the intent.

MS. DES JARDINS: And wasn't it a multiagency, multidisciplinary effort?

WITNESS BAXTER: Yes, perhaps the biggest one to date, or to that time.

MS. DES JARDINS: Can we go to .pdf Page 104, please.

(Exhibit displayed on screen.)

MS. DES JARDINS: And scroll down.

(Exhibit displayed on screen.)

MS. DES JARDINS: I just wanted to have you look at -- These are the references cited.

Just keep going.

(Exhibit displayed on screen.)

MS. DES JARDINS: Keep going.

(Exhibit displayed on screen.)

MS. DES JARDINS: So --

WITNESS BAXTER: We don't see . . .
MS. DES JARDINS: So, Mr. Baxter --
We can keep going.
There's a very large number of references cited for this report; correct?
WITNESS BAXTER: Yes.
MS. DES JARDINS: And -- And didn't -- You probably didn't read and review all of them.
WITNESS BAXTER: No.
MS. DES JARDINS: But somebody on the POD team --
WITNESS BAXTER: Was aware of all these reports.
MS. DES JARDINS: And -- And so these informed the ultimate -- this ultimate synthesis report; correct?
WITNESS BAXTER: Correct.
MS. DES JARDINS: And it also went into the underlying studies that were done.
WITNESS BAXTER: Yes. The un -- Some of the underlying studies contributed even at the stage of being prepeer-reviewed to the data that were used in this report.
MS. DES JARDINS: And wasn't the sense of using data partly a sense of urgency because of what

was happening in the estuary?

WITNESS BAXTER: Yes.

MS. DES JARDINS: Keep going.

(Exhibit displayed on screen.)

MS. DES JARDINS: So -- And weren't -- You -- You've been an author for a number of peer-reviewed articles; correct?

WITNESS BAXTER: Yes.

MS. DES JARDINS: And other people on the POD team also were authors of peer-reviewed articles?

WITNESS BAXTER: Yes.

MS. DES JARDINS: And so . . .

Do you think this was the broadest effort to understand the causes of the pelagic organism decline?

WITNESS BAXTER: Yes.

MS. DES JARDINS: And, so, when you consider Mr. -- Robert Latour's paper, it just is not consistent with the understanding that came out of -- that -- that you developed in participating --

WITNESS BAXTER: Yes.

MS. DES JARDINS: -- in this interagency, interdisciplinary.

And didn't this involve some of the best experts on Delta fish in the world?

WITNESS BAXTER: Best experts in -- in most of

the areas that were delved into in the report, well beyond just fishes.

MS. DES JARDINS: Thank you.

That concludes my questions.

CO-HEARING OFFICER DODUC: Recross?

MS. ANSLEY: Yes. I think we have one to two questions.

RECROSS-EXAMINATION BY

MS. ANSLEY: So I just have one or two clarifying questions about the Latour paper.

And -- and am I correct in thinking the Latour paper was from 2016, approximately?

WITNESS BAXTER: I don't remember when it got published. I'd -- I'd have to -- I'd have to look. I don't -- I don't remember the exact citation.

I think it was up earlier. Wasn't it part of the -- one of the exhibits for today?

MS. ANSLEY: I think it was one of BSK exhibits.

And is your memory that the Latour paper investigated the factors evaluating catch?

WITNESS BAXTER: Catch minimum effort, yeah.

MS. ANSLEY: Rather than abundance?

WITNESS BAXTER: Correct.

MS. ANSLEY: And are you aware of any . . .

And is -- And, to your knowledge, is there a paper that is published that disagrees with Latour's findings?

WITNESS BAXTER: Well, I think some of Latour's findings were contradictory to the types of work that would -- that was done by Feyrer, et al., the 2007-2010, and Nobriga 2005.

Both -- Even though that's a different dataset, it's kind of looking at the same habitat type factors and bigger-picture relationships, or regional relationships rather than station-to-station, location-to-location relationships.

MS. ANSLEY: Okay. That's all my questions.

Thank you.

CO-HEARING OFFICER DODUC: Thank you.

Any other recross?

Not seeing any, thank you, Mr. Baxter.

WITNESS BAXTER: Thank you.

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

Miss Des Jardins, does this conclude your case in chief?

MS. DES JARDINS: Yes, it does.

CO-HEARING OFFICER DODUC: At this time, would you like to move your exhibits into the record?

MS. DES JARDINS: Yes.

I would like to move the exhibits listed on my April 9th, 2018, Cumulative Exhibit Index listed under Part 2: Exhibits DDJ-214 through DDJ -- what did I get up to? -- DDJ-285, and I also reference a number of State Water Board exhibits.

To the extent that SWRCB-66, -106, -107, -108, -109, and . . . just a sec . . . -111 and -112 have not been submitted into evidence, I'm submitting those as well.

CO-HEARING OFFICER DODUC: Any objections?

MS. ANSLEY: (Shaking head.)

CO-HEARING OFFICER DODUC: All right. Those have been moved into the record.

(California Water Research's Exhibits DDJ-214 through DDJ-285 received in evidence)

(State Water Resources Board's Exhibits SWRCB-66, SWRCB-106 through SWRCB-109, SWRCB-111 & SWRCB-112 received in evidence)

CO-HEARING OFFICER DODUC: Thank you, Miss Des Jardins.

We will re --

Oh, before we adjourn, I will note that Mr. Volker did send in an e-mail clarifying his latest proposal for the presentation of his witnesses.

While he acknowledges -- or noted that this was the original order he had originally posed many months ago, and that no one objected to it then and he did not see a reason for them to object now, I recognize that, during the many courses of changes to his panels, cross-examiners might have reformatted their particular questions.

And so I, again, will entertain any objections that will be filed by 5 p.m. today given the late notice that Mr. Volker provided for yet another change in his ordering.

On that note, then, we will adjourn and we will reconvene at 9:30 on Monday in the Sierra Hearing Room.

(Proceedings adjourned at 3:20 p.m.)

State of California)
)
County of Sacramento)

I, Candace L. Yount, Certified Shorthand Reporter for the State of California, County of Sacramento, do hereby certify:

That I was present at the time of the above proceedings;

That I took down in machine shorthand notes all proceedings had and testimony given;

That I thereafter transcribed said shorthand notes with the aid of a computer;

That the above and foregoing is a full, true, and correct transcription of said shorthand notes (Pages 97-192), and a full, true and correct transcript of all proceedings had and testimony taken;

That I am not a party to the action or related to a party or counsel;

That I have no financial or other interest in the outcome of the action.

Dated: April 17, 2018

_____
Candace L. Yount, CSR No. 2737

STATE OF CALIFORNIA)
) ss.
COUNTY OF MARIN)

I, DEBORAH FUQUA, a Certified Shorthand Reporter of the State of California, do hereby certify that the foregoing proceedings (Pages 1 through 96) were reported by me, a disinterested person, and thereafter transcribed under my direction into typewriting and which typewriting is a true and correct transcription of said proceedings.

I further certify that I am not of counsel or attorney for either or any of the parties in the foregoing proceeding and caption named, nor in any way interested in the outcome of the cause named in said caption.

Dated the 18th day of April, 2018.

DEBORAH FUQUA

CSR NO. 12948