PUBLIC HEARING

STATE WATER RESOURCES CONTROL BOARD

DIVISION OF WATER RIGHTS

STATE OF CALIFORNIA

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SUBJECT: AMENDMENT OF CITY OF LOS ANGELES' WATER RIGHT LICENSES FOR DIVERSION OF WATER FROM STREAMS THAT ARE TRIBUTARY TO MONO LAKE

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Held in

Resources Building

Sacramento, California

Tuesday, December 7, 1993

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Reported by: Kelsey Davenport Anglin, RPR, CM, CSR No. 8553

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SACRAMENTO, CALIFORNIA
TUESDAY, DECEMBER 7, 1993, 8:45, A.M.
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HEARING OFFICER DEL PIERO: Ladies and Gentlemen, this hearing will come to order.

Ladies and Gentlemen, this is the continuation of the hearing before the State Water Resources Control Board in consideration of the amendment of the licenses held by Los Angeles Department of Water and Power on the streams tributary to Mono Lake.

My name is Marc Del Piero. I'm the Vice-Chairman of the State Water Resources Control Board.

Ms. Cahill, when last we left, you were on tap.

MS. CAHILL: Yes. Mr. Del Piero, our first witness today will be Darrell Wong, and when we finish with him, we propose a panel on our Rush and Lee Vining Creek studies. That panel will be made up of six experts.

DIRECT EXAMINATION BY MS. CAHILL

Q Good morning, Mr. Wong.
A Good morning.
Q Would you please state your name and spell it for the record?
A Darrell M. Wong, D-A, double, R-E, double L, last name W-O-N-G.

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Q Mr. Wong, I'm handing you DFG Exhibit 1. Are you familiar with that document?
A Yes.
Q And is that an accurate copy of the testimony you submitted in these proceedings?
A Yes, it is.
Q And I'm passing you now -- do you have any changes to make in Exhibit 1?
A No, I don't.
Q I'm passing you now DFG Exhibit 2. Is that an accurate statement of your experience and qualifications?
A Yes, it is.
Q Would you please briefly summarize your education and experience?
A I received a bachelor's degree in biology from California State University Long Beach in 1969. I also received a master of arts degree in biology with emphasis on fisheries and aquatic ecology from the same institution in 1975. My master's thesis involved the life history of the trout population in the White Mountains of Mono County.
Q Mr. Wong, let's go briefly over the exhibits that accompanied your testimony. DFG Exhibits 63 through 69 -- I'm sorry, 65 through 69, are those photographs?

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A Yes, they are.
Q And did you submit them to illustrate points in your testimony?
A Yes.
Q And were they taken in the Mono Basin?
A Only DFG 65 was taken -- photos of Rush Creek. The rest of them are from outside the Basin and were used for illustrative purposes.
Q And with regard to DFG Exhibits 70 through 72, are those articles that you relied on in preparing your testimony, or at least referred to?
A Yes.
Q Would you please summarize your testimony for us?
A First of all, as far as work experience, I'm an associate fishery biologist with the Department of Fish and Game. I began work in the Mono County and Inyo County areas in 1968. I have been employed permanently there as a fishery biologist since 1975. My management responsibilities include the management of fish, amphibians, reptiles, and invertebrates in the Mono areas.

I've also been involved with project review for numerous hydroelectric projects as well as other water development projects in the area. For over 25 years, I have gathered quite an extensive amount of experience

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regarding fish populations and fish sampling in the Mono County area and the waters involved.

As far as my testimony goes, it actually addresses three main issues: What constitutes instream flows in good condition, because the department is making recommendations based on some information that we've gathered. On -- also, we will be covering Mono Lake ecology, as well as some comments on the Upper Owens River.

Regarding instream flow determination of good condition, Department of Fish and Game Code Sections 5937 and 5946 require that "sufficient water be passed over, around, or through a dam to keep in good condition any fish that may be planted or exist below the dam." This requires the identification of requisite criteria to keep fish in good condition.

Fish -- as we have heard before, but I think it's worth repeating again, fish are defined in the Fish and Game Code in Section 45 includes both wild fish, mullosks, or other crustaceans, invertebrates or amphibians, including any parts, spawn, or ova thereof. So it is a fact that really maintaining good condition, from a biological perspective, requires maintaining good conditions for the entire stream ecosystem.

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This fits in very well with the mission statement of the California Department of Fish and Game. which is behind me here for those of you that can read it, but it basically says, "The mission of the Department of Fish and Game is to manage California's diverse fish, wildlife, and plant resources and the habitats upon which they depend for their ecological values and for their use and enjoyment by the public."

Q We had not previously submitted that, although it's consistent with the submitted testimony, and I would like now to give it DFG Exhibit No. 154. And we have copies.

MR. BIRMINGHAM: May I ask, Mr. Del Piero, Ms. Cahill a question?

HEARING OFFICER DEL PIERO: Certainly.

MR. BIRMINGHAM: Is this an official document by the Department of Fish and Game?

MS. CAHILL: It's my belief that it is.

MR. BIRMINGHAM: I've got no objection.

HEARING OFFICER DEL PIERO: Thank you. It will be entered then.

(DFG Exhibit No. 154 was admitted into evidence.)

MR. WONG: And, of course, as an area biologist who's responsible for managing the area for all the

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values, ecological as well as enjoyment by the public --

HEARING OFFICER DEL PIERO: Mr. Birmingham, did

you need another copy?
MR. BIRMINGHAM: I'll get one from Mr. Smith at the break. Thank you very much.
HEARING OFFICER DEL PIERO: Pardon me, Mr. Wong. Please proceed.
MR. WONG: As far as management in the Mono Basin, management of fish, we've got one coming here, brown and rainbow trout have been --
HEARING OFFICER DEL PIERO: It appears you've got that one under control.
(Laughter.)
MR. WONG: As far as management of the Mono Basin, brown and rainbow trout have been the most valuable recreational fish, vertebrate or fin fish that the department has managed before for the last 50 years in the Mono Basin. What you have here is a depiction, a mounted specimen, which is a brown trout about 20 inches long. If it were alive, it would probably weigh approximately four pounds, just to get some idea of what a desirable fish might be in Mono Basin. This is not to be entered as an exhibit, by the way.
HEARING OFFICER DEL PIERO: That's good, Mr. Wong,

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because my five-year old is coming up here later today. I'm going to take that and show it to him and tell him I caught it.
(Laughter.)
MR. WONG: The question is will he believe you. I've worked with too many anglers for too many years.
But this brown trout, as depicted in that photo that I presented, which is Exhibit 66, of a trout which is in very good condition and appears to be disease-free. The one I have in the picture, though, is a live fish, other than this one.
But as far as presenting or providing these kinds of fish to the public, we're trying to do it in a natural context, and so our goal is to make fish like this or ones that are desirably -- desirable to the public available to the recreational public as part of the natural ecosystem. That's the -- more or less, the pinch that we have.
So the Department of Fish and Game seeks to maintain natural systems of fish and wildlife with self-sustaining populations of trout which are desirable to the public, which means those which are over ten inches in total length.
I see in the Mono Basin really an emphasis on wild trout. By "wild trout," I mean self-sustaining

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populations. We see no expansion, to speak of, of the catchable trout program, our typical rainbow trout-stocking program in the Mono Basin. That is being stretched to the limit as it is. So flows to maintain fish such as this in good condition would result in self-sustaining, desirably-sized adult populations of fin fish, in this particular case, which are in good condition, well proportioned, such as that specimen behind me, and disease-free.
There really should be no artificial limitations from a lack of cover or food or poor water quality or

reproductive habitat. Ideally, you have good numbers of different age classes, which results in a good stable population, and habitat should not be artificially limited. So there's a real need with whatever flow regime is in a stream to maintain adequate physical, biological, and chemical parameters which together constitute the ecology of the stream. The whole stream ecosystem.

The ecological health of the stream is dependent on aquatic and riparian ecosystems together. We've heard a lot of testimony regarding riparians so far. This requires natural stream processes with well-vegetated banks and a diverse riparian system.

There's general agreement among researchers that

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there is a linkage between stream ecology and fish populations, and the paper that I presented in my testimony by Hill, Platts and Beschta 1991, which is DFG Exhibit 72, says this very well, and I'll quote a very short section from it.

Quote, healthy fish populations are dependent on stream flow regimes that protect the ecological integrity of their habitat. Fish habitats are the consequence of linkage among the stream, flood plane, riparian, and upland zones, and watershed geography." These authors maintain that there are really four different types of flows that will result in this linkage, and those are instream flows, channel maintenance flows, riparian maintenance flows, and valley maintenance flows.

Now, the instream flow incremental methodology, which you've already heard so much about, characterizes in-channel trout habitat, for the most, part the way the department is normally using it. However, it's very important that out-of-channel flows be maintained as well to keep the system functioning.

Flushing flows are usually determined for in-channel sediment transport, and these are fine for the streams that we're talking about now, but as these streams become restored, things should be re-evaluated

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because over-bank flows would be necessary to really maintain them and restore the riparian -- riparian ecosystem.

Now, the stream biota, or the animals living in the stream, and other -- and plants as well for that matter, evolved with natural rates of stream flow change. Controlled stream flows should try to mimic, as we've heard so much, the natural hydrograph. That's all we're trying to do here. This is not anything really highly technical. We're just trying to somehow imitate nature.

Especially important on ramping, though, would be the recessional flows for aquatic organisms. Hill, Platts and Beschta and others recommend flow changes of less than 10 percent per day to reduce fish stranding, stream bank damage, and to enhance vegetative seeding, and I maintain that these still should be used with a baseline for determining controlled recessional flows.

Physical conditions that would result in good

condition should result in adequate water depths and velocities, water quality, including temperature, substrates that are suitable in the entire reach all year long for all life stages of aquatic animals. Good water temperatures are necessary for growth and reproduction, substrate with a low embeddedness, depth

is important for cover, feeding, and over-wintering habitat.

Good velocities are necessary for fin fish spawning, especially, sediment transport, food transport, and habitat diversity.

Good riparian strip is necessary for good water quality, stable banks, shading, and to create a deep and narrow channel. A lot of things that you've already been hearing about so far.

So, in summary, then, basically, adequate flows would result in a riparian and aquatic system which is in good condition. This results in a stream system which is in good condition, which also will result in fish being in good condition.

Now, the current streams or the streams that we're involved with during the Mono Basin, are, as we heard yesterday for many hours, very degraded, and so it's difficult to quantify these conditions now. That's part of the problem we all have.

So I recommend that we re-evaluate in five to ten years once active or passive restoration has occurred in these streams, re-evaluate the instream needs, channel maintenance, and riparian needs as things progress.

Regarding the Mono Lake ecology. The Draft

Environmental Impact Report, or the DEIR, basically states that there really is no mitigation for any declines in brine shrimp. There's only one mitigation measure offered for the alkali or brine fly for any possible adverse impacts there. It also states that little is known about the shrimp declines and how that might affect the population survival of that species or the birds that depend upon them.

In addition, the brine shrimp is the Federal Category One candidate for listing pursuant to the Endangered Species Act of 1973. All of these considerations would compel someone interested, such as the department, in maintaining these animals, it compels you to be conservative in whatever lake levels are chosen because of the uncertainties involved. The Draft Environmental Impact Report indicates that 6390 has the greatest benefit to shrimp and flies and, therefore, for those two species, appears to be a lake level which is at least in the range that should be considered or definitely the lake level that should be strongly considered.

However, the Mono Lake ecosystem consists of more than just flies and shrimp, and from the broad-base ecosystem approach that the department has in our mission statement, we must look at the entire ecosystem

not just two species within one. The Draft

Environmental Impact Report states that there are species of zooplankton or small animals that live there that were extricated above salinities of 70 grams per liter. The restoration of these public trust values would require the restoration of that functioning ecosystem as it once was.

The Draft Environmental Impact Report also states that 53 grams per liter of pre-divergence salinities to 70 grams per liter would be required to restore that diversity. The impact report or DEIR states that 6390 is equivalent to approximately 79 grams per liter of salinity, so it appears that a level incrementally higher than 6390 would be required to restore that original or even close to the original natural diversity.

Regarding the Upper Owens River, the river above the east portal, and basically its natural state, has very good to excellent habitat with a desirable fishery, a very desirable fishery. Below the east portal, due to exported water, the river is degraded but provides still a good recreational fishery, in my opinion.

The Department of Fish and Game recommends that natural flows, including tunnel bank, remain in

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the Upper Owens River channel, as described in Stream Evaluation Report 93-1, and that augmentations from the Mono Basin are acceptable but only to the extent that they can be maintained without affecting the needs for the Mono Lake tributaries or Mono Lake itself.

Due to reduced flows from the east portal, it is my professional opinion that with better land management practices in particular, the Upper Owens River has the potential to come to equilibrium with its new flow regime and could provide good to excellent angling, especially within the time frame that we're looking at for the lake to come to its new equilibrium. Mitigation measures that could be implemented in the Upper Owens River could expedite this process.

Also, since my testimony is written, it has come to my attention that there's some new information available to me regarding the potential for restoration of spring flows in the Rush Creek bottom lands.

MR. BIRMINGHAM: Excuse me, Mr. Del Piero. I'm going to interpose an objection at this point on the grounds that Mr. Wong is going beyond the scope of his written testimony.

HEARING OFFICER DEL PIERO: Ms. Cahill?

MS. CAHILL: It is beyond what was contained in

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the written testimony. It's information Mr. Wong didn't have at the time he put the written testimony in.

MR. BIRMINGHAM: May I confer with Ms. Cahill for just a moment, Mr. Del Piero?

HEARING OFFICER DEL PIERO: Sure. Go ahead.

(Discussion held off the record.)

MR. BIRMINGHAM: I'll withdraw my objection.

HEARING OFFICER DEL PIERO: Mr. Wong, proceed.

MR. WONG: That leads me to now conclude that my recommendation would be that diversions from Parker and Walker Creek -- I should say the lack of diversion of Parker and Walker Creek, as the City of Los Angeles has offered in their land management plan, would be a desirable situation for Parker Creek and Walker Creek, as well as the spring flows that might be restored in the Rush Creek bottom lands.

HEARING OFFICER DEL PIERO: Thank you very much.

Q BY MS. CAHILL: Does that conclude your testimony, Mr. Wong?

A Yes, it does.

MS. CAHILL: Thank you very much.

HEARING OFFICER DEL PIERO: Thank you very much, Ms. Cahill.

Mr. Wong, you're being called only by the

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Department of Fish and Game?

MR. WONG: Yes, Sir.

HEARING OFFICER DEL PIERO: Mr. Birmingham?

MR. BIRMINGHAM: Thank you very much, Mr. Del Piero.

Also, at this time, I'd like to introduce for the record Diane Lockareff, who is going to be helping us out. I'm tempted to ask Ms. Lockareff to cross-examine Mr. Wong because I'm confident that she is as prepared as I am and probably could do as good a job.

HEARING OFFICER DEL PIERO: I assume this is Ms. Lockareff?

MR. BIRMINGHAM: This is Ms. Lockareff right here. She is not a new admittee, but will be in a few days.

HEARING OFFICER DEL PIERO: Congratulations, and my sympathies.

(Laughter.)

CROSS-EXAMINATION BY MR. BIRMINGHAM

Q First, I'd like to ask you some questions, Mr. Wong, about that beautiful fish that you've put up on the easel.

HEARING OFFICER DEL PIERO: Get that right, Mr. Birmingham. That's my fish.

(Laughter.)

Q BY MR. BIRMINGHAM: You said that fish was about 20

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inches long. Is that correct?

A Yes.

Q And you said that that fish, when it was alive, probably weighed somewhere in the vicinity of four pounds?

A Yes.

Q In terms of the fishery that existed in Lee Vining Creek prior to the diversions by the City of Los Angeles, would you have expected to find an abundant number of fish like the fish you put up on the easel in Lee Vining Creek at that time?

A I don't personally know what existed in Lee Vining Creek. From what I have heard and from what I know of fish of that size, it would probably be unlikely that you find a fish that large.

Q And it would be unlikely that you find a fish that large in the area of Rush Creek below the Grant Lake

Reservoir. Isn't that right?
A No. That's not right. I don't know what was there at the time, but I've heard -- Rush Creek's quite a larger stream and a fish like that just requires good-size pools, and if there's adequate habitat, fish like that can occur in waters much smaller than that of Rush Creek.
Q I, first, would like to ask you about the opinions

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that you've expressed concerning Mono Lake productivity, which are Paragraphs 18 and 19 of your testimony. You say that almost nothing is known about how declines in the brine shrimp population might threaten the population's survival or bird populations dependent upon brine shrimp as food. Now, you have heard the testimony of Dr. John Melack; is that correct?
A Portions of it.
Q And when forming the opinion that you've expressed in Paragraph 18 of your written testimony, did you consider all of the research that has been done by Dr. Melack and his colleagues at Mono Lake over the course of the last 14 years?
A Well, what I wrote in my testimony, that was based entirely, as I mentioned, on the Draft Environmental Impact Report information which very clearly states that.
Q That was not my question. In forming this opinion, I take from it your answer that you did not consider the research that was conducted by Dr. Melack and his colleagues over the course of the last 14 years?
A No. When I heard -- when I heard Dr. Melack give his testimony, that was after I had already written my

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testimony. That's what I was getting at. So all I had available to me at the time were the statements which I took as factual within the DEIR.
MR. DODGE: I object to this line of questioning on the grounds that it assumes that the DEIR did not take into account Dr. Melack's work. I don't know how this --
HEARING OFFICER DEL PIERO: Mr. Birmingham, do you have a response to that?
MR. BIRMINGHAM: I'm not sure a response is required.
HEARING OFFICER DEL PIERO: My inclination is to overrule the objection because, One, I'm not sure the witness had any way of knowing that one way or the other but, Two, that's not the point of the question.
Proceed.
MR. BIRMINGHAM: Thank you.
Q BY MR. BIRMINGHAM: Now, in forming the opinions that you expressed in Paragraph 18 concerning the potential effect that the brine shrimp population decline might have on bird populations dependent upon the brine shrimp as food, did you consider the research that was conducted by Dr. Jehl over the course of the last 14 years?
A Again, this is -- these are statements that were

made by Jones and Stokes who wrote the Draft Environmental Impact Report. You have to understand that my role here is not to be a research scientist. My role is to take information that's available that I can find to network with other experts and academic or agency people that I know and utilize that information to make management decisions. So the Draft Environmental Impact Report, which looked at all of these things, would be the basis and which is what I use for the basis of my recommendations and my opinions provided in my testimony.

Q If an expert ornithologist like Dr. Jehl came to you as a staff biologist for the Department of Fish and Game and said to you that the -- there were -- there was no threat to any bird population at Mono Lake because of a declining population of Artemia Monica, you would consider that, wouldn't you, in forming any policy with respect to Mono Lake?

A As a fishery biologist, I wouldn't be really able to integrate what he had said into my basic discipline without consulting some other people in our department.

What I did hear was -- that's why I was very clear, the Draft Environmental Impact Report made these statements, and I'm assuming that they are correct.

Q I'd like to talk about the fishery aspect of your

testimony, instream flow determination. You apparently have taken a number of courses on IFIM; is that correct, Mr. Wong?

A Yes.

Q From whom did you take those courses?

A A variety -- a variety of agencies, institutions, primarily, the U.S. Fish and Wildlife Service courses. There also have been some in-house courses and as well as one private consultant-provided course.

Q The courses that you took from the U.S. Fish and Wildlife Service, were any of those courses taught by Dr. Hardy who testified here?

A No.

Q You -- you indicate in Paragraph 7, with respect to a good condition, you state that, "The good condition requirement must include the protection and maintenance of physical, biological, and chemical parameters which constitute the ecology of the stream." Is that correct?

A Yes.

Q If -- and I take it that what you're saying is that in order to protect fish in good condition, you must maintain these parameters in good condition.

MR. DODGE: Objection. Unintelligible.

HEARING OFFICER DEL PIERO: Sustained. Rephrase

the question, Mr. Birmingham.

Q BY MR. BIRMINGHAM: Well, let me ask a different question.

Mr. Wong, if fish in a stream are in good condition, is it safe to assume, then, that the parameters that you have listed in your testimony are not having a negative impact on fish?

A Yes. I would agree with that.
Q Now, you would agree with me, wouldn't you, that the fish in Rush Creek are in good condition?
MR. ROOS-COLLINS: Objection. Ambiguous. It is unclear whether Mr. Birmingham is referring to the fishery; namely, the population of individual fish as a whole, or to individual fish in isolation.
HEARING OFFICER DEL PIERO: Sustained.
Q BY MR. BIRMINGHAM: As part of the instream inflow incremental methodology, do you consider condition factors?
MR. THOMAS: Objection, ambiguous. "Condition factors" is an overly broad term.
HEARING OFFICER DEL PIERO: Mr. Birmingham?
MR. BIRMINGHAM: I believe that "condition factors" is a term of art that is used as part of the IFIM. I'll ask the witness that question. I think a better question -- objection might be lack of

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foundation.
HEARING OFFICER DEL PIERO: Well --
MR. THOMAS: I'll accept your suggestion.
HEARING OFFICER DEL PIERO: Somehow I knew you were going to do that, Mr. Thomas. I'll sustain the objection.
Mr. Birmingham, why don't you proceed, okay?
Q BY MR. BIRMINGHAM: Mr. Wong, are you familiar with the term "condition factor" as it relates to IFIM?
A No.
Q Have you reviewed the IFIMs that were prepared for, say, Lee Vining Creek?
A No.
Q You haven't reviewed the IFIM on Lee Vining Creek?
A You have to explain what you mean by "reviewed the IFIM," please.
Q Isn't it correct that an IFIM report was prepared by the Department of Fish and Game for Lee Vining Creek?
A Well, the report, yes.
Q Have you reviewed the report?
A I have read the report.
Q On page -- do you have a copy of the report in front of you?
A No, I don't.

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I might add, too, that any specific questions regarding those reports should be addressed to the panel that will be coming on later. I am not -- I am not very intricately involved with the preparation of those reports. So rather than waste a lot of time on the record, it would be more appropriate to ask specific questions of the panels that will be coming up.
Q I'll do that. Thank you.
Let's talk about fish in good condition. And I don't want to raise any objections, so I'm just going to ask you these questions in a very straightforward manner, and I'm going to lay the foundation so we don't have any objections from the very beginning.
Is there a distinction between the Department of

Fish and Game and the Fish and Game Commission?
A Yes.
Q Would you please explain to us what is the distinction between the Department of Fish and Game and the Fish and Game Commission?
A I am not sure enough about that to really explain it to you. I wouldn't feel comfortable doing that.
Q Is it correct that the Fish and Game Commission establishes fishing and hunting regulations for the State of California?

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A That's true.
Q And is it correct that the Fish and Game Commission periodically reviews hunting and fishing regulations for various parts of the State of California?
A That's my understanding.
Q And based upon that review, it periodically amends the fishing and hunting regulations for various parts of the State of California?
A Yes.
Q Has the Fish and Game Commission recently considered amendments to fishing regulations for the Mono Basin?
A I believe so.
Q And as part of the public review process -- is there a public review process that occurs in connection with the review by the Fish and Game Commission of fishing regulations?
A No. The reason why I say that is it's not really a public review. There's an opportunity for public input and public recommendations, but I don't believe they review anything the Commission does.
Q In connection with the recent consideration by the Fish and Game Commission of new fishing regulations for the eastern Sierra, was there an opportunity for the

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public to comment on the proposed regulations?
A I believe there were public hearings held, yes.
Q Do you know if the -- the organization California Trout, Incorporated, commented on proposed regulations for Rush, Lee Vining, Walker, and Parker Creeks?
A I do not know that for a fact. I don't know that for a fact.
MR. BIRMINGHAM: Can I have this marked next in order?
HEARING OFFICER DEL PIERO: What do we have here, Mr. Birmingham?
MR. BIRMINGHAM: It's a document that I'll identify after I've given a copy of it to opposing counsel.
MR. CANADAY: Mr. Birmingham, that will be marked L.A. DWP 90.
(L.A. DWP Exhibit No. 90 was marked for identification.)
Q BY MR. BIRMINGHAM: Mr. Wong, I'm giving you a document that has been identified as L.A. DWP Exhibit 90 and, if I may, I'll give a copy of it to the Hearing Officer.
MR. FRINK: He's got one.

Q BY MR. BIRMINGHAM: L.A. DWP Exhibit 90 is a summary of recommendations received by the Fish and Game

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Commission, December 8, 1991, through November 21, 1993. Is that correct, Mr. Wong?

MS. CAHILL: Objection.

HEARING OFFICER DEL PIERO: Who's objecting?

MS. CAHILL: He has no personal knowledge.

HEARING OFFICER DEL PIERO: I'm sorry. I can't see --

MS. CAHILL: I think we need -- first, before he asks that question, we should establish whether Mr. Wong even recognizes the document. He's asking him to validate a document he may never have seen before.

HEARING OFFICER DEL PIERO: I doubt that anybody's seen this. I'm assuming that this is not a document prepared by the Fish and Game Commission. Is that correct, Mr. Birmingham?

MR. BIRMINGHAM: No. In fact --

HEARING OFFICER DEL PIERO: Is this a summary of the public record of the hearing that took place that's been prepared by L.A. DWP?

MR. BIRMINGHAM: I believe, in fact, this is a summary that was prepared by the Fish and Game Commission.

HEARING OFFICER DEL PIERO: Oh, this is a document of the Fish and Game Commission?

MR. BIRMINGHAM: Yes, I believe so.

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MR. THOMAS: Objection. This has not been prepared by the Fish and Game --

HEARING OFFICER DEL PIERO: I would have expected at least a seal or a standard letterhead on the cover of it.

MR. THOMAS: Right.

HEARING OFFICER DEL PIERO: That's why I assumed it was prepared by L.A. DWP.

MR. BIRMINGHAM: This is not a document that's prepared by L.A. DWP. We obtained this document from the Department of Fish and Game.

MR. THOMAS: This may have been prepared by the --

HEARING OFFICER DEL PIERO: Is this a staff summary?

MR. THOMAS: Staff summary of the Department of Fish and Game.

MR. BIRMINGHAM: Which I established --

HEARING OFFICER DEL PIERO: Why don't -- okay. I'm going to sustain her objection, and I want you to ask him whether or not he's ever seen that document before, and then we can proceed that way.

Q BY MR. BIRMINGHAM: Have you ever seen this document, Mr. Wong?

A No. Not to my recollection.

Q I'm going to ask you to assume that -- well, that

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it is a summary of comments prepared by the Department of Fish and Game, and we'll lay the appropriate --

HEARING OFFICER DEL PIERO: Excuse me, Mr. Birmingham. Can I ask a question?

Mr. Wong, do you provide staff services to the

Fish and Game Commission?
MR. WONG: How do you mean "staff services"?
HEARING OFFICER DEL PIERO: Do you assist them during the course of their public hearings?
MR. WONG: Not really assist. We're only there if called upon for input.
HEARING OFFICER DEL PIERO: Have you done work for them in the past specifically in relationship to their policy and responsibilities?
MR. WONG: Other than modifying written recommendations from the public and such -- I'm not real clear on if that's what you mean or not. We provide input in that way, also, in terms of recommendations, but nothing directly with the Commission.
Q BY MR. BIRMINGHAM: Let me ask you some further questions about this document, L.A. DWP Exhibit 90. I'd ask you to turn to Page 26 of L.A. DWP Exhibit 90, Mr. Wong. And at the bottom of Page 26, there is a -- there's a Paragraph 1 that states, "Edmondson -- "

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excuse me. "Edmondson, Jim, California Trout, July 12, 1993," and that appears under a subheading, "Number Number Number New Subsection 98.7 Lee Vining Creek."
Do you see the paragraph that I'm talking about?
A Yes.
Q Now, do you know whether or not California Trout made a recommendation of a zero bag limit artificialed only on Lee Vining Creek from the Lee Vining conduit downstream to Mono Lake, Mono County, California?
A I was aware, as far as the Bishop office personnel, that some recommendations had been made, but I had really had no personal involvement with their evaluation or any recommendations regarding them.
Q Are you aware of what the Bishop -- did anybody in the Bishop office review the proposal by California Trout?
A I would assume so, but I have no personal knowledge in specifics.
Q Now, I'd like you to turn to Page 34, and at the top of Page 34, there appears, a heading Subsection 153, Rush Creek, Mono County -- Mono County, California, and there's a Summary 1 from California Trout, "Mr. Edmondson recommends a zero bag limit and artificials only for Rush Creek from Grant Lake Dam downstream to Mono Lake."

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Are you aware of a recommendation of this kind from California Trout with respect to new regulations for Rush Creek?
A Leekewise as for Lee Vining Creek. I was aware that some recommendations were being provided, but I don't know the details.
Q And your answers would be the same for Parker and Walker Creeks; is that correct?
A Yes.
Q There is, in fact, a reference to Walker Creek on Page 40 of this document, L.A. DWP Exhibit 90; is that correct?
HEARING OFFICER DEL PIERO: Next to the last

paragraph on Page 4.
MR. WONG: Yes, I see it now.
Q BY MR. BIRMINGHAM: And on Page 31 of L.A. DWP Exhibit 90, there's a similar recommendation for Parker Creek. Is that correct?
A Page 41, did you say?
HEARING OFFICER DEL PIERO: 31.
MR. WONG: 31, I'm sorry.
HEARING OFFICER DEL PIERO: Right in the center of the page.
MR. WONG: Yes, I see it.
HEARING OFFICER DEL PIERO: I'm sorry, Mr. Wong.

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Were you aware?
MR. WONG: I'm sorry, you'll have to repeat the question. I'm sorry.
Q BY MR. BIRMINGHAM: Were you aware of that recommendation from Cal-Trout?
A Leekewise, as the others, just dimly aware that -- I didn't know the details.
(L.A. DWP Exhibit No. 91 was marked for identification.)
MR. BIRMINGHAM: I guess this would be L.A. DWP 91 now.
Q BY MR. BIRMINGHAM: I'm handing you a document, Mr. Wong, that has been identified as L.A. DWP Exhibit 91, and I will -- I will represent that this is a document, L.A. DWP Exhibit 91, is a document obtained from the State Headquarters for the Department of Fish and Game, and it contains a -- what appears to be a department recommendation concerning the Cal-Trout proposal for a zero bag limit on artificials only for Rush Creek on Grant Lake Dam downstream from Mono Lake.
And the document states as part of the analysis, where it states as the recommendation, "Do not accept." And then under analysis it states, "Special restrictions were applied to this stream in 1991. The bag limit is five. The maximum size limit is ten

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inches, and only artificial lures with barbless hooks maybe used. Mr. Edmondson proposes that the bag limit be reduced to zero. He believes that angler harvest is masking the effectiveness of efforts to restore the trout population following rewatering of the section downstream of the Lee Vining conduit. The department maintains that the trout population is responding well to the special regulations. The population is in good condition and further restrictions are unnecessary at this time."
Were you aware of the analysis by the Department of Fish and Game that the population of trout in Rush Creek is in good condition?
Q Could you restate that, again, please?
A I'm asking you were you aware of the analysis by the Department of Fish and Game that is purportedly reported in L.A. DWP Exhibit 91 that the population of trout in Rush Creek is in good condition?
A No. I'm not aware of the analysis.
MR. DODGE: Just for the record, I want to hand the text that was being read to the witness.

MR. BIRMINGHAM: I'd already given him a copy of the text.
MR. WONG: I have a copy. I guess I might ask the question I'm not sure what you mean by "analysis."

Q BY MR. BIRMINGHAM: There is an analysis here on L.A. DWP Exhibit 91; is that correct, Mr. Wong?
A If you're referring to what's in writing here as being the analysis, then yes, that represents an analysis that somebody did something, yes.
Q And if my representation is correct, and I will call a witness later to lay the foundation for this document, that is an analysis prepared by the Department of Fish and Game?
A Yes, it is. With their ideas of definitions.
Q With -- with -- when you say "their," you mean the Department of Fish and Game definition of "good condition"?
A Whoever wrote this particular item, which I don't know who wrote it.
Q And if my representation is correct that this is an analysis prepared by the Department of Fish and Game, this was the official analysis of the Department of Fish and Game submitted to the Fish and Game Commission in connection with proposed regulations; isn't that correct?
MS. CAHILL: Objection. This is asking him to assume something and then asking if it is true.
HEARING OFFICER DEL PIERO: Mr. Birmingham, I'm going to sustain the objection. If you want to ask

that question, you need to lay a foundation.
MR. BIRMINGHAM: I believe, Mr. Del Piero, I began my question by asking to assume my representation was correct.
HEARING OFFICER DEL PIERO: Then you asked him a very specific question as to whether or not he believed it -- not whether or not he believed it, whether or not that document was, in fact, the official position of the department, and you've not laid the foundation for that question.
MR. HERRERA: Excuse me, Mr. Birmingham, your 20 minute time is up.
MR. BIRMINGHAM: I make an application for an additional 20 minutes.
HEARING OFFICER DEL PIERO: Granted.
MR. BIRMINGHAM: I'm handing Mr. Canaday a document which I have identified as L.A. DWP Exhibit 92, and I'll give Mr. Wong a copy of it.
(L.A. DWP Exhibit No. 92 was marked for identification.)
Q BY MR. BIRMINGHAM: Again, Mr. Wong, I'll represent to you that L.A. DWP Exhibit 92 is a document that we obtained from the State Headquarters of the Department of Fish and Game. It appears to be similar to L.A. DWP Exhibit 91.

And under the analysis paragraph of L.A. DWP 92, analysis purportedly states that, "The department maintains that the trout population is responding well

to the special regulations. The population is in good condition and further restrictions are unnecessary at this time." This appears to be an analysis to support a recommendation that the Fish and Game Commission not accept Cal-Trout's proposed regulation.

Were you aware of an analysis by the Department of Fish and Game that the population of trout in Parker Creek is in good condition?

A I presume again you're referring to this paragraph as being an analysis.

MS. CAHILL: Objection --

HEARING OFFICER DEL PIERO: Wait. Wait. Wait. Wait. Wait. Mr. Birmingham, you can clarify your question, then I'll take your objection, Ms. Cahill.

MR. BIRMINGHAM: I'm asking about the analysis that is contained under the heading Analysis L.A. DWP exhibit -- L.A. DWP Exhibit 92.

HEARING OFFICER DEL PIERO: Mr. Wong, do you understand the question?

MR. WONG: I believe I do now.

HEARING OFFICER DEL PIERO: Now, Ms. Cahill, do you have an objection?

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MS. CAHILL: Could he just repeat the question, please?

(Whereupon the record was read as requested.)

HEARING OFFICER DEL PIERO: That's it.

Now, Mr. Wong, do you understand the question?

Ms. Cahill, did you have an objection?

MS. CAHILL: I withdraw the objection.

MR. WONG: If you're referring to this as being the analysis, then apparently something was done, but I was not -- I didn't have personal knowledge of it being done. But it doesn't surprise me that they did produce this.

Q BY MR. BIRMINGHAM: "They" being the Department of Fish and Game?

A Meaning staff personnel, apparently, and inland fisheries divisions, who apparently prepared these.

Q I'm handing the Staff and am now circulating among opposing counsel a copy of a document that has been marked as DWP Exhibit 93.

L.A. DWP exhibit 93, Mr. Wong, appears to be -- and, again, I'll represent this is a document that we obtained from the State Headquarters of the Department of Fish and Game. But it contains a paragraph on an analysis of -- supporting a recommendation that the Fish and Game Commission not accept the California

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Trout proposed regulation.

And at the bottom it says, "The department maintains that the trout population is responding well to the special regulations. The population is in good condition and further restrictions are unnecessary at this time." And again, this is a -- an analysis of a regulation proposed for Walker Creek.

Were you aware of the Department of Fish and Game analysis of the fishery -- or the fish population in Walker Creek that concluded the population is in good condition?

A I have to answer again, I'm not aware this was actually being done, but apparently someone did do it.
Q So, if the fish -- and I'm going to ask you a hypothetical question about Rush Creek. If the fish population is in Rush Creek -- let me restate the question.
Hypothetically, if the fish population in Rush Creek is in good condition, can it not be safely assumed that the physical, biological, and chemical parameters which constitute the ecology of Rush Creek are not negatively affecting the fishery in Rush Creek?
MR. ROOS-COLLINS: Objection.
HEARING OFFICER DEL PIERO: Grounds?
MR. ROOS-COLLINS: If Mr. Birmingham is referring

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to L.A. Exhibits 91 through 93 and their analysis that the fishery in those creeks are in good condition, he has not laid the foundation that those analyses refer to Section 5937. And, therefore, the question is confusing apples and oranges and asking this witness to relate these analyses to his testimony.
HEARING OFFICER DEL PIERO: Mr. Birmingham?
MR. BIRMINGHAM: I'll stand by the question.
HEARING OFFICER DEL PIERO: Well, I'm going to sustain the objection, Mr. Birmingham.
Let me suggest to you, Sir, that if you want five additional minutes, I'll grant that five additional minutes, no more than that, but in order for you to lay the foundation. You've taken a rather long time to introduce four short paragraphs related to the recommendations of the department on the stream. So if you need five additional minutes to lay the foundation in order to ask that question, you can have that.
MR. BIRMINGHAM: I appreciate that.
HEARING OFFICER DEL PIERO: It's taking a very long time to get to your point. I know what your point is, but --
MR. BIRMINGHAM: I apologize for taking the time, but I wanted to lay the appropriate foundation so I wouldn't have the objection.

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Q BY MR. BIRMINGHAM: I'm asking you a biological question, not a legal question, Mr. Wong. Putting aside 5937 of the Fish and Game Code -- you're a fisheries biologist; is that correct?
A Yes.
Q Now, I'm going to ask you, in your capacity as a fisheries biologist, a biological, hypothetical question. I'm going to ask you to assume that the fish population in Rush Creek is in good condition biologically. If you make that assumption, based upon your earlier response to one of my questions, I take it that it can be safely assumed that the physical, biological, and chemical parameters which constitute the ecology of Rush Creek are not negatively affecting the fish population which is in good condition.
MS. CAHILL: Objection. The question's unclear because of the reference to an answer to a previous question. I'm not sure it's at all clear what the meaning of this entire question is.

MR. DODGE: I object on the grounds that the term "negatively affect" is ambiguous.
HEARING OFFICER DEL PIERO: I'm going to sustain the objections.
Mr. Birmingham, you need to break it up, okay?
MR. BIRMINGHAM: May I ask Ms. Anglin, who now, I

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think, has the ability to do a computer search, and she's frowning, I would like her to search my cross-examination of Mr. Wong for the term "parameters" because I asked Mr. Wong a question about the parameters that are contained in Paragraph 7 of his direct testimony. And after I -- after I ask her to find those questions, I will then ask Mr. Wong this hypothetical question.
(Whereupon a short recess was taken.)
HEARING OFFICER DEL PIERO: We're back in session, Ladies and Gentlemen.
Mr. Birmingham?
MR. BIRMINGHAM: Thank you.
Q BY MR. BIRMINGHAM: Mr. Wong, during the recess, I had an opportunity to go back and look at the transcript of this morning's proceeding, and I asked you the following question: "Question, Mr. Wong, if fish in a stream are in good condition, is it safe to assume, then, that the parameters that you have listed in your testimony are not having a negative impact on fish?" And your response to my question was, "Yes, I would agree with that."
Now, when I asked you that question, the parameters that we were talking about -- and we can go back and get this from the record, if necessary, the

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parameters that we were talking about were those listed in Paragraph 7 of your written testimony. Is that correct?
A Chemical, physical --
Q Physical, biological, and chemical parameters.
A Yes.
Q And you said that you would agree with me that if fish in a stream are in good condition, it is safe to assume, then, that the parameters that we have listed are not having a negative impact on fish?
A That's correct, but maybe some clarification is required. We are speaking very generally here, Sir, and biological systems are very frequently changing. So at any given moment, some of those may not be exactly what you want to see, but overall, things might be all right. So you see the quandary that -- the problem I have with some of your very general questions.
Q Let me ask you -- your testimony is very general, so apparently my questions have to be very general. And I don't want to be argumentative, but let me ask you a general, hypothetical, biological question.
If, at a given point in time, fish in a stream like Rush Creek are in good condition biologically, then isn't it safe to assume that the parameters -- the

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physical, biological, and chemical parameters which

constitute the ecology of the stream are not having a negative impact on fish?
MS. CAHILL: Objection. Ambiguous whether "fish" means individual fish or fish in a larger population sense.
HEARING OFFICER DEL PIERO: Rather than have you restate the question, Mr. Birmingham, and having me sustain the objection, can you just specify what you're talking about so we can move on?
MR. BIRMINGHAM: Sure. I'll ask two questions.
Q BY MR. BIRMINGHAM: First, with respect to that individual fish that you've got up there on the board, if that fish were alive and in a stream and in good condition, would it not be safe to assume that the physical, biological, and chemical parameters which constitute the ecology of the stream are not having a negative impact on that fish?
A No.
Q Generally, Mr. Wong, if that fish is in good condition, isn't it safe to assume that these physical parameters are not having a negative impact on fish?
MS. CAHILL: Asked and answered.
MR. ROOS-COLLINS: Asked and answered.
MR. DODGE: Same question.

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HEARING OFFICER DEL PIERO: Forgive me, I'm sorry.
(Whereupon the record was read as requested.)
MS. CAHILL: Asked and answered. The most recent question was identical to the one before it.
MR. BIRMINGHAM: I disagree.
HEARING OFFICER DEL PIERO: Overruled. Answer the question, Mr. Wong.
MR. WONG: I think I better have it read again, also.
(Whereupon the record was read as requested.)
MR. WONG: All these double negatives throw me for a loop sometimes.
HEARING OFFICER DEL PIERO: Do you understand the question?
MR. WONG: I thought I did the first time.
HEARING OFFICER DEL PIERO: If you don't, I'll --
MR. WONG: Could you state in it positive sense, Sir?
Q BY MR. BIRMINGHAM: Let me ask you just a different question. Let's go back to the question you answered before and make sure that we understood the answer to that question. Now -- and I wrote this down very exact because I don't want there to be any confusion. I don't want there to be any objections because it's

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ambiguous. I just want to clear up the record.
Now, before when I asked you if fish in a stream are in good condition, is it safe to assume, then, that the parameters that you have listed in your testimony are not having a negative impact on fish, you said, "Yes, I would agree with that."
Now, let's take it to the specific. If that fish that you've got up there were alive and in a stream, was in good condition biologically, then is it safe to

assume that the physical conditions that you've listed in Paragraph 7 of your testimony are not having a negative impact on that fish in general terms, because your testimony's general?
MR. THOMAS: Objection. Ambiguous as to point in time. What the questions are doing is he's taking a single point in time and confusing it with a continuum, and the witness can't understand the difference unless we're clear.
HEARING OFFICER DEL PIERO: Overruled. Answer the question.
MR. WONG: The question's not clear to me in that you said it's in good condition biologically?
Q BY MR. BIRMINGHAM: Yes, biologically.
A I'm not sure what your definition is. What does that mean?

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Q Well, I'm not a fisheries biologist, Mr. Wong, so maybe you can tell me --
A It's not easy.
Q Well, your written testimony talks about fish in good condition. "Good condition" is a term that you used throughout your written testimony; is that correct?
A Yes.
Q And now you're telling me you don't know what that means in biological terms?
A I'm not sure what your definition is, but it's key to the answer to that question.
Q I'm asking a question about your understanding. Now, you have an understanding of what "good condition" means; is that correct?
A Yes.
Q Now, my question is based on your understanding of good condition because I'm not a fisheries biologist. You are. Okay? And again, I apologize if I'm being argumentative, but if that fish that we're talking about were alive and in Rush Creek and in good condition, then would it be safe to assume that at the point in time you took that fish out of the stream and determined that it was in good condition, wouldn't it be safe to assume that the physical parameters that are

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set out in Paragraph 7 of your testimony are not having a negative impact on the fish?
A I'm still troubled somewhat by your -- the question being that if you're equating good condition to meaning that that fish is alive and in the stream, then it would, in effect, be the answer to that question.
HEARING OFFICER DEL PIERO: Mr. Wong, I want you to assume that the fish at the point in time at which Mr. Birmingham has asked you the question is one moment away from being hooked and removed from the stream. Now answer the question.
MR. WONG: So it's just alive in its current state.
HEARING OFFICER DEL PIERO: One moment away from being hooked and removed. A single moment in time.
MR. WONG: I believe, from what I understand the

question to be, the answer is no.
Q BY MR. BIRMINGHAM: Now, I'm going to ask you a question about a fish population. If a fish population in Rush Creek is in good condition, and let's just make sure that we're talking about the same term because in your Paragraph 7, you talk about what "good condition" is. And you say, "Good condition includes the instream flows necessary to keep fish in good condition,

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including those which will maintain a self-sustaining population of desirably-sized adult vertebrate fish which are in physically condition; i.e., well-proportioned and disease-free." Is that what you mean by "good condition"?
A That's only a part of it.
Q Let's just talk about this part of it because that's the only part that we've got in your testimony.
MR. DODGE: Objection. You have to read the rest of Paragraph 7. That's really outrageous.
HEARING OFFICER DEL PIERO: Let's -- Mr. Birmingham, there are other portions -- there are other statements in his testimony. If you wish to focus on that aspect of it, then we'll focus on that aspect of it. But your representation that that's the only part of it is not appropriate.
MR. BIRMINGHAM: Okay. I withdraw the representation.
Let's focus on that aspect of what "good condition" is. All right? If the fish population in Rush Creek is in good condition; i.e., it is a self-sustaining population of desirably-sized adult vertebrate fish which are in good physical condition and well-proportioned and disease-free, isn't it safe to assume that the physical parameters which constitute

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the ecology of the stream listed in Paragraph 7 are not having a negative impact on the fish population?
HEARING OFFICER DEL PIERO: He's asking you for an assumption, Mr. Wong.
MR. WONG: Again, if you're using the -- if you're wanting me to assume that the fish in Rush Creek are in good condition, I cannot agree with the assumption. But given the assumption --
HEARING OFFICER DEL PIERO: Whether you agree with the assumption or not, Mr. Wong, is not the point. He's asking you to answer a question based on that assumption.
MR. WONG: The answer is at any given point in time, the answer would be no. Not necessarily.
Q BY MR. BIRMINGHAM: Before I started to ask you a question about condition factors. Do you recall that -- never mind. Let me just go to the page.
On Page 47 of the Lee Vining Creek Stream Evaluation Report 93-2, Volume One -- you said you'd read this report; is that correct?
A I did some time ago. I'm not -- I'm not entirely familiar with the report.
Q Do you have a copy of the report in front of you?
A No, I do not.
Q Let me give you one of my copies, and I'll ask

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that you return this to me at the conclusion of the testimony.
I'd ask you to turn to Page 47 of the report. On Page 47 of the report in the first full paragraph, it discusses the term "condition factor." Is that correct?
A Yes.
Q Is that a biological term with which you are familiar?
A Yes.
Q Page 47 says that, "A condition factor assessed by habitat type indicated that fish in pools, paren, mean K equals 1.07, end paren, were growing well. Only one fish had a condition factor less than 1.0; i.e., 0.9. Trout in runs, paren, mean K equals 1.09, end paren, and riffles, paren, mean K equals 1.124, end paren, also appeared to be growing well but showed greater variability and condition. The high-condition factors calculated from several of the small trout caught in riffles may be an artifact of small errors in measurement of weight or fork length relative to the length and weight of the small fish."
First, Condition Factor K. What does that term mean?
A In plain and simple terms it just means how fat is
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the fish.
Q Now, if -- in biological terms, to put aside 5937, you're not a lawyer. You're a biologist. In biological terms, if a condition factor for a single fish is equal to or greater than one, isn't it correct that that fish is in good condition?
A It means you have a fat fish. If you've got something -- it means you've got a fish that is well-proportioned. If you're looking at a single fish, that isn't necessarily indicative of the entire population.
Q I'm asking you, Mr. Wong, about a single fish.
A Very well.
Q Put aside the entire fish population. You said it means you've got a fat fish, well-proportioned. Now, does that -- that's included in your definition of good condition, isn't it?
A I'm sorry. Would you repeat the question?
Q Yes. In response to my question about a single fish with a condition factor equal to or greater than one, I asked you if that fish was in good condition, and you said what it means is you've got a fat fish, well proportioned. Is that right?
A What it strictly means is you have a fish with a condition factor which may be greater than one.
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Q And that means that the fish is in good condition; isn't that correct?
A I would not agree with that, Sir. It depends -- see, the problem with all of this is that it's a matter of semantics and what "good condition" means. I think we'll be talking a lot about that in awhile, but right now it means that you have -- when you say "fish in

good condition," you have a fish that has a certain condition factor. Its potential could be greater or less than what you see, or it could be the only one in the population like that.
Q If -- are condition factors calculated for an entire population of fish?
A They're conducted on individual fish.
HEARING OFFICER DEL PIERO: Mr. Birmingham? Mr. Wong, if -- help me to understand, okay? If I went out and I caught a brown trout out of Rush Creek with a condition factor of one, describe for me what that trout would look like.
MR. WONG: It would appear to be a pleasantly plump fish, in plain terms.
HEARING OFFICER DEL PIERO: Would it have -- from a biological standpoint, would it be a healthy fish?
MR. WONG: It could be, but also it may not be. These factors are all independent of each other.

HEARING OFFICER DEP PIERO: Tell me -- would you only be able to know whether, from a biological standpoint, it was a healthy fish if you did an analysis, cut it open, and figured out what its innards looked like?
MR. WONG: You could tell externally as well.
HEARING OFFICER DEL PIERO: Okay. With a condition factor of one -- would a fish that externally was not -- did not appear to be healthy have a condition factor of one? Did you understand the question?
MR. WONG: Yes. The reason why I'm hedging is --
HEARING OFFICER DEL PIERO: If it has a fungus, okay, would it have a condition factor of one?
MR. WONG: It could.
HEARING OFFICER DEL PIERO: It could. Okay. I'm sorry, Mr. Birmingham.
Q BY MR. BIRMINGHAM: You've stated that fish populations -- or condition factors are not calculated for fish populations?
A Generally, that I'm aware of.
Q So if I were to ask you if a fish population had a condition factor equal to or greater than one, you wouldn't be able to tell me whether or not that fish population was in good condition?

A I wouldn't. No.
Q Now, in your testimony, you said that the Department of Fish and Game manages resources on an ecosystem basis. Is that right, Mr. Wong?
A Yes.
Q In managing an ecosystem, in your opinion, is it appropriate to focus on a non-native species such as brown trout?
A How do you mean "appropriate"? You'll have to define that for me, please.
Q Is it a good idea to focus the managing of an ecosystem -- is it a good idea to focus on a non-native species such as brown trout?
MR. ROOS-COLLINS: Mr. Del Piero, rather than object, I would just ask that Mr. Birmingham clarify

whether he's asking about a good idea in legal terms or biological terms.
MR. DODGE: I would object to the question as irrelevant because the legislature has resolved that.
HEARING OFFICER DEL PIERO: I'm going to overrule the objection. If you could specify what -- to a greater extent than you have, Mr. Birmingham, then we can move along. Okay?
MR. BIRMINGHAM: Biological terms. All of my questions to Mr. Wong have been biological questions.

HEARING OFFICER DEL PIERO: Mr. Wong, do you understand the question?
MR. WONG: I would like to have it repeated, please.
HEARING OFFICER DEL PIERO: Ms. Anglin, would you read it, please?
MR. BIRMINGHAM: It may be easier for me to --
Q BY MR. BIRMINGHAM: In biological terms, Mr. Wong, when managing an ecosystem like the Mono Basin, is it a good idea to focus on a non-native species like brown trout?
A Again, "good idea" troubles me as much as anything else.
MR. BIRMINGHAM: That's fine. Thank you, Mr. Wong.
MR. THOMAS: The witness --
MR. BIRMINGHAM: If --
MR. THOMAS: -- is about to finish his answer.
MR. WONG: It's meaningful here that we resolve what that means. I think I know what you want to get at, but you'll have to get there on your own, I'm afraid.
MR. BIRMINGHAM: If you don't understand "good condition," Mr. Wong, or "good idea," I have no further questions. Thank you.

HEARING OFFICER DEL PIERO: Thank you very much, Mr. Birmingham. Mr. Dodge?
MR. DODGE: No questions.
HEARING OFFICER DEL PIERO: Mr. Roos-Collins?
CROSS-EXAMINATION BY MR. ROOS-COLLINS
Q Good morning, Mr. Wong. I have a few questions for you regarding Paragraph 9 of your written declaration. Do you have that declaration before you?
A Yes, I do.
Q In the paragraph following the quotation from the article by Drs. Platts and Beschta and Mr. Hill, you state, "It is my opinion that the flow regime parameters described above are necessary to maintain the stream ecosystem and its associated fish populations in good condition."
MR. BIRMINGHAM: Excuse me. I'm going to object to the question on the grounds as vague and ambiguous in terms of "good condition."
HEARING OFFICER DEL PIERO: Sustained.
MR. ROOS-COLLINS: I haven't asked a question. I simply read the testimony.
HEARING OFFICER DEL PIERO: Well -- can you read that back?

(Whereupon the record was read as requested.)
HEARING OFFICER DEL PIERO: I thought that was

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eliciting a response in terms of yes or no.
MR. BIRMINGHAM: If he was going to go beyond that, the question would have been compound.
HEARING OFFICER DEL PIERO: I'm sorry. Mr. Roos-Collins?
MR. ROOS-COLLINS: Mr. Del Piero, I simply read a sentence from his testimony. I have not yet asked him to interpret that sentence.
HEARING OFFICER DEL PIERO: Your question, the way I interpreted it, was eliciting either an affirmation or denial of the written statement, so why don't you proceed, Sir. Okay?
Q BY MR. ROOS-COLLINS: Mr. Wong, is that sentence in Paragraph 9 of your written declaration?
A Yes.
Q That paragraph then goes on to discuss the IFIM results; is that correct?
A Yes.
Q Do you have a recommendation for this Board as to the analytical methodology which it could use to determine the channel maintenance flows, riparian maintenance flows, and valley maintenance flows described in the quotation discussed in this paragraph of your written declaration?
MR. BIRMINGHAM: I'm going to object on the

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grounds that the question is vague and ambiguous. It refers to the written testimony which contains the term "good condition," and the term "good condition" is something that we have not yet defined.
HEARING OFFICER DEL PIERO: Mr. Roos-Collins, your response?
MR. ROOS-COLLINS: I don't believe the question contained the term "good condition," therefore, the objection seems irrelevant.
HEARING OFFICER DEL PIERO: Mr. Thomas, you don't want to offer a better justification for the objection?
MR. THOMAS: I was thinking, though, that we're going to have a hard time having a hearing if every time the term "good condition" comes up, we have an objection --
MR. ROOS-COLLINS: Mr. Del Piero, let me withdraw the question. I have no desire to complicate this matter by reference to the term "good condition."
Q BY MR. ROOS-COLLINS: Mr. Wong, if this Board agrees that flows should be established for channel maintenance, riparian maintenance, and valley maintenance purposes, as described in Paragraph 9 of your written testimony, do you have a recommendation as to the methodology which this Board would use to establish those flows?

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A I guess the answer would be yes, those methodologies are contained in the stream reports which the department has provided in its recommendation.
MR. ROOS-COLLINS: Thank you. No further questions.

HEARING OFFICER DEL PIERO: Thank you very much, Mr. Roos-Collins. Ms. Scoonover?

MS. SCOONOVER: Yes, Mr. Del Piero.

CROSS-EXAMINATION BY MS. SCOONOVER

Q Good morning, Mr. Wong.

A Good morning.

Q I have a question about the lake ecology section of your testimony. You testified, I believe, that there was a species of zooplankton that was extricated. Do you remember that testimony?

A Yes.

Q All right. I beg your pardon. Species. More than one species of zooplankton have been extricated.

My question is do you believe it's feasible to restore the bio-diversity of the lake?

A I do. And the basis for that decision is actually contained in one of the auxiliary reports for the Draft Environmental Impact Report. It's Auxiliary Report Number 12 entitled Functional Relationships Between Artemia Leefe History Characteristics and Salinity, and

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this is part of the basis for my conclusion.

On Page 21, there's a sentence in the -- there's a discussion in the previous and the following page or two regarding the bio-diversity of Mono Lake. And within this discussion, talking about the species that used to occur there as well as the extrication of some of the species, there's a sentence that says, and I'll quote, "Species diversity of the plankton will most likely increase in a less saline Mono Lake."

In addition to that, the Board has received from the LaHatten (phonetic) Regional Water Quality Control Board, as part of their comments on the Draft Environmental Impact Report, a document which is a scientific paper authored by Dean W. Blinn, B-L-I-N-N, which is entitled "The Diatom Community Structure Along Physico-Chemical Gradients in Saline Lakes." The gist of this article or this scientific paper, after the author surveyed and evaluated diatom populations, diatoms meaning uni-cellular or single-celled plants, which are quite diverse and widespread throughout most of North America, that after surveying nearly 50 saline lakes in the North American continent, that there was an inverse correlation between the numbers of species of diatoms present and the salinity. Mono Lake is one of the lakes that is involved in the survey or in this

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evaluation.

Q Mr. Wong, excuse me. Could that paper have been provided to the Board --

A Well, the Board has it, I presume, as part of the comments from the LaHatten (phonetic) Regional Water Quality Board comments. That's how I obtained them was my copy of those comments.

Q So it's part of the comments to the EIR?

A As far as I know, it is.

HEARING OFFICER DEL PIERO: Mr. Birmingham?

MR. BIRMINGHAM: I don't think we received any evidence from the regional board.

HEARING OFFICER DEL PIERO: Mr. Canaday, do you

recall?
MR. CANADAY: I don't recall, Mr. Del Piero.
MR. WONG: This was attached to my copy of those comments to the Board. If you do not have it, please let me know, and I can make it available or the Board can make it available to you, the LaHatten (phonetic) board.
MS. SCOONOVER: I would like a copy of that.
HEARING OFFICER DEL PIERO: Mr. Wong, you need to make it available to all parties.
MS. SCOONOVER: I'm sorry. I interrupted. Were you finished?

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MS. CAHILL: Shall we give that an exhibit number?
HEARING OFFICER DEL PIERO: If you wish to give it an exhibit number, Ms. Cahill, that will be fine. I just want to make sure that all parties who are not in receipt of it get a copy of it.
MS. CAHILL: That would be 155.
HEARING OFFICER DEL PIERO: Fine.
MR. SMITH: Point of order. Could we specify the title of that for us for an Exhibit No. 155?
MR. WONG: Right now?
MR. SMITH: Yes, please.
MR. WONG: The author is Dean, D-E-A-N, W. Blinn. B-L-I-N-N. entitled "Diatom," D-I-A-T-O-M, "Community Structure Along Physico-Chemical Gradients and Saline Lakes." It's from the journal "Ecology," 1993.
I also, in my literature file, came across another paper entitled "Taxonomy and Distribution of Benthic Diatoms for Mono Lake, California, USA." It's an article authored -- or a paper authored by J. P. Bociolek, B-O-C-I-O-L-E-K, and D. B. Herbst, H-E-R-B-S-T.
Basically, what this article does is describe the diatom community of Mono Lake, which amounts to some 30 species, and describes two new species of diatoms heretofore not known to science. This was published in

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the Transactions of the American Microscopical Society dated 1992.
Q BY MS. SCOONOVER: And are those existing diatom communities?
A Yes, they are.
Q So they wouldn't include the extricated?
A That's correct. And the reason why I use this as a basis for my statement is that other researchers apparently have come to the conclusion that decreasing salinities in Mono Lake would allow the return of the species that were extricated which have very good dispersal means. Diatoms, rotiphers, the things that are contained in the report, species mentioned, other insects that have been extricated and, therefore, I would come to the conclusion it's feasible to restore those values with a proper lake level.
Q And that proper lake level that you recommended in your testimony was some increment above 6390?
A That's correct. Based on information provided in the DEIR.
MS. SCOONOVER: Thank you. That's all.

HEARING OFFICER DEL PIERO: Thank you very much.
Mr. Haselton?

CROSS-EXAMINATION BY MR. HASELTON

Q Good morning, Mr. Wong. My name is Frank Haselton. I represent John Arcularius, Arcularius Ranch, and the Upper Owens River. I want to -- I'll try and keep my questions grouped in a sense of organization, though I can't promise that won't happen.

I want to ask you first about your testimony as it pertains to the Mono Basin, and I have two questions. And I'm starting on -- well, apparently, this is your first page, Paragraph Number 6. And I'm assuming you know this fairly close to memory, so I'm not going to read all of it. But there are terms that you use, for example, in the third sentence of Paragraph 6, you state that, "The Fish and Game goal is to make these fish available to the angling public as part of the natural ecosystem."

The following page, Paragraph Number 7, the second to the last sentence states, "Therefore, the good condition requirement must include the protection and maintenance of the physical, biological, and chemical parameters which constitute the ecology of the stream."

The following page in Paragraph 10, though, the second to the last sentence, you use the term "naturally functioning streams," and in Paragraph 11, first sentence, you use the term "natural rate of change streams." And the second sentence in Paragraph 11 is, "Ideally the rate of change of controlled stream flows, open parentheses, ramping, close parentheses, should mimic the natural hydrograph." And then within that same paragraph -- excuse me, within -- under Section 11, next paragraph, you go on and agree with -- I don't know if you're recommending it, but you agree with that, "A flow reduction of less than 10 percent of the previous day's flow would be highly preferred."

And my question to you is controlling the ramping rate where it's reduced less than 10 percent of the previous day's flow, is that consistent with the natural condition of Rush Creek or those other streams? I believe you're referring just to all the tributaries, if I'm not correct.

HEARING OFFICER DEL PIERO: Excuse me, Mr. Haselton. I'm sorry, but I didn't understand your question. Okay?

MR. HASELTON: Okay. I'll just -- let's say, Rush Creek.

Q BY MR. HASELTON: Is a flow -- is a controlled ramping program that limits the flow increase or reduction by 10 percent or less of the previous day's flow, is that consistent with the natural condition of Rush Creek?

MR. DODGE: Objection. Ambiguous.

HEARING OFFICER DEL PIERO: I'm going to sustain the objection, Mr. Haselton. Mr. Wong is a biologist. You want to talk about the hydrology of -- alternative

hydrologies and flows in the stream. The questions you're asking are not appropriately put to him.

MR. HASELTON: Okay. I thought -- I was just following his testimony.

HEARING OFFICER DEL PIERO: I understand. But you need to focus on what the nature of his testimony was. Okay?

MR. HASELTON: Okay.

HEARING OFFICER DEL PIERO: You can ask him in terms of what he's testifying on.

Q BY MR. HASELTON: Okay. Then we'll go ahead and move on down to Paragraph Number 17, and it's a couple of pages. I'll go ahead and read the first sentence. The Mono Basin EIR states on Page 3-D-101 that, "Excellent fishery conditions existed in the Mono Basin tributary prior to L.A. DWP diversions."

And by having that statement, do you concur with that statement in the EIR?

A I have no personal knowledge. As I mentioned before, I assume that the information that was put together for the Draft Environmental Impact Report accurately reflected those conditions, and that's why

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it's stated that way. And I based it upon those -- the conclusions of the Jones and Stokes personnel. I have no personal knowledge as to what those fisheries were.

Q Okay. Then let's move on to the Upper Owens River, and I'd like to start with the Exhibit DFG No. 2, which I believe is -- is titled Personal Qualifications Statements of Darrell M. Wong. And the second to the last paragraph starts off saying, "Responsibilities include the management of fisheries in over 600 high country lakes with several hundred streams of the Sierras as well as numerous roadside cold-water lakes and reservoirs."

Could you just take a moment and explain to me what does "management" mean?

A Well, other than just management, management of fisheries?

Q What constitutes your responsibilities? You used the word "management," and I'm trying to break that down.

A Generally, the fisheries that are managed in it, we manage for in the eastern Sierra, are recreational fisheries. They are fish populations that are being utilized for recreational purposes. So in order to perform that function, we first need to look at the desires of the anglers, and then try to provide

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recreational anglers with those types of fish, meaning both species and size, et cetera, which are preferred, as well as doing in it a context of the natural ecosystem.

Q Does -- is the Upper Owens River included in your geographical area of management?

A Yes, it is.

Q The Upper Owens River essentially extends from -- would you agree with me, I guess is probably a better way of putting it, that the Upper Owens River extends from Big Springs -- generally speaking, from Big

Springs down to Crowley Lake?
A Yes.
Q And of that portion, approximately half -- and I'm speaking in general terms -- is under private property ownership?
A Approximately half. I would agree.
Q Are you familiar with the Arcularius Ranch?
A I have been there on occasion.
Q As vacationing or --
A Not as a client. I've been there on business.
Q We'll see what we can do.
I'm going to refer to, I think, a report that was introduced earlier. It's the -- my cover's falling off, DFG Exhibit No. 62. And that is the Upper Owens

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River Stream Evaluation Report 93-1. Do you have a copy of that, by any chance?
A No, I do not. Again, the reason for that is that very specific questions regarding the reports themselves should be addressed to the appropriate panel. I only have very general recommendations. As the manager who was responsible for these resources once this whole process is completed, things are settled, then either me or my successor would be responsible for managing the ecosystem and providing for recreational fisheries with those resources that come from this process. And so in that regard, you seem to need a general overview for those kinds of concerns.
If I can answer your question in that context -- I don't want to put you off, but if it's anything specific, then it should just be a -- brought up with that particular panel.
Q Okay. Well, in fact, that may assist me because maybe we can get to the point a little quicker. Now, are you aware that -- well, let's talk about the Arcularius Ranch. Are you aware that the Arcularius Ranch, as part of their management, implements a catch-and-release program?
A Yes.

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Q Are similar -- excuse me. Let me back up. Do you, in your professional opinion, believe that such a component of a management program is beneficial to the fishery?
A The reason why I'm hesitating is it really depends upon the goals and the public's desires for that fishery. When you say "fishery," I have to assume it's not the fish population necessarily, but the fishery, which means you add the angler and the desirability.
Q Thank you for helping me clarify.
Let's talk about the fish, fish population, because that's what this report that I will work with the panel with later on speaks to. It speaks to fish population, fish density, as a matter of fact, and it actually compared the fish density, the Arcularius Ranch and other portions of the Upper Owens River.
That being said, my question to you, then, is do you believe that a no-kill regulation or component of a management program, overall management program, could

that benefit the fish population of an area?
A Yes. But I'll to have qualify it by saying that what you're doing by restricting fishing to no-kill is basically removing one of the types of mortality that affects fish populations, their natural mortality. Fish live and grow and die like everything else, but by

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reducing the angling portion of that mortality, you do reduce the number of fish that are taken from that population.

And by instituting a no-kill, you basically might be reducing that. There is some mortality even involved with a no-kill situation. So you don't have a pristine, untouched population. If you mean by the fact that you may have more fish than you might otherwise, then the answer would be yes.

Q I think the rest of my questions are probably more appropriate for the panel that you suggested.

I've got one other question. I kind of wanted to assist Mr. Del Piero with his story with his son about your fish up there. I want to know is that a mount or that a replica of a fish that has been released?

A Unfortunately, it's not mine. It's on loan, and I'm not sure what its background is. I don't believe it was taken at the Arcularius Ranch property. Sorry.

MR. HASELTON: I hope not. Thank you.

HEARING OFFICER DEL PIERO: We're going to be on break for ten minutes.

(Whereupon a short recess was taken.)

HEARING OFFICER DEL PIERO: This hearing will again come to order.

Mr. Frink?

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MR. FRINK: Yes, Mr. Del Piero. I do have a few questions. Our environmental staff will have some more.

CROSS-EXAMINATION BY THE STAFF

Q BY MR. FRINK: Mr. Wong, I believe you testified that in making fishery flow recommendations, one of your objectives is to mimic natural conditions; is that correct?

A The idea to imitate -- in a natural situation, if that's what you're referring to, the idea would be to imitate natural conditions within natural range of variation. The ecosystems that we deal with are subject to variations in weather and a whole multitude of physical parameters. And the idea is that from an ecosystem approach, that that ecosystem be maintained at some level, and that it be still subject to those type of natural variations which resulted in the animals that are present -- animals and plants that are present in that system.

MR. BIRMINGHAM: Excuse me, may I ask the Reporter mark that answer?

Q BY MR. FRINK: You would not want to impose large variations that are more excessive than the variations that occur under natural conditions; is that correct?

A When you say -- can I ask for clarification? When

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you say "impose," a lot of things run through my mind.

If you have a totally controlled system, which you normally don't. In other words, what I'm getting at are flood flows, I think. You can have a flushing flow, but that will often be exceeded -- or not often, but could be exceeded naturally due to flows beyond which you have the capacity to control. So that's why -- I don't -- I'm not being reluctant to answer, it's just that there are a lot of variations and a lot of variabilities in the biological world, unfortunately, which make it difficult to answer some of these questions generally.
Q Have you reviewed the historic flow records on Rush Creek, Lee Vining Creek, Parker Creek, and Walker Creek?
A No, I have not.
Q Are you familiar with the flow fluctuations that occur under natural conditions in those creeks?
A By "natural conditions," you'll have to define -- do you mean unimpaired? I guess the answer in either case is no, but there's a distinction there in terms of what the natural flows are in those creeks.
Q So your testimony is that you're unaware of --
A No. I'm not unaware of it, but again, you're getting down to factors that were developed by the

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consultants --
Q I'm not asking about factors that the consultants developed --
HEARING OFFICER DEL PIERO: Mr. Frink -- Mr. Wong, in terms of the questions being asked, it's safe for you to assume that the words being used are plain English. In terms of "natural conditions," when Mr. Frink is asking you about flows under natural conditions, that means a system that is unimpaired and has no man-made modifications to it. Now, if you aren't capable of answering that question, then it's okay for you to say you don't know the answer to that question.
Alternatively, if you have reviewed what natural runoff is within either Rush Creek or Lee Vining Creek, regardless of what man-made modifications to the system may have existed, you are obliged to answer that question.
Mr. Frink, why don't you proceed? And maybe you want to ask the question you asked again to see if we can get an answer.
MR. WONG: Thank you for clarifying that, by the way, because there was some confusion there.
Q BY MR. FRINK: The question I have is are you aware of the type of fluctuation in the rate of flows that

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would occur under natural conditions in Rush Creek and Lee Vining Creek?
A Yes. I am aware, but I am not really familiar with those flows. We have Dr. Kondolf, who is -- basically, will be the one that will be very familiar with those kinds of fluctuations.
Q Okay. On the basis of your general awareness of those fluctuations, would you agree that there is a considerable daily fluctuation in flows in those creeks

under natural conditions?
A Dale -- I'm sorry. A daily fluctuation?
Q That there can be a considerable daily fluctuation in flows in those creeks under natural conditions?
A There can be, yes.
Q Your testimony recommended a ramping rate of 10 percent or less of the previous day's flow. Do you know if the natural rate of flow fluctuation on Rush Creek and Lee Vining Creek exceeds the recommended ramping rate in your testimony?
A I have not done an actual analysis of that, but my sense is, again, from many years of experience looking at general hydrographs, that a rate of change, for example, that would take a Rush Creek flow, flushing flow from 300 cubic feet per second to 100 cubic feet per second, excuse me, would take -- at a 10 percent

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rate, would take approximately ten days.
I have done an analysis from the 300 cubic feet per second down to 100 cubic feet per second at a 5 percent increment, and that takes approximately 21 days. From my experience in the eastern Sierra and generally the runoff patterns, it seems to me that a period of time of between 10 and 21 days translating to 5 to 10 percent would be approximately what we would normally see in a general runoff in terms of recessional rate naturally. So in my estimation, it would approximate the types of rates that I have seen.
Now, Dr. Kondolf would be the one who might do a more detailed analysis of those kinds of rates. He does speak of it in his testimony as well.
Q If your objective is to mimic natural conditions, wouldn't you want to consult the natural flow records or the historic flow records before you make a recommendation on ramping flows?
A Yes, exactly. That 10 percent or 5 to 10 percent is only a baseline approximate. You should consult, as you're suggesting, consult a natural hydrograph or synthesize a hydrograph in the watershed and determine if, in fact, that 5 to 10 percent is within the natural rate.
Furthermore, if there are any special

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considerations that you might have in terms of erosional bank damage that are special considerations especially during restoration processes, those could be taken into account as well, which would help modify the regime to create the situation that you're trying to achieve.
Q Aside from the special considerations such as prevention of erosion, if there were considerably more fluctuation in the rate of flow that is shown under historical conditions, would you agree that a ramping rate in excess of 10 percent may be acceptable?
A Yeah. These are not hard and fast rules. I would -- again, fluctuate -- to maintain some, actually, even almost daily measure of variation within flows is not bad. I mean, these natural systems are dependent on variation. Dr. Beschta, I think, is the one to really point that out, and I agree. During snow

melt periods, for example, the flows fluctuate during the day because of snow melt. You get snow melt in the morning. By the time it gets to the bottom, you've got flows fluctuating within a daily period. So variation per se is not bad.

That 5 to 10 percent is only a, more or less a rough estimate of where you begin to look.

Q And the key guide would be to consult the

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historical flow records. Would you agree with that?

A Yes.

MR. FRINK: Thank you.

HEARING OFFICER DEL PIERO: Mr. Satkowski?

MR. SATKOWSKI: No questions.

HEARING OFFICER DEL PIERO: Mr. Smith?

MR. SMITH: Thank you, Mr. Del Piero.

Q BY MR. SMITH: I have one general question for you. The mike's not working. Okay. I'll try and be as loud as I can.

Mr. Wong, I'd like to pose a general question for you. Someone, perhaps the State Board, perhaps Fish and Game, is going to have to do some monitoring short-term of the fishery when we establish -- the Board establishes certain flows and lake levels and whatever.

Would you agree in general terms that it would be a good idea to have a zero bag limit and barbless hooks for a period of time so that we can monitor the health of the fish for a period of time and find out which direction the fishery is going? Again, this is -- I'm not asking about good condition or anything else, I'm just asking about that monitoring program. Would you think that would be a wise idea?

A Not necessarily, and here are my reasons.

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Unfortunately, there's a little bit of explanation to clear the air here.

Q Please.

A I am not an advocate of only looking at fish populations in terms of measuring your restoration activity success or our restoration activity success or fish that are in good condition. If you look at the holistic approach that we're -- that I'm trying to get across here, you have to look at the whole system, stream system. The fish are only a part of that system. Insects are part of that system. If you -- and I'll get around to monitoring here very soon. But the point is what you really are after is monitoring habitat, and the key here is that -- one way of looking at this is if one assumes, and I think it's an assumption that appears to me that Belacort (phonetic) made as well, is that all the water that you have in a natural system will give you good condition. It would be pretty difficult to argue with that.

MR. BIRMINGHAM: Can I ask that that be marked?

MR. WONG: If all the water in a natural system gives you good condition then, as we've seen, and I have observed, fish populations vary tremendously in terms of numbers, sizes, A factors, et cetera, in a natural situation throughout the eastern Sierra. As a

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matter of fact, even within one stream itself, as you look at the stream from top to bottom, those kinds of factors will change that effect fish populations. And if in one stream you have a rather small fish population in terms of numbers of fish which are fairly thin, but that's what they are based upon, the habitat that they're involved with, that they have to put up with, that they have to live in.

Another stream system may have large numbers of very large fish based upon the factors that they're in. All of these fish are in good condition because they're in a natural state.

One we're looking at also is, getting back to the Hearing Officer's question from about the first day, as I recall. Can 1 cfs keep fish in good condition? The answer is most definitely yes. I know streams which are running at less than a cfs that have fish that are 16 and 17 inches long in them, and that is because those fish are dependent upon the habitat that they live in, and that 1 cfs is occurring in a channel which is, at times, three feet deep, has undercut banks, has good stable banks, produces watercress with a lot of food in it, skuds, et cetera. Most definitely those fish are in good condition.

If will you translate that 1 cfs, if in your

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mind's eye you can do that, to the lower part of Rush Creek as it currently is, and see the conditions you would expect with 1 cubic foot per second running through some of these wide open channels with no riparian vegetation, you would definitely say, "My gosh, no. There's no way they're in good condition."

So it's not the flow that would maintain fish entirely in good condition, but it is the combination of factors, the geomorphology, all of the things that you would be seeing the department of representatives who would perform these studies going through. You start with the hydrology, the hydrograph. What is the natural situation? Then you go through physical water temperatures. Food abundance. All these factors.

The other way to look at it as well is if you -- getting back to the natural state, the fish are in good condition in natural conditions, then that means that there's a certain potential that a stream has. There's a potential that each stream has for fish populations and riparian vegetation, all the factors associated with the stream. Well, the problem that we have as agencies is -- and the court readily recognized in their wisdom, is that, well, it may not take all the water in a stream to keep those conditions there. And so where the Department of Fish and Game is involved is

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that based upon our expertise, our knowledge, intricate knowledge of each stream system, the population there plus the anglers' communities and desires, we came up with flows which should maintain those conditions that would keep those ecosystem conditions in such a state that things are healthy, shall we say.

The surface water that's left above and beyond

that is available for other uses. Now, I hope that's clear to you.

Now, getting back to monitoring --

MR. FRINK: Mr. Del Piero, excuse me. I appreciate the witness' effort to give us a complete answer, but we do have a limited amount of time. And in the interests of time, I wonder if we could get some direction to be as specific as possible and as brief as possible in the answers.

HEARING OFFICER DEL PIERO: There's no grounds for an objection, Mr. Thomas.

MR. THOMAS: I think the record should be clear that the witness has been criticized earlier for being non-responsive, and now he's attempting to be responsive and being criticized for taking too much time.

HEARING OFFICER DEL PIERO: Mr. Birmingham, do you have a comment?

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MR. BIRMINGHAM: I just wanted to interpose an objection.

HEARING OFFICER DEL PIERO: There's no objection. The response is completed.

Mr. Smith, do you have a next question?

MR. SMITH: I simply wanted him to just say yes or no whether zero bag limit, barbless hooks would be helpful in a monitoring program.

MR. WONG: Really, no. What we really need to be monitoring is the return of the habitat. If you get the habitat restored, the fish will follow.

Q BY MR. HERRERA: Mr. Wong, I've got a few questions that go back to some of the discussions that you had with Mr. Birmingham.

First of all, do you know when Parker and Walker Creeks were rewatered?

A I can't recall the exact date.

Q But you know it was -- not the exact date, but what year? Do you know that?

A I can't recall the year, either, I'm afraid.

Q But it has been in recent times?

A Yes. Right. I'm familiar with that.

Q Were the Fish and Game studies that you've indicated, were they conducted after that stream was rewatered?

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A Yes. I believe so.

Q Were fish planted in those streams?

A I believe they were.

Q Do you know -- again, I notice that on the exhibits that Mr. Birmingham presented, that they're dated -- from Mr. Edmondson, they're dated 7-12-93. Do you know that if Fish and Game has done any population studies to determine the population of fish in Parker and Walker Creeks in, say, 1993?

A I'm not aware of that.

Q Lee Vining Creek. Are fish planted in Lee Vining Creek below the Lee Vining Creek conduit?

A They are not regularly, to my knowledge. They have been stocked in the past, though.

Q Have they been stocked in 1993?

A I believe so, because the population was wiped out recently in terms of -- from an icing event, as I recall, or a dewatering event. That's what we were trying to get that population going again.
Q Is it the policy of the Department of Fish and Game to plant fish in areas where it will sustain a population in good condition?
MR. THOMAS: Objection. This is not a policy decision. We have biologists who can testify as to biological facts. If he knows of the Commission's

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policy as to planting, he's agreed to testify to that. It's beyond his scope.
HEARING OFFICER DEL PIERO: I'm going to overrule the objection.
Do you know the answer to the question?
MR. WONG: Could you repeat it, please?
HEARING OFFICER DEL PIERO: The question was is it the policy of the Department of Fish and Game to plant fish where a fishery is in good condition?
MR. WONG: The reason why I have trouble is that we do stock fish over existing populations with rainbow trout, but if your -- that's the problem --
HEARING OFFICER DEL PIERO: I understand.
MR. WONG: So the answer, I guess, technically, would be yes, we do that.
HEARING OFFICER DEL PIERO: Mr. Herrera?
MR. HERRERA: Thank you, Mr. Del Piero.
Q BY MR. HERRERA: So routinely, you do, your response is routinely the department doesn't plant fish where there is a fish population in good condition?
A Yes.
Q Do you know -- on Rush Creek do you know if fish have been planted in Rush Creek below the Lee Vining conduit in the recent times?
A Not to my knowledge.

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Q Do you have any idea when was -- first of all, let me ask you a question. Do you know if fish had been planted, let's say in the last ten years, in Rush Creek?
A Again, not to my knowledge. I don't recall.
Q You don't know whether they have or have not?
A To my knowledge, they have not.
Q Thank you. One other question.
Mr. Birmingham presented the analysis -- essentially, the analysis was a result of a presentation by Mr. Edmondson of Cal-Trout, and you stated that generally, you were aware of Cal-Trout's concerns regarding zero bag limit and artificial lures on Lee -- below Lee Vining Creek conduit on -- I'm assuming all four of the streams we're discussing here today. Is that true?
A I'm sorry. I lost your train --
Q You're generally aware of Cal-Trout's concerns regarding zero bag limit and artificial -- the use of artificial lures?
A Yes, I am.
Q Do you know -- it appeared to me this was somewhat -- you're not aware of the analysis, do you

know if there was a similar analysis presented for Lee Vining Creek?

A No.
MR. HERRERA: Thank you. That concludes my questions.
HEARING OFFICER DEL PIERO: Thank you very much.
Mr. Canaday?
Q BY MR. CANADAY: Good morning.
A Good morning.
Q Mr. Wong, I'd like to take you through some of the points you made in your testimony, and I'd like to start with Point 9. In Point Number 9, you talk about, or you quote from an article by Hill, Platts and Beschta in 1991, and it talks about -- in this quote, it talks about the need for multiple in-channels, out-of-channel flows, instream flows, channel maintenance flows, and valley -- well, it talks about instream flows, channel maintenance flows, riparian maintenance flows, and valley maintenance flows. Four different flows.
Can they be one in the same in your opinion?
A I believe in the context that the authors used, no, because there's an assumption that there is a channel within a flood plane, and from that perspective, you would have to get out of bank with a higher flow to follow that reasoning.
Q And so you state that it is -- I'm going to quote you. "It is my opinion that the flow regime parameters described above are necessary to maintain the stream ecosystem and its associated fish populations in good condition;" is that correct?
A Yes.
Q Have you looked at the department recommendations to keep fish in good condition for Rush Creek and Lee Vining Creek?
MR. BIRMINGHAM: Excuse me. I'm going the object on the grounds that the question is vague whether he's talking about the Department of Fish and Game recommendations or the Department of Water and Power.
Q BY MR. CANADAY: The Department of Fish and Game recommendations on Rush and Lee Vining Creek?
A Yes, I have.
Q Do those recommendations contain flows that are instream flows, channel maintenance flows, riparian maintenance flows, and valley maintenance flows?
A The final flows contain what I would term to be instream flows, the IFIM results, basically. There also is a flushing flow component. But again, because of the degraded nature of the streams we're dealing with, it's probably inappropriate to speak of out-of-bank flows because many of these banks have been obliterated, as we heard from Dr. Stine yesterday. So there has to be more or less a careful manipulation of flows at this time especially, which Dr. Kondolf, excuse me, has taken into account, so that we don't do damage while we are yet coming to terms with these four times of flows that we would ultimately like to see.

Q So you anticipate the department making recommendations at some time in the future of additional flow regimes or periods -- different flow recommendations for over-bank riparian maintenance flows?
A I would assume that yes, that would seem to be the appropriate thing to do, to re-evaluate as things are restoring, becoming restored, and then re-evaluate as time goes on.
Q Do you have a recommendation on what kind of time frame that revisiting should be?
A Again, that's very difficult because of -- it hasn't been determined yet as to the amount of active intervention in the restoration process, and so there are some variables there. But we believe, especially with the explosive return of riparian vegetation, that is apparently occurring, that at least another look within a five- to ten-year time frame would be appropriate.
Q When this Board establishes an instream flow

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condition to be implemented in the license, is it your recommendation that when we look -- the Board consider ramping flows or changes in peak flows to base flows be reduced by not more than 10 percent from the previous day's flow? Is that your recommendation?
A Yes. Again, looking at that as a baseline but comparing that to the natural hydrograph and making adjustments if necessary.
Q On Point 15, starting at the bottom of the page and carrying over to the next page, you discuss -- and I'm going to quote your testimony, "Due to the apparent lack of vertebrate fish life in South Parker Creek, it represents the only basin tributary which will contain native invertebrates unaffected by introduced vertebrate species and should be maintained in that condition." Therefore, you're suggesting that the department should -- some sort of exclusure program so that we don't get non-native fin fish into that stream?
A No. I didn't have that in mind. But there -- what we're looking at here is I'm not real certain on where the diversion points are in South Parker. I'm personally not that familiar with it, but based on the information available at the time, for whatever reason, there were not a lot of vertebrate fish in portions of South Parker Creek. That's my understanding. I have

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not personally surveyed that stream. So I'm not proposing that they be excluded.
Other invertebrate fish, if you will, these insects, do co-exist with other fish populations that indeed provide food for them. My intent there was that from -- because of the -- the unique, if you want to call them that, Capnia or winter stone fly species present, again, looking at our overall approach, that I would not advocate putting fish where they perhaps would not occur naturally.
Q Could you spell the genus of the stone fly for court reporter?
A Capnia, C-A-P-N-I-A.

Q Thank you.
Moving on to Point 16, you and I discussed earlier a few minutes ago about what kind of interval we should come back, you would recommend to the Board to come back to re-evaluate flow regimes, and in this testimony you say five to ten years. Would that still be your recommendation?
A Based on what I know today, yes.
Q Mr. Wong, you would consider yourself, what, a stream fisheries, fresh-water fisheries stream ecologist?
A I have dealt with both, but predominantly streams.

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Q You wouldn't consider yourself a saline lake limnologist, would you?
A No, I would not.
Q In your testimony, Point 19, actually Point 20, you discuss or you provide a lake level recommendation to protect the diversity of Mono Lake. Is that correct?
A Yes.
Q And in your testimony earlier, you referred to Auxiliary Report 12; is that correct?
A Yes, I did.
Q I'd like to read some excerpts of Auxiliary Report 12, but first, I'd like to ask you a question. Is, in your opinion, recognizing that you're not a salt water lake limnologist, but in your opinion as a biologist, is salinity the only thing that is controlling diversity in that lake?
A I would -- I would have to guess no.
MR. BIRMINGHAM: Excuse me. I'm going to ask the answer be stricken if, in fact, it is a guess.
MR. WONG: Well, based on my knowledge of ecology, I would still answer the same.
HEARING OFFICER DEL PIERO: That you're guessing?
MR. WONG: No, I'm sorry. No. Based on my experience and some knowledge, I would say no, it's

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very likely that there are other factors involved.
HEARING OFFICER DEL PIERO: Proceed, Mr. Canaday.
Q BY MR. CANADAY: You testified that many of the recommendations in your testimony are based on information provided you in the Draft EIR and I assume Auxiliary Report 12 would be that way, also; is that correct?
A Yes.
Q I'd like to read from Auxiliary Report 12 in the record, if I may, and I'm starting on Page 19, the last paragraph, about the middle of the last paragraph. "Clearly individual development of Artemia," capital A-R-T-E-M-I-A, "Is reduced as salinity is increased between 76 and 168 grams per liter. However, numerous authors conclude that salinity may not been the most important factor governing species abundance. Regardless of salinity rank, and in paren it says, for review see Williams, et al., 1990, other abiotic and biotic factors are important to Artemia production including interactions between physical and chemical factors, and in parentheses including salinity, comma,

predation, competition, and food availability."
I take you down to the second full paragraph on that -- on Page 20, and I'll read, "Predation and competition on Artemia by other zooplankton are not

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factors at higher salinities." And in parentheses, "100 grams per liter, in Mono Lake, due to salinity intolerance of these species. At lower salinities, however, predation and competition by other species may exert a significant influence on the Artemia population."

We'll move to Page 21, the last paragraph on that page. "Changing structure of Mono Lake ecosystem could offset the demonstrated physiological and life history advantages gained by Artemia Monica," and that's the species, M-O-N-I-C-A," at lower salinities resulting in reductions in Artemia abundance similar to those observed in the Great Salt Lake. Species diversity of plankton will most likely increase in less saline Mono Lake."

Page 22. First paragraph in the middle. "Competition of the rotiphers with Artemia could influence Artemia productivity and would depend partly on the degree of seasonal overlap between the two species," and I believe you talked earlier about these two particular species.

And then finally I'd like to read in the summary. "In summary, Artemia are able to maintain osmotic homeostasis over a wide range of salinities. Such osmole regulatory abilities have high energetic costs

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that uniformly affect Artemia survival, growth, and reproduction. However, other factors such as predation, competition, and food availability must be considered along with the physiological responses when assessing the effects of changing salinity on the productivity of natural populations of Artemia. Predation and competition are likely to be significant factors influencing shrimp productivity at lower salinities. While individual physiological constraints and Artemia interactions with -- " let me reread that. "While -- " let me read the whole sentence again, please.

"Predation and competition are likely to be significant factors in influencing shrimp productivity at lower salinities. While individual physiological constraints and Artemia interactions with nutrients and allergy attain prominence at higher salinities."

Based on what I read to you from Auxiliary Report 12, do you still feel confident in your recommendation of a lake level incrementally higher than 6390 is required to restore these resources?

A Yes. And here are the reasons. The way I look at it, although there's lots of data on Mono Lake, 14 years' worth, predominantly focused on Artemia and alkali or brine fly populations, one must recognize

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that all those studies that we have are of an ecosystem that's in a vastly degraded state from an ecosystem perspective. That is, I did not hear any testimony nor

have I read anywhere in the Draft Environmental Impact Report that there were any problems with the Mono Lake ecosystem at pre-diversion levels. Brine flies existed. Shrimp existed. Birds were there in good numbers.

So to go back to that, getting back, it's all very much the same thing. To get back to that state of nature or something approximating it, if it's feasible with a public trust resource involved, it is something that should be accomplished.

To look at these rotiphers and other small animals as being predators on shrimp, for example, and the bad thing, in my view of thinking and the ecological view of thinking, is not correct. It would be like, for example, us studying and managing the savanna grasslands of Africa for only zebras and giraffes, two large animals that happen to be there. There are lions there, and there are cheetahs there. Would we basically eliminate cheetahs and lions from Africa, or would it be the same place?

My point is that the Mono Lake ecosystem, in its pre-diversion state, existed in a certain way with a

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certain component and a certain biological diversity. You can't say that it's good or bad. The diatom's there. The rotiphers. The furry shrimp that are there, they're not good or bad. That's just the way that it is.

And by incrementally achieving that by some level, lake level, currently, re-achieving what was once there, is not bad thing, either. So from the ecological standpoint, the restoration, the extra -- granted there will be predators. Well, Mono Lake, remember, is, by some accounts, half a million years old, one of the oldest lakes North America. These animals have been living together in this ecosystem for a long, long time. And that's -- there's no problem with that.

So I guess -- I guess -- then I had to qualify my answer in that way.

MR. BIRMINGHAM: Can I ask that the Reporter mark that place in the transcript?

Q BY MR. CANADAY: But you have no data to suggest that, based on what I've read to you here, the lowest level I talked about was 76 grams per liter, and you stated in your testimony that at 6390, it's approximately a salinity of 71 grams per liter, that that's not going restore or provide an opportunity for

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the recovery or change in diversity. Is that correct? You have no data to suggest that?

A I have no data. That's correct.

Q Moving on to Point 21. Again, you talked about bio-diversity, and in your last sentence, "A reduction in the augmented flows may enhance available habitat for or facilitate the recolonization of species with these specific habitat preferences." What species were you thinking about?

A That is, again, an ecological -- there are no data. I did check or at least with as many places as I

could, there are no data to support that there are any unique species in that reach of stream.

My point is that the focus here has been so far and, rightfully so in some respects, on the vertebrate fish species that are present that may not be native to the system. We should not preclude, if we can at all do it, concerns regarding the native species that are there. And I do know that Hot Creek does contain some unique invertebrate species. Whether or not those occur or are part of the Owens River system or extend into it, I don't know.

Q Finally, in response, I believe, to Mr. Herrera, you suggested that the State Water Board not use fish numbers as a criteria for measuring fish in good

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condition. Is that correct?

A Yes. But qualified again, not the only criteria. Fish can be monitored, but in the respect that you're looking for limitations that you maybe have to work on. For example, spawning is one that comes to mind readily. Our spawning gravel is limited to the population. In your restoration activities, do you need to provide some spawning gravel to your spawning habitat? For those kinds of things, yes, the monitoring program I would propose does look at habitat and it does look as fish as well, but not as the only factor to go by.

MR. CANADAY: You answered my next question. Thank you. That's all I have.

HEARING OFFICER DEL PIERO: Thank you very much. Ms. Cahill?

REDIRECT EXAMINATION BY MS. CAHILL

Q Mr. Wong, in response to Mr. Herrera, you testified that the department does sometimes plant fish where a natural fish population is in good condition. Is that correct?

A Yes.

Q Were you referring to the department's catchable trout program?

A Yes, I was.

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Q For what purpose did the department stop trout in Lee Vining, Parker, and Walker Creeks?

A It was not for that purpose. It -- my understanding is that we were trying to reestablish a fishery that had been lost there entirely.

Q In other words, in that case --

A I shouldn't say -- excuse me. Not entirely, but that had been severely decimated by some action, probably some sort of winter condition.

Q Are you aware of any streams in which the department plants brown trout on top of a resident population of brown trout that's in good condition?

A None come to mind. None that would meet the criteria of the good condition that I've outlined here.

Q And why would you not plant if you already had a resident population in good condition?

A Because there may be spawning limitations that would require you to plant, for example, fingerling fish because those are not being reproduced. There was

not enough natural reproduction occurring successfully to keep a desirable fishery.
Q I think maybe you didn't understand my question.
A I'm sorry. Would you repeat it, please?
Q It's my understanding that your testimony is that if you had a spawning limitation that, in fact, the

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fish were not in good condition?
A Correct.
Q So, if the fish were in good condition, all aspects of all life stages as you have defined good condition, then would it be necessary to plant any additional fish?
A I see. No. If everything appeared to be fine, then you would want to leave it alone.
Q As I understand your testimony, you've testified that the ecological health of the stream will determine if fish, both vertebrates and invertebrates, are to be kept in good condition. Which would be a better measure of whether the conditions needed to maintain the fish in good condition are present in a stream, the existing population numbers or the quality of the habitat?
A Quality of the habitat.
Q Are condition factors a reliable measure of the health of the fish?
A No. I don't believe so. Condition factors can change throughout the season. Some species of fish, for example, are just naturally slim and so, therefore, a condition factor for that type of fish would lead one to believe if they looked at that factor it was in poor condition when, in fact, it might be in fine condition

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for that species of fish. So one must be very careful with that.
Q Could a fish in an aquarium have a high condition factor?
A Yes, it could.
Q Would you consider the habitat in an aquarium to be the type of habitat that you were advocating?
A No.
Q You mentioned the fact that it would be possible if all the water were in the stream, it could keep the fish in good condition, but you weren't suggesting, were you, that it would take all the water in the stream?
A No.
Q Is it possible that a small stream would keep fish in good condition with a small flow?
A Yes.
Q And is it possible that a channel cut by a large stream could maintain a self-sustaining population with a relatively small flow compared to its natural flows?
A large -- a stream created by a large flow from which that flow was diverted, could it maintain a self-sustaining population with a smaller flow?
A A self-sustaining population, yes.
Q But would you consider that population to be in

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good condition if the stream had the potential of

maintaining a larger healthy population?
A No. Not necessarily.
Q I know there was considerable frustration as you were attempting to answer some of Mr. Birmingham's questions with regard to the condition of fish at a given moment in time. If you were to attempt to determine whether a stream had the conditions required to maintain fish in good condition, would you look at a particular point in time?
A No. You really couldn't.
Q And can you explain why not?
A Again, because of the variation. The natural variations that normally occur or the variation occurring through time all through the year.
Q Would it be possible that you would have a fish that was healthy in a stream with a flow that might, during a given summer, become lethal and that fish might be healthy at a given point in time in the winter, but it might be in conditions that might and might not cause adverse impacts later in the year?
A That's correct. And again, you're -- from a fish's perspective, it is what is that limiting factor, and it -- maybe the limiting factor only occurs for a short period, such as a dewatering event, for example,

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which may not even show up on a hydrograph in a mean daily or mean monthly flow data.
For the species or for the whole aquatic ecosystem, you could literally lose all the populations that occur there at that time. You need to look at the big picture, if you will, over time.
Q With regard to the need to replant in Lee Vining, it certainly was true, then, that at some time in the last two years the fish in Lee Vining Creek were not -- the fishery was not in good condition; is that correct?
A That's my understanding.
Q As you have defined "good condition," do you believe that the fishery in Rush Creek is in good condition at present?
A No, it's not.
Q And why not?
A As we heard, Rush Creek is severely degraded, and although it's coming back, the testimony and the knowledge that I have indicates that it is not yet linked with its natural riparian system. The nutrient cycling that we heard about is not occurring, so over time, what you have is basically a stream that is trying to recover to some extent, but it is not what would be considered to be a natural functioning state.
Q And would you give me the same answer on Lee

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Vining Creek? Do you believe that at present, Lee Vining Creek has the conditions required to maintain fish in good condition?
A No.
Q And can you explain that?
A Well, there are limiting factors -- in all the creeks, that are the result of the severe degradation that's occurred; namely, winter habitat, pools, and such that are required for survival, winter survival in

particular, which is a very tough time for aquatic organisms. So that as well as habitat complexity, there are some temperature problems, as far as high temperatures, higher than we want to see for trout especially at the lower ends of the creeks. Anyway, there are problems.
Q I'd like to get back again to the given point of time question. Is it possible that a stream at a given point of time would have juvenile fish that would be healthy, that the stream would not be in good condition because the conditions necessary to allow the growth and development of adult fish are not present?
A That's possible.
Q In the sense -- I want to go back to my questions about Rush and Lee Vining Creek that you answered just a few questions ago. In the sense, then, in which your

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testimony is using the term "good condition," would you agree with -- do you believe that the statement that the fish population in Rush Creek is in good condition is correct or incorrect?
A I presume you mean currently?
Q Yes.
A It is -- you mentioned that they are in good condition?
Q No.
A The assumption is that they are in good condition?
Q No assumption. Let me re-ask the question.
In the sense in which are you using "good condition," would you agree that the fish population in Rush Creek is in good condition?
A No.
Q And in the sense in which you are using "good condition," would you agree that the fish population in Lee Vining Creek is in good condition?
A No.
Q And is that because your sense of "good condition" includes the health of the entire ecosystem?
A Yes.
Q Ordinarily, when fishing regulations are being considered, what is the focus of the -- what is the context in which the fish are analyzed?

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A In terms of numbers and sizes of vertebrate fish.
Q Would it be possible to have an adequate number of fish at a given time in a stream that is not in good condition in the sense in which you used that term?
A Yes.
Q Even a large number of fish?
A Yes.
Q And, in fact, in the sense in which you used "good condition," the size of the population would be related in some way to the potential of that particular stream?
A Yes.
Q And so the mere fact that there might be a self-sustaining population in a given stream would not necessarily indicate that that stream was in good condition?
A Right. And that is not the only factor.
Q Why is it that the quality or health of the

habitat is a more appropriate way to get at this concept than the number of fish?
A The fish numbers, especially in the eastern Sierra, fluctuate greatly for a number of reasons, many of which we can't explain, on a year-to-year basis or even within the year, so it is extremely dangerous unless one has a very thorough sampling program and does a very consistent methodical, repeatable type of

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survey, to actually come up with quantitative information to result in describing the numbers of fish that might occur within a stream.
I've been doing this for years, and I can assure you that even in the most stable environments that we have, fish numbers in the eastern Sierra can fluctuate greatly. Hot Creek, for example, which is one of the most stable stream-fed systems that I'm aware of on the east side, fish numbers, and again these are estimates, can fluctuate over a period of 10 to 15 years from 4,000 in nine-tenth's of a mile stretch up to 10,000, even in a system which appears to be very, very stable.
So the eastern Sierra streams, basically undergo a wide variation in terms of both temperature and climate, weather, precipitation, and all these do effect the population sizes which makes looking at fish alone extremely difficult in terms of numbers for coming to any final determination as to the population that is really -- the potential population that could really be there.
MR. BIRMINGHAM: Would the Reporter please mark that question?
Q BY MS. CAHILL: In other words, your recommendations are based on the theory that if you create the habitat,

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the fish will follow; is that right?
A That's correct.
Q Let me go back again to fishing regulations. Is it possible that there could be a situation where there are sufficient fish to allow harvest but the habitat is such that you would not consider the fish to be in good condition?
A Yes, that's possible.
Q Is it possible that the department of representatives addressing fishing regulations might use the term "good condition" in a different context with a different meaning to simply mean that there were sufficient fish available to allow harvest?
A Yes.
MS. CAHILL: I think I have no further questions. Thank you.
HEARING OFFICER DEL PIERO: Thank you very much.
Mr. Birmingham?
RECROSS EXAMINATION BY MR. BIRMINGHAM
Q Mr. Wong, I'm at a loss. Have you ever read George Orwell "1984"?
A No.
Q Have you ever heard term "doublespeak"?
MR. THOMAS: Objection. Argumentative.
HEARING OFFICER DEL PIERO: Sustained.

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Q BY MR. BIRMINGHAM: In response to a question by Mr. Frink, Mr. Del Piero interrupted you and said, "You can assume that words in our questions have plain meaning." Do you remember Mr. Del Piero telling you that?
A Yes.
Q I'm going to ask you. Does "good" have a plain meaning?
A "Good" has many meanings.
Q Does "condition" have a plain meaning?
A It also has many meanings.
Q So you are here today as a witness on behalf of the Department of Fish and Game. Is that correct?
A Yes.
Q And you have expressed an opinion that the fish population in Rush Creek is not in good condition?
A Using my biological definition.
Q And that's a different biological definition than the Department of Fish and Game used when it wrote in L.A. DWP Exhibit 91 that, "Fish in the fish population in Rush Creek is in good condition"?
MR. THOMAS: Objection. Calls for speculation. This witness has no idea --
MR. BIRMINGHAM: Excuse me, Mr. Del Piero. I wonder if Ms. Cahill is going to be examining the
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witness, if Mr. Thomas could refrain from objecting.
HEARING OFFICER DEL PIERO: I'm going to sustain the objection because as part of his testimony he said he didn't play a role in developing a recommendation that went to the Fish and Game commission.
However, your request is appropriate. In the event that one party is cross-examining, that party ought to be the person who's objecting.
Q BY MR. BIRMINGHAM: So when the Department of Fish and Game -- just so we have it clear on the record. When the Department of Fish and Game said that the fish population in Rush Creek is in good condition, said that in July of 1993, you don't know what the basis of the Department of Fish and Game's conclusion was?
A That is correct.
Q Now, a few minutes ago, you responded to a question by Ms. Cahill by saying if you create habitat, fish will follow. You said, "That's right."
A I can't recall the word "create."
Q I'll ask the Reporter to go back and see if she can find that question. It was immediately after a question that I asked to be marked, the last question I asked to be marked. Immediately following that was the question I'm referring to.
HEARING OFFICER DEL PIERO: Mr. Wong, I want you
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to assume that the representation being made by Mr. Birmingham is, in fact, correct and then you can respond based on that assumption. Okay?
MR. BIRMINGHAM: I'm not sure we can do this because I was going to then ask the Reporter to read back the question that had been marked and the answer to it.

Q BY MR. BIRMINGHAM: Assume that you said, "If habitat is created, fish will follow." Assume you said that. Immediately before that, you said that the numbers of fish in the eastern Sierra streams fluctuate greatly. It depends on a whole number of factors. Do you remember saying that?
A Yes.
Q So it's correct, then, isn't it, that the number of fish is not necessarily related to a condition of habitat.
A No. That's -- I would say that's not correct. The numbers of fish are related to their habitat. But that habitat varies widely, hence fish populations can vary widely.
Q And therefore, simply the creation of habitat is not going to result in fish following. Isn't that right?
A I'm not sure what you mean by "creation of

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habitat" in that context. If you mean the restoration, Sir, or even creation?
A I'll -- restoration. The restoration of habitat does not necessarily mean that fish are going to follow?
A No. I believe from what I know of fish populations, especially in the eastern Sierra, that if you were to create a set of conditions which were desirable for fish in the broadest sense of the term, that they would follow.
Q In response to a question by Mr. Frink, you said that -- actually, let's go back further than that.
THE REPORTER: If it would help, I could probably get this fixed over lunch.
MR. BIRMINGHAM: I don't want to take the time -- well, it's ten minutes to noon now, would it be an appropriate time to break for lunch?
MS. CAHILL: I would prefer not to break. I would like to have this cross-examination completed, if there's -- if we could find out how many minutes there are left?
MR. HERRERA: 14 minutes.
HEARING OFFICER DEL PIERO: Is there some particular reason why you prefer not breaking at ten to 12 as opposed to 12?

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MS. CAHILL: I would just prefer to get this cross-examination completed in one piece.
HEARING OFFICER DEL PIERO: Are you going to be able to guarantee that you're going to be able to have this resolved?
THE REPORTER: 80 percent.
MR. BIRMINGHAM: There were three questions, Mr. Del Piero, that I have requested --
HEARING OFFICER DEL PIERO: I know. I'm aware of that. I made note of those. Do you have other questions to ask besides those or is that going to --
MR. BIRMINGHAM: I have other questions.
HEARING OFFICER DEL PIERO: Why don't you ask your other questions, okay, and then we'll come back to that? You can't do a search while you're working, can

you?
THE REPORTER: No.
HEARING OFFICER DEL PIERO: Go ahead. We are going break at noon. Okay?
Q BY MR. BIRMINGHAM: Mr. Wong, you testified in response to a question by Mr. Herrera about monitoring. Do you recall the exchange about monitoring? Excuse me. It was in response to a question by Dr. Smith.
A Yes.

Q Were you in the hearing room yesterday?
A Yes.
Q And did you hear Dr. Stine express an opinion that the restoration activities in 1992 in Lee Vining Creek had been successful?
A I actually do not recall that.
Q I'm going to ask you to assume that Dr. Stine expressed that opinion, that the restoration activities in 1991 in Lee Vining Creek had been successful.
A Very well.
Q And I think he said that. In your opinion, as a fisheries biologist, could you determine the success of a restoration program similar to that carried on in Lee Vining Creek in 1991 two years after it was carried out?
A It depends upon what your criteria for successful are and what Dr. Stine's were.
Q Well, if you want to create habitat that will keep fish in good condition after one year or two years, are you going to have enough information about a restoration program to conclude that the program was successful?
A I'm not aware of the exact types of activities that occurred that brought about Dr. Stine's

statement. So it's difficult for me the answer that question.
But if you want to speak generally, I think the answer -- well, perhaps -- could you repeat the question because I think I might be able to answer it?
Q Well, it's your understanding, isn't it, that in 1991, pools were dug in Lee Vining Creek?
MR. DODGE: Actually, it was 1992.
MR. BIRMINGHAM: I believe it was 1991.
MR. WONG: I guess I don't --
Q BY MR. BIRMINGHAM: I'm going to ask you to assume that in 1991 pools were dug in Lee Vining Creek
MR. DODGE: Objection. Assumes facts not in evidence.
HEARING OFFICER DEL PIERO: It's an assumption. It's overruled.
Go ahead, Mr. Birmingham, pursue your question.
Q BY MR. BIRMINGHAM: I'm going to ask you to assume that in 1991 pools were dug in Lee Vining Creek, and I'm going to ask you to assume in 1991 that banks were armored to create undercut banks, and that in 1991, willows and cottonwoods were planted along the stream to produce recovery of riparian vegetation, and that in

1991, spawning gravels were placed in Lee Vining Creek. And the purpose of this program was to restore

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the conditions which would keep fish in good condition, as you have used that term in your testimony.

After two years, would you be able to analyze the success of that restoration program?

A The answer is yes, but again, it depends on what level and what your success criteria are. In other words, if the pools were still there and survive a high flow, for example, in 1993, one could say as a measure of success that you had a successful treatment because they survived the runoff.

The same with some of the other factors you mentioned. Spawning gravels, you may be able to detect within a two-year time an increase in spawning, for example, or survival from spawning, because of your activities. So it does vary greatly with what you term to be success and the time frame involved.

Q Now, in your testimony, you said that you were not personally familiar with South Parker Creek.

A I have been to the site, but I believe I said I have not participated in any actual sampling activities to determine what the fish populations were or were not.

Q In response to questions by Mr. Canaday about your recommendations on Mono Lake, you referred to Auxiliary Report 12 and asked a lot of the same questions that I

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was going ask. But specifically, I'd like to know, you mentioned in your direct testimony that the Artemia Monica is a Candidate One species for listing under the Endangered Species Act.

A Yes.

Q Do you have any knowledge about the Endangered Species Act?

A I have some.

Q For instance -- and I'm only asking you your knowledge. Do you have an understanding of what constitutes a take under the Endangered Species Act?

MS. CAHILL: Objection to the extent that it does ask for a legal conclusion.

HEARING OFFICER DEL PIERO: I'm going to sustain the objection to that extent.

Go ahead and answer the question within a biological standpoint from the standpoint of -- in your capacity as an employee of the Department of Fish and Game.

THE WITNESS: The actual definition I would not feel comfortable commenting on.

Q BY MR. BIRMINGHAM: Let me ask you a biological question, Mr. Wong. I'm going to ask you to assume that you have a species which is a candidate species for a listing under the Endangered Species Act. As a

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biologist, would you feel comfortable introducing into that species habitat a predator species?

A If the predator species was a native in its own right, I would have -- I would have to say yes. I tend to get lost sometimes in between the question and

answer, but I'd say yes, I think it would be appropriate or could be appropriate to introduce that species.
Q Could be. Would it necessarily be? For instance, if it was going result in the extinction of that candidate species, if the introduction of the predator species was going to result in the extinction of that candidate species, would you -- would you promote the introduction of that predator species into the particular habitat?
A I guess the answer to the question is I don't know. It would depend on a whole variety of factors.
Q And with respect to the situation at Mono Lake, you don't know enough about the potential listing of the Artemia Monica to express an opinion concerning the introduction of a predator species into that habitat. Isn't that correct?
A That's correct. I'm here as a biologist in the biological end of things.
Q So if, in fact, the introduction of this predator

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species that Mr. Canaday referred to in his questions about Auxiliary Report Number 12 is going to be damaging to the Artemia Monica, a candidate species, you may have some reservations about the introduction of that species into Mono Lake; isn't that correct?
A No. Not necessarily. It depends on your -- the use of the word "damaging." If it were to return basically the Artemia population back to its non-degraded state, I would not term that to be damaging.
MR. BIRMINGHAM: Could I ask that the question be reread, Mr. Del Piero?
HEARING OFFICER DEL PIERO: Ms. Anglin?
(Whereupon the record was read as requested.)
Q BY MR. BIRMINGHAM: And your response to my question was no, not necessarily. The converse of that, Mr. Wong, is you might have some reservations. Isn't that right?
A That is the converse of that question. That's correct.
Q That's the converse of your answer.
A Converse of the answer. I better make sure that I understood your question. You caused me to question if I really understood what you were saying.
Q Well, let me ask it again because I want to make

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sure we have a clear record. Auxiliary Report Number 12 on Pages 19, 20, and 21, talks about the potential of reducing the population of Artemia Monica resulting from the introduction of other zooplankton; is that correct?
A I don't believe that's true. There would be no actual introduction of those animals. What you'd be doing is just creating conditions that would allow them to occur -- or become established naturally. There's a distinction there.
Q Then let's talk about establishing conditions that would allow them to occur naturally. For instance, on Page 20 of Auxiliary Report Number 12, it says,

"Predation and competition on Artemia by other zooplankton are not factors at higher salinities greater than 100 grams per liter in Mono Lake due to salinity intolerance of these species. At lower salinities, however, predation and competition by other species may exert a significant influence on the Artemia population." Is that correct?
A That is what that document says.
Q I'm going to ask you to assume that what the document says is correct. Now, if Artemia is a candidate species for listing under the Endangered Species Act, would you have any reservations about

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creating conditions that would allow zooplankton to establish themselves if that zooplankton, establishment of that zooplankton, would have a significant influence on the Artemia population?
A No, I would not. Because one could look at significant influence as being one which would allow those populations to evolve under the conditions that they have been under for thousands of years.
HEARING OFFICER DEL PIERO: Mr. Birmingham, it's now five after 12. I don't know how much more time you have left, but it's my inclination at this point to break.
MR. HERRERA: He has two minutes.
HEARING OFFICER DEL PIERO: I'm assuming you're going to petition for more time.
Mrs. Anglin, if you could see if you could ferret out those questions during the course of the lunch hour. 1:30.
(Whereupon the lunch recess was taken.)
HEARING OFFICER DEL PIERO: Ladies and Gentlemen, this hearing will again come to order.
Mr. Birmingham, you have two minutes left on your testimony.
MR. BIRMINGHAM: I would make, at this point, an application for an additional ten minutes.

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HEARING OFFICER DEL PIERO: It's granted. Okay? And then we're going to try and move this along. Okay?
Q BY MR. BIRMINGHAM: Mr. Wong, I have asked over the lunch recess for the Reporter to go back and find a couple of places on the tape. First, I'd like to go back and ask the Reporter to read a question and answer asked of you by Mr. Frink and your response to that, and it was the question that I asked be marked during Mr. Frink's examination of you. The first question that we just discussed.
(Whereupon the record was read as requested.)
Q BY MR. BIRMINGHAM: You said in response to Mr. Frink's question that you were trying to -- in formulating proposed minimum flows, you were trying to imitate the natural condition. Now, isn't it correct, Mr. Wong, that with respect to the minimum flows proposed by the Department of Fish and Game, that for many months the proposed minimum flows are in excess of what would be there naturally?
A I'm afraid I can't answer that because my

recollection of the flow regime proposed is rather general and apparently, extremely flexible from the operational standpoint in that, as I recall, mean monthly flows were offered with some minimum and some

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maximum from month to month. But as I recall, there was really no flow regime dictating what that might be.
Q Again, Mr. Wong, I'm going to give you a copy of Volume One of the Lee Vining Creek Stream Evaluation Report 93-2, and I'm going to ask you to look at Table 12 on Page 67 of the report.
Now, is it your understanding from your review of the report that Table 12 is a table which shows the monthly stream flows and cfs exceedence data for Lee Vining Creek, Mono County, California, 1973 to 1991?
A Yes, that's what I'd say.
Q And if we look at the column on the left-hand side, it says, "Percent of time equal or exceeded." Is that correct?
A Yes.
Q And is it correct, taking as an example 20 percent under that column entitled Percent of Time Equal or Exceeded, and if we go over to the month of -- the month of January, that for the month of January, 80 percent of the time, the flows in Lee Vining Creek are equal to or less than 41 cfs?
A I wanted to make sure that I'm reading this table correctly.
Q Please take your time.
MS. CAHILL: Mr. Del Piero, the witness can

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answer. I think from looking at the table it would be more efficient to have these questions posed to the panel that developed them.
HEARING OFFICER DEL PIERO: Mr. Birmingham?
MR. BIRMINGHAM: I will ask these same questions probably of the panel that wrote the report, but Mr. Wong's testimony was that it's the Department of Fish and Game's effort to mimic the natural -- natural condition, and I just want to establish that the proposal in this document proposes minimum flows that exceed what would be in the stream naturally. Is that your understanding, Mr. Wong?
MR. WONG: The -- I guess in answer to your question, from what I understand -- I'm not sure I understand the question. The City of Los Angeles' proposed flows do not mimic the natural hydrograph because they do not contain wet-, dry-, or normal-year criteria. Again, looking at fluctuations, it's extremely important that you have those three different year types, three different situations, to mimic the hydrograph overall in terms of wet, dry, and normal years, so that the fish population will get the benefit of the good years along with the bad years. So in that general regard, I think I could answer your question.
Q BY MR. BIRMINGHAM: I'm not asking a question about

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the Department of Water and Power proposal. What I'm asking you a question about is the -- is the Department of Fish and Game recommendation for Rush Creek. Am I

not correct that --
MS. CAHILL: Tom. I think this was Lee Vining Creek.
MR. BIRMINGHAM: Excuse me. Lee Vining Creek. Thank you very much, Ms. Cahill.
Q BY MR. BIRMINGHAM: I'm asking you about the Department of Fish and Game recommendation for Lee Vining Creek.
MS. CAHILL: He doesn't have, probably, those recommendations in front of him.
Q Do you have the --
A No. I don't. I'm not prepared to speak specifically on those particular reports.
HEARING OFFICER DEL PIERO: Mr. Birmingham, I think he indicated that earlier.
Q I'll address these questions to the panel that prepared --
A Thank you very much.
Q Now, in response to a question by Mr. Canaday about Mono Lake, you stated that Mono Lake is a vastly degraded ecosystem. Is that correct?
A That's my opinion, yes.

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Q And you based that opinion on numbers of birds?
A No, Sir.
Q What did you base that opinion on?
A When species are extricated from an ecosystem due to acts of man, I'll call it, or artificial means, then I consider that to be a degraded ecosystem.
Q But isn't it correct, Mr. Wong, that since the Department of Water and Power began its diversions in 1940, the number of California gulls has increased significantly at Mono Lake?
A I don't know.
Q And that there has been no vast degradation of brine shrimp at Mono Lake?
A I when you say "degraded," degraded as to what? That's the problem, we have no pre-diversion information as to brine shrimp or brine fly populations specifically or quantitatively for Mono Lake, so it does make it very difficult to make that distinction. So there's nothing upon which to base that as far as an -- as far as a natural system goes.
Q MR. BIRMINGHAM: Could you go to the next question? Actually, it was the very long question that I asked the Reporter to have marked. It was the one in which the terms "create habitat" were used.
(Whereupon the record was read as requested.)

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Q BY MR. BIRMINGHAM: Now, Mr. Wong, do you remember being asked that question about creating habitat by Ms. Cahill?
A Yes.
Q In response to the prior question, you said that even in the most stable environment, the number of fish can fluctuate greatly. Is that your testimony?
A Yes.
Q And that's your opinion?
A With regard to eastern Sierra trout populations, yes.

Q So in terms of identifying a fish population that is in good condition, you can't look at just the number of fish. That's your opinion?
A Yes.
Q Now, let's say you've got this most stable environment that you described but there are no fish in there. It would be your opinion that you did not have a fish population in good condition; isn't that right?
A Are you asking me to assume that we have a body of water that had no fish?
Q I'm asking you to assume that you've got what you termed a most stable environment with a very low number of fish.
MR. DODGE: Objection. Now he's changed the

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question. He said "no fish" the first time.
HEARING OFFICER DEL PIERO: That's true. I'm going to sustain the objection.
Restate the question, Mr. Birmingham.
Q BY MR. BIRMINGHAM: All right. I'll state a new question, Mr. Wong.
Let's assume that you've got this most stable environment with a low number of fish. Is it your opinion that you would not have a fish population in good condition?
A I really can't answer that the way it was stated.
HEARING OFFICER DEL PIERO: Why?
MR. WONG: Because his assumption -- there's a question I would have to ask, Sir, and that is is this -- is this a natural system, or is it an artificial impacted system?
Q BY MR. BIRMINGHAM: Let's talk about a natural system.
A Very well.
Q A natural system that is the most stable environment -- and I'm using your words. I want to use your words because I don't want to get confused by using my words. The most stable environment. You've got very few fish. In fact, we can make it better. We can say that the fish that you have are low weight. Do

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you have a fish in good condition? A fish population in good condition?
A Overall speaking, with regard to that single population, I think with the assumption that you have given, I'd say yes.
Q So if you look at --
A It's possible.
Q If you look at habitat and the habitat is in good condition, then you have a fish population in good condition?
A No. That's not entirely correct. What I'm getting at is you can't only look at the habitat and you can't only look at the fish populations. You have to look at everything.
Q Now, you said that the number of fish in the stream on the eastern Sierra fluctuate depending on a number of factors. Is it correct that some of those factors are unrelated to habitat conditions?
A They can be.

Q And again, I just want to make sure we understand what you're saying about good condition. So you can't look at habitat and conclude whether or not fish are in good condition; is that correct?
A Could you repeat it, please?
Q You cannot look at habitat and determine if fish

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are in good condition.
A Not entirely.
Q And you can't look at population and determine if fish are in good condition.
A Correct. Not entirely.
MR. BIRMINGHAM: I have no further questions.
HEARING OFFICER DEL PIERO: Thank you very much, Mr. Birmingham.
Mr. Dodge?
MR. DODGE: Well, I thought I'd try a new tactic this morning and not ask any questions and see if it speeded up. But it didn't --
HEARING OFFICER DEL PIERO: A vacuum is an unnatural condition.
(Laughter.)
RECROSS EXAMINATION BY MR. DODGE
Q I just have a couple of questions. One is just sort of a follow-up question, Mr. Wong.
This term "condition factor" is a new one to me, and that applies to individual fish; is that right?
A Yes.
Q And tell me exactly what the condition factor is.
A It's basically a co-efficient, usually referred to as "KA" which is nothing more than a relationship between the length and weight of a single fish.

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Q So is it just a fraction?
A Yes. It's -- it's usually described as the weight divided by the length cubed, multiplied by some factor, and there's a constant.
Q And anything else relating to that fish aside from length and weight is not taken into account?
A It's not considered at all.
Q Okay. Now, here's the part of your testimony that I want to explore with you. It's in Paragraph 7 of your testimony -- if could you get that out, and I'm interested in the second sentence which reads -- of Paragraph 7. "Fish population should not be limited by lack of cover, comma, food availability, comma, poor water quality, paren, including temperature, end paren, or lack of habitat necessary for reproduction."
Do you see that, Sir?
A Yes.
Q Now, you use the term "limited" in that sentence, and we've also had testimony about limiting factors. Can you explain to the Board in simple terms what a "limiting factor" is?
A It is some part of the environment, which would be any part of the environment that we've been talking about, that can affect all or a single life stage of any animal that could somehow result in an effect on

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that population. An example would be not having any

gravel could limit -- or very little spawning gravel could limit the total potential size or the total size of a fish population.
Q Now, am I right that -- am I reading Paragraph 7 correctly, that lack of cover, food, water quality, and reproductive habitat are potential limiting factors?
A Yes, they are. But really, the intent of this sentence, and I said there could be some problems, the implication is that really artificially limiting factors, is what I really in the mind. For example, there have to be limiting factors on populations or else there would be innumerable population sizes.
Q That really gets to the point that I wanted to ask you about. I want to take a potential limiting factor through time. Now, let's take lack of cover, for example.
MR. BIRMINGHAM: Excuse me, Mr. Del Piero. I'm going to pose an objection. Yesterday, Mr. Dodge expressed an objection on the grounds that my questions were going beyond the scope of a -- of a redirect or a direct that he had performed, and he raised the objection because I was going beyond the scope, I somehow might be able to sandbag him in terms of expanding the questions after he has had an opportunity

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to ask additional questions.
Now, Mr. Dodge is going well beyond the scope of any questions that were asked of this witness by any attorney or member of the Staff or by the Board, and if I understand Mr. Dodge's objection correctly, I think he's violating the rule that he wishes to impose. If we have an understanding --
HEARING OFFICER DEL PIERO: Excuse me, Mr. Birmingham?
MR. BIRMINGHAM: Yes.
HEARING OFFICER DEL PIERO: As I recall, you correct me if I'm wrong, but I think I overruled that objection.
MR. BIRMINGHAM: You did and --
HEARING OFFICER DEL PIERO: As I'm inclined to overrule your objection right now.
So, Mr. Dodge, why don't you proceed?
MR. DODGE: I thought I was going to lose both ends of that fight for a minute there.
HEARING OFFICER DEL PIERO: Contrary to some people's opinion, I do remember from one day to the next. Go ahead.
Q BY MR. DODGE: I'm interested in taking any given potential limiting factor through time. Let's take lack of cover, which is the first one you listed in

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what I've -- now, that, as I understand your testimony, is potential limiting factors -- take Rush Creek, today, correct?
A I believe so, yes.
Q And tell the Board what you mean by "lack of cover."
A Well, it could be variable. Fish utilize cover for various reasons. One is to escape high velocities because it does take energy in fast-moving water --

conserve energy and obtain sustenance and energy from the environment if they're in slower-moving water. They also can use cover as an evasion or a means to evade predation, which is always present in one form or another. So if any of these factors are not optimal, then -- or adequate, then there's a potential for them to affect the population's health.
Q So there's a potential in Rush Creek that lack of cover could affect one or more life stages of the brown trout, correct?
A Yes.
Q Now, if one's goal were to -- in the Rush Creek, to restore conditions that benefitted the fishery pre-diversion, then if you were concerned about lack of cover, you'd have to look at the amount of cover that existed pre-diversion, correct?

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A Yes, for a baseline.
Q For a baseline. And then you could determine that once you had that baseline and looked at today's situation, you could determine whether that particular characteristic that benefitted the fishery had or had not been restored, correct?
A Correct.
Q Now, are you aware -- this is a comparison over time between now and pre-diversion. Are you aware of any group that's attempting to make that comparison?
A I have reviewed -- the only thing I reviewed is a Trihey report, which compares the pre-41 and, I guess, post-diversion periods.
Q So -- your understanding is that the planning team is attempting to make that comparison?
A That's my understanding. I have seen the report and reviewed it.
Q And who are the particular -- if you know, who are the particular people who are trying to make that comparison?
A Without looking at the report, I do have it here, but without looking at it, I'm really not certain who the individuals are or the parties involved with that effort.
Q But you understand that the Trihey group is trying

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to identify factors that limit one or more age groups in the population today that were not limiting pre-diversion. You understand that they're going about that exercise?
A Yes.
MR. DODGE: That's all I have. Thank you.
HEARING OFFICER DEL PIERO: Thank you very much, Mr. Dodge.
Mr. Roos-Collins?
I promise this time, Mr. Roos-Collins, I'll wait to find out whether or not you have a question mark at the end of the statement. Okay?
MR. ROOS-COLLINS: Whether or not I have what?
HEARING OFFICER DEL PIERO: Forget it.
MR. ROOS-COLLINS: Are you referring to my displacement to the far end of Plaintiff Counsel's tables?

HEARING OFFICER DEL PIERO: No. No. I was referring to something earlier this morning. It's not worth repeating.

RECROSS EXAMINATION BY MR. ROOS-COLLINS

Q Good afternoon, Mr. Wong.

Let's focus on Paragraph 7 of your written declaration. Could you read the first sentence for the record?

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A "The instream flows necessary to keep fish in good condition include those which will maintain a self-sustaining population of desirably-sized adult vertebrate fish which are in good physical condition; i.e., well-proportioned and disease-free."

Q Thank you.

Let's parse the term "fish in good condition," as you use it in this written declaration. When you say "fish," what are you referring to?

A Well, in this case, I'm talking about desirably-sized adult vertebrate fish.

Q Are you referring to individual fish?

A The way it's worded here, it's a self-sustaining population of desirably-sized adult vertebrate fish. So that would be referring to individual fish.

Q In this declaration, do you use the term "fishery" to mean something different than fish?

A Yes, I do. I believe it's in the testimony that a fishery is a fish population which is being utilized for a purpose.

Q In this declaration, does the word "fish" refer to a fish population?

A Not necessarily, because an individual insect, according to the Code definition, is a fish. It is very confusing, and that's part of the reason we're

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having the problems, unfortunately, that we are.

Q Mr. Wong, I'm not asking you to interpret Section 5937. I'm asking you to explain the words "fish" and "fishery" as you use them in your written declaration.

A Right.

Q When you use the word "fish," are you referring exclusively to individual fish?

A The reason I'm hesitating is fish population. A fish could either be an individual fish or a fish population.

Q So as you use the term "fish" in this declaration, the term includes individual fish and fish population?

A Yes.

Q Now, when you say "fish in good condition," what are the elements of good condition to which you are referring?

A I think I might need some clarification.

Q Let me withdraw that question.

You previously read the first sentence in Paragraph 7 of your declaration. And in discussing the flows necessary to keep fish in good condition, you state, or rather you describe, "a self-sustaining population of desirably-sized adult vertebrate fish which are in good physical condition; i.e., well proportioned and disease free."

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A Yes.
Q Do those qualities "self-sustaining population, desirable size," and so forth, describe "good condition" as you use that term in this declaration?
A The reason I'm hesitating, I'm getting confused between good physical condition versus the Code, the Fish and Game Code definition of good condition, because both are used in this same sentence. I'm sorry. I'm not quite understanding, apparently, which of the two you're referring to. I apologize. I'm not --
Q I'm asking you to interpret your sentence.
A I know, but -- I guess in a sense which --
HEARING OFFICER DEL PIERO: Do you understand the question?
MR. WONG: I don't believe I do, Sir, or else I'd be more than happy to --
HEARING OFFICER DEL PIERO: Mr. Roos-Collins, please restate it.
Q BY MR. ROOS-COLLINS: As you use the term "fish in good condition" in Paragraph 7 of your written declaration, is one quality of such good condition a self-sustaining population?
A Yes.
Q Is another quality desirable size of adult
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vertebrates?
A Yes.
Q Is is another quality good physical condition?
A Yes.
Q Are there any other qualities of fish in good condition, as you use that term, in this declaration?
A In other words, qualities other than those mentioned in this?
Q Other than those we just discussed.
A Yes, there are. Yes, there are.
Q And what are they?
A Well, they're some of the ones that are already in the declaration. That's why I'm so confused. Because there are some mentioned here in terms of "A" structure, other qualities of the populations --
HEARING OFFICER DEL PIERO: Mr. Wong, take a moment and try to outline all of them so we'll just get it clear on the record. Okay? And then there won't be any question as to what's in your statement as opposed to what may not have been specifically articulated.
MR. WONG: Let me make sure I understand correctly. You're looking for things that may not be in the statement?
HEARING OFFICER DEL PIERO: I'm looking for everything in your mind that has bearing on this, okay,
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if you can recall it at this point. That's the nature of the question.
MR. WONG: Basically --
MR. DODGE: Mr. Del Piero, could we have a clarification as to whether it's the individual fish or the fishery to which this question was directed?
HEARING OFFICER DEL PIERO: Mr. Roos-Collins?

MR. BIRMINGHAM: Excuse me, Mr. Del Piero. I don't think that such a clarification can be made because the witness has said he's used fish in both contexts, and I think that if this testimony is going to have any meaning, we've got to understand this.

HEARING OFFICER DEL PIERO: Let's keep in mind, Gentlemen, that this is Mr. Roos-Collins' question. He's afforded the opportunity to ask the question he wants to.

Which is it, Mr. Roos-Collins, so Mr. Wong can effectively answer the question with the degree of specificity necessary?

Q BY MR. ROOS-COLLINS: Mr. Wong, I am referring to the term "fish in good condition" as you use it in Paragraph 14 of your written declaration where you state, "That an adequate flow regime is necessary to keep riparian and aquatic systems in good condition. This results in a stream in good ecological condition

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which can then maintain fish life in good condition."

When you use the term "fish life in good condition" in Paragraph 14, were you referring to individual fish or to the fish population as a whole?

A I'm referring here to fish population as a whole.

Q With that understanding; namely, that my question refers to fish population as a whole, what are the qualities of fish in good condition?

MR. BIRMINGHAM: I'm going to object on the grounds that the question is ambiguous. It's not clear whether or not we're talking about invertebrate fish or fish as defined by the Fish and Game Code.

HEARING OFFICER DEL PIERO: I had hoped we were going to be able to resolve this by getting the clarification that I asked for originally. I think I'm going to overrule that objection, Mr. Birmingham, because in the event that -- in the event that Mr. Roos-Collins wants a response, specifically within the confines of the definition of "fish" under Fish and Game Code, he can ask for it. I'm assuming he's asking for an answer from Mr. Wong in the context of fish as Mr. Wong has indicated he's used it during the course of his written statement.

Mr. Wong, proceed with an answer, okay? It's now five minutes, and we still don't have an answer. We've

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got a bunch of iterations of the question but no answer.

MR. WONG: Right. The word "quality" is difficult. The word "quality" is throwing me, Sir, that's the problem. Is there another word that would help me, please? Or if that's it, I will do my best to answer it.

Q BY MR. ROOS-COLLINS: Mr. Wong, I will withdraw that question and ask another, and before I do let me preface it with an explanation of my purpose for asking this question.

You have been subjected to continuous questioning now for four hours by attorneys for all parties. There is some confusion now as to what you mean when you say "fish in good condition." I am attempting to eliminate

that confusion. I am not asking about Section 5937 in the abstract. I am not asking about anything but your meaning when you use the term "fish in good condition."

When you use that term and are referring to a fish population, what does that term mean to you?

A I'm going to be somewhat repetitive, but I'll bring to mind what I can regarding that. Fish populations as a whole would be self-sustaining, as we mentioned, containing good age classes. There would be

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adequate reproduction, natural reproduction for whatever species there may be. An adequate habitat for all life stages involved, meaning both aquatic insects, meaning in the stream as well at riparian vegetation outside the stream that's required by various life stages of aquatic insects which have terrestrial form.

There would be abundant or adequate food available for all these types of species, whether it be for predators or whether it be for herbivores that are dependent upon organic input from outside the stream system itself, meaning from the riparian vegetation. There would be adequate energy input, and what I mean by that is energy either in the form of organic debris or sunlight with primary productivity with algae.

Basically, an ecosystem that is self-supporting and can provide some measure of, in the case of vertebrate management species of management interest, would provide desirable life stage for that particular species.

Q Mr. Wong, your answer addressed fish habitat as well as fish themselves. Is that correct?

A Yes.

Q Let's leave fish habitat out of it. When you use the term "fish in good condition," do you have any meaning beyond self-sustaining population, desirable

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size, and good physical condition?

MR. BIRMINGHAM: I'm going to object on the grounds that although I don't think it's intended to be argumentative, it is argumentative. Mr. Roos-Collins asked this witness what he meant by the use of the term in his written testimony. This witness answered it. And if that includes habitat, that's the way this witness intended to use that term. And I think it's argumentative for Mr. Roos-Collins to now ask him to tell us what he meant by excluding that term.

HEARING OFFICER DEL PIERO: Mr. Roos-Collins?

MR. ROOS-COLLINS: That's a fair objection. I withdraw the question.

HEARING OFFICER DEL PIERO: Fine.

Q BY MR. ROOS-COLLINS: Mr. Wong, does the term "fish in good condition," as you use it, include habitat?

A Yes.

Q Let me turn now to several questions put to you by Mr. Birmingham at the close of his recross examination. He said you can't look at habitat to determine good condition, and you answered no not entirely, or words to that effect. And then he asked you you can't look at population to determine good

condition, and you answered no not entirely or words to that effect.

Do you recall those two questions and then your answers?
A Yes, I do.
Q You understand that this Board is intending to establish an amendment to L.A.'s water rights licenses to comply with Section 5937?
A Yes.
Q You have recommended in Paragraph 16 that re-evaluation of flow regimes would be appropriate in five to ten years. Is that correct?
A Yes.
Q You have described a monitoring program which would be helpful for assessing the effect of the flow regime?
A Only in the most general terms.
Q What would you recommend this Board look at in five or ten years to determine whether the fish in Rush and Lee Vining Creeks are in good condition?
A Actually, what I would recommend is, and I happen to have a copy here, it's a habitat-typing methodology which has been adopted by the Department of Fish and Game and modification of that is used by the Forest Service. It's a habitat-based monitoring scheme which looks at the physical characteristics of the streams in question including riparian vegetation, pool depth,

size, quality. It literally measures different parameters of the stream.
In addition to that, as I think I alluded to earlier, it does contain a fish population monitoring component, but it is not one that is intended to describe the number of fish in each stream. That is being utilized by our department, right now, mostly for anadromous fish habitat monitoring, looking at limiting factors available in these streams and how they might be corrected or enhanced by habitat modifications.
A monitoring scheme such as this could be utilized to first develop a baseline for the kinds of quantitative baseline on the type of habitat that's present now. It could then be utilized at intervals in order to determine any progress towards a restoration goal that has been decided upon.
The Vestal reports, I believe, regarding Parker and Walker Creeks, make this type of recommendation in terms of monitoring for those two particular creeks, and there are a few more details there. They reference the methodology that I have that the department utilizes, but also others which are similar.
MR. ROOS-COLLINS: Mr. Del Piero --
MS. CAHILL: Mr. Wong, I think, indicated he had it with him. I don't know how lengthy it is.

MR. WONG: Let me go ahead and read it for the record. This is entitled "California Salmonid Stream Habitat Restoration Manual." It's dated August 1991, and it's been prepared by Gary Flosi, last name F-L-O-S-I, and Forrest, with two R's, L. Reynolds,

R-E-Y-N-O-L-D-S.
MR. ROOS-COLLINS: Mr. Del Piero, I would request that the --
MS. CAHILL: We would be willing to offer that as an exhibit. I think it would be DFG 156?
MR. SMITH: That's correct.
HEARING OFFICER DEL PIERO: Do you have copies?
MS. CAHILL: We don't have, but we will get them.
HEARING OFFICER DEL PIERO: Objections?
MR. BIRMINGHAM: Is it being admitted?
HEARING OFFICER DEL PIERO: Yes.
MR. BIRMINGHAM: I would have to review it before I could --
HEARING OFFICER DEL PIERO: I will point out that at least two of the Board members have seen that as one of the submittals during the deliberation to the Board on then Draft Decision 1630. I remember it as one of the exhibits.
MS. CAHILL: It would be convenient for us to -- to offer it as an exhibit by reference if the Board

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already has copies.
HEARING OFFICER DEL PIERO: Mr. Smith, do you recall that?
MR. SMITH: We could do it that way.
HEARING OFFICER DEL PIERO: Do you recall the document?
MR. SMITH: I don't recall, but I can look real quick.
HEARING OFFICER DEL PIERO: I'm almost positive. Can you hold on for one moment? Before we accept it, I'm inclined to accept it by reference, but before I do that, I want to make sure that Mr. Birmingham has a copy and is afforded the opportunity to review it. I also want to make sure that we get a copy for our records in terms of this proceeding, also.
MS. CAHILL: We provide two copies when we do it by reference, but it saves us having to copy ten.
HEARING OFFICER DEL PIERO: Mr. Dodge, do you want a copy, also?
MR. DODGE: Yes, I do.
HEARING OFFICER DEL PIERO: What parties don't have copies of this? Everybody? Two for us and --
MS. CAHILL: And for those who are present.
HEARING OFFICER DEL PIERO: And one for everyone else. Ms. Scoonover would like one.

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MS. SCOONOVER: That would be fine. Thank you.
MR. WONG: If I could complete my answer totally. This is being revised currently, so within a very short time, there will be a new improved model out, if will you.
HEARING OFFICER DEL PIERO: Are they going to be out before the 22nd of December?
MR. WONG: I won't attest to that.
HEARING OFFICER DEL PIERO: If it's not out before the 22nd of December --
MR. WONG: But the only caution I might make is that in the use of this, there are four different levels of specificity used in this particular, which

range all the way from just two habitat types, meaning pools and riffles, which are fairly relatively simple to measure, all the way to a very complex habitat description of the stream amounting to some 24 different habitat types involving that stream. I would caution the use of this in that the parties involved make sure they use the grossest, if you will, specific level so that it's -- it would be easier or more accurate to reproduce those results.

In other words, if you have just the physical measurements, could lead to some inaccuracies in terms of monitoring on a year-to-year basis, but if you stick

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with rather large habitat types that are of importance to the parties, the way I understand it, I don't believe we'll ever find out to within 18 habitat types what the pre-diversion conditions were on Lower Rush Creek, for example, but you might come up with a percentage of pools to riffles. So what I'm saying is just use the document, that level, which is really required.

HEARING OFFICER DEL PIERO: Thank you, Mr. Wong.

Next question, Mr. Roos-Collins?

Q BY MR. ROOS-COLLINS: Mr. Wong, bearing in mind Mr. Del Piero's remainder that we are attempting to conclude this hearing by December 22nd, I will conclude with one further question regarding the monitoring that you believe might be advisable to determine the effect of the flow regime adopted by this Board.

Would you recommend any monitoring of the characteristics described in Paragraph 7, specifically self-sustaining population, desirable size, and good physical condition of fish?

A Yes. That would be helpful, but at this point, I think, seeing as how things are coming back, you're really using that monitoring to try and determine if, in fact, there are any limiting factors that perhaps might be missed in the restoration process. So I would

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just use that as a gauge, for example, to make sure there is adequate spawning, that you are getting good year classes, and so on, from your restoration efforts.

MR. ROOS-COLLINS: Mr. Wong, thank you very much. No further questions.

HEARING OFFICER DEL PIERO: Thank you very much, Mr. Roos-Collins.

Ms. Scoonover?

MS. SCOONOVER: I have no further questions of this witness.

HEARING OFFICER DEL PIERO: Thank you very much.

Ms. Leidigh, do you have any questions? I'm sorry. Mr. Haselton, forgive me. You're hiding over there, and I can't see you over the top of the desk.

MR. HASELTON: I just have two questions.

RECROSS EXAMINATION BY MR. HASELTON

Q Mr. Wong, I just need a clarification on Number 21 of your testimony, paragraph -- Point 21. You see that?

A Yes.

Q And it's the second sentence -- last sentence

reads, "A reduction in the augmented flows -- " we're speaking about the Upper Owens River. "A reduction in the augmented flows may enhance available habitat for, comma, or facilitate the recolonization of, comma,

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species with these specific habitat preferences." Does that statement include brown and rainbow trout, or --
A No. I was really, in that case, referring to native aquatic species that might have been adapted to a pre-diversion environment.
Q Okay. And please, I don't mean to be repetitive, but Ms. Cahill reminded me of something that I wanted to ask. The statement is that just merely fish population is not the only indicator of fish in good condition. What came to my mind would be the reciprocal. Would you interpret the absence of a fish population as an indicator of a problem?
A Well, again, we get to a matter of definition. The fact that a species is not present doesn't necessarily mean that it should be there. I mean, I think -- are you referring to --
Q I'm referring to the trout. I'm referring to the habitat, but I was hoping we could presume all of this and basically link to your comment --
HEARING OFFICER DEL PIERO: Mr. Haselton, why don't you restate your question?
Q BY MR. HASELTON: My question is this, restated, is assuming that the habitat has -- exists, and it exists all -- exists with all the conditions that would be favorable, or would provide for it, maybe the word to

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use, for fish populations, the fact that there is an absence of fish, would that indicate a problem?
A The reason why I'm hesitating is, there are too many things going through my mind, the fact, what species and things biologists think about, I'm afraid, whether or not they originally were stocked there. I don't mean to slow things up, but it's very -- it makes a difference as far as an answer from my perspective.
Can you --
Q Well, you know what, Mr. Wong, I'll just go ahead and withdraw my question.
A I'm sorry.
HEARING OFFICER DEL PIERO: Thank you very much, Mr. Haselton.
Mr. Satkowski?
MR. SATKOWSKI: Yes, I have a question.
RECROSS EXAMINATION BY THE STAFF
Q This morning, L.A. Department of Water and Power introduced Exhibits L.A. Department of Water and Power 91, 92, and 93. Do you recall those exhibits? Those were the ones that responded to the public proposals for angling regulations.
A Yes.
Q And on those exhibits, there were -- there was an analysis done, and in that analysis, I believe on all

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three exhibits, at the end of the paragraph talking about the -- I assume the fishery populations, it says that, "The population is in good condition and further

restrictions are unnecessary at this time." I believe when asked earlier you said that you did not know who performed this analysis; is that correct?
A Yes.
Q Yes. Is it possible that you could find out who performed this analysis and maybe get those analyses for the Board and also maybe find out -- it's not, if stated in the analysis, what this person meant by "good conditions."
A It has come to my attention, because we didn't have it earlier, that there has been a statement made by the director of our department. It's in a letter to Mr. Ed Anton (phonetic), or a memo, excuse me, a memorandum to Mr. Ed Anton (phonetic) June 21st, 1993. And it's basically a --
MR. BIRMINGHAM: Can we have an opportunity to review the memo before Mr. Wong reads from it?
MS. CAHILL: This should be, in fact, already part of the Board's record in this case.
HEARING OFFICER DEL PIERO: Can I get a copy, Mr. Satkowski?
MR. SATKOWSKI: Pardon?

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HEARING OFFICER DEL PIERO: I'd like to see it, too.
MR. BIRMINGHAM: Excuse me, Mr. Del Piero. Did I understand Ms. Cahill to say that this was already an exhibit that had been submitted by the Department of Fish and Game?
HEARING OFFICER DEL PIERO: I think she said it was already part of the record. Is that true?
MS. CAHILL: I would assume it was. I'm perhaps wrong. To a certain extent, the Board incorporated all of its files in this matter. I would assume that letter to Ed Anton (phonetic) from the director --
HEARING OFFICER DEL PIERO: Copies went to Mr. Herrera, Mr. Frink, Mr. Canaday. The only person that didn't seem to get a copy was me.
MS. CAHILL: I'm now noticing that this particular draft or this particular copy is not signed. I perhaps should go -- with some time should be able to locate the signed copies --
HEARING OFFICER DEL PIERO: Mr. Canaday, do you recall this?
MR. CANADAY: Yes.
HEARING OFFICER DEL PIERO: Is it now a part of our records?
MR. CANADAY: I don't recall whether it was signed

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or not, but I do recall the memo.
MS. CAHILL: I'm just bringing it forward because it is the official position, signed, or at least either by or on behalf of the director.
MR. WONG: The general response regarding angling regulations is made by --
HEARING OFFICER DEL PIERO: Excuse me, Mr. Wong.
Mr. Birmingham, did you have any further comments there? I know you're trying to read it as quickly as you can.
MR. BIRMINGHAM: May I ask that Mr. Satkowski's

last question be read?
MS. CAHILL: Actually, I apologize. I do have the signed copies.
HEARING OFFICER DEL PIERO: Everybody take a seat for a second. Mrs. Anglin was asked to read a question back that she now has.
(Whereupon the record was read as requested.)
HEARING OFFICER DEL PIERO: Now, we've got two copies, one signed, one unsigned. They're quite different, which doesn't surprise me, Boyd Gibbons (phonetic) having been a journalist for most of his life, invariably edits everything submitted to him. Anybody who knows Boyd will appreciate that.
I would, inasmuch as -- the question I've got, are

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these, in fact, the same documents? Or are these different documents? The reason I point this out is one is addressed to Ed Anton (phonetic), the chief of the Division of Water Rights. One is addressed to interested parties. One is -- one is four pages long including one page of attachments and an addendum with flows. The other one is a two-page letter with an addendum -- Pardon me. Three pages with an addendum.
Ms. Cahill, can you tell me?
MS. CAHILL: I think they are different documents. One was more widely circulated than the one to Mr. Anton (phonetic). I would assume for our purposes it might be, because they are already in your files, good to rely on the ones to Mr. Anton (phonetic), and there should be one for each stream, Walker, Parker. There's one on South Parker, Rush, and Lee Vining, I believe.
HEARING OFFICER DEL PIERO: All dated the 21st of June 1993?
MS. CAHILL: So far as I can tell.
HEARING OFFICER DEL PIERO: Mr. Canaday, will you confirm that this correspondence is all in my record? Can you confirm it?
MR. CANADAY: Yes, we can. We believe that the first letter, the short memo --

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MR. HERRERA: The signed memo.
MR. CANADAY: The signed memo, was a cover letter to the report that was provided, 91-2.
HEARING OFFICER DEL PIERO: Okay.
MR. CANADAY: And we believe that the other letter dated June 21st was a follow-up memorandum to Mr. Anton (phonetic) stating the department's position.
HEARING OFFICER DEL PIERO: Okay. Now, Mr. Birmingham.
MR. BIRMINGHAM: The reason I requested that the question be read back was having reviewed these memos in a very cursory fashion, I don't understand how that's responsive to Mr. Satkowski's questions concerning who prepared the analysis that's contained in L.A. DWP 91, 92, and 93, and whether or not that person can explain that analysis.
HEARING OFFICER DEL PIERO: I understand your question.
MR. BIRMINGHAM: And therefore, I don't -- I guess

I'm objecting to their being offered as part of a response to this question.
HEARING OFFICER DEL PIERO: Because the response was nonresponsive?
MR. BIRMINGHAM: Because the reference to these memoranda, and the memoranda, are unresponsive to

Mr. Satkowski's question.
MR. DODGE: Mr. Chairman, Mr. Satkowski's question, as I understood it, related to the Department of Water and Power Exhibit 91, which was a reaction to Mr. Edmondson's proposal there not be any fish taken in various creeks. The documents that are floating around here appear to be on a different subject, and that is the Department of Fish and Game recommendations respecting various creeks.
HEARING OFFICER DEL PIERO: I'm going to overrule your objection, Mr. Birmingham. I'm going to allow these to be introduced into the record based on the response given by Mr. Wong. The reason I'm doing that is although the connection between the question asked by Mr. Satkowski and the documents themselves is thin, I recall, during the course of the presentation of witnesses by other parties during this proceeding, I've extended the same opportunity for introduction of documents that resulted from responses to questions that were equally thin.
Thank you. Are these being numbered?
MS. CAHILL: I didn't know if they needed to be or if they were already part of the record.
HEARING OFFICER DEL PIERO: If they're on file -- Mr. Satkowski --

MS. CAHILL: For clarity, perhaps I will number them in order.
HEARING OFFICER DEL PIERO: Fine. Do we have numbers on these? What are your next two exhibit numbers?
MR. SMITH: I think it's --
HEARING OFFICER DEL PIERO: Leeke 150 something?
MS. CAHILL: 157, 158. 157 will be the next. We better make sure we're all on the same wave length.
MR. HERRERA: That's correct, Mr. Del Piero. 157, 158.
MS. CAHILL: So we can make interested parties 159. We can make the letter to Mr. Anton (phonetic) on Rush Creek 160.
MR. HERRERA: 157 was the next one.
HEARING OFFICER DEL PIERO: They're going to be 157 and 158.
MS. CAHILL: You have only two, though. That's --
HEARING OFFICER DEL PIERO: We got two.
MS. CAHILL: There are more.
HEARING OFFICER DEL PIERO: Oh, the ones about the other creeks?
MS. CAHILL: Yes.
HEARING OFFICER DEL PIERO: That are in the record that are all received? Well, they can block -- pardon

me?

MR. HERRERA: They're in our files.
HEARING OFFICER DEL PIERO: Well, the nature of -- these two have been presented in response to Mr. Wong's comments. We'll have these identified. If the other ones come up during the course, they can be identified as exhibits, also. If not -- and incorporated by us. So this is -- which one is 157 now, the signed one or the unsigned one?
MS. CAHILL: The signed one. There's no reason to go with an unsigned one when we have a signed one.
MR. BIRMINGHAM: I'm sorry, Mr. Del Piero. I'm really confused. I have been all day. It's very, very obvious. But I thought these were 158 and 159.
HEARING OFFICER DEL PIERO: Help me. Mr. Smith?
MR. SMITH: 157 is the signed letter.
HEARING OFFICER DEL PIERO: That's what I thought.
MR. SMITH: 158 is the --
HEARING OFFICER DEL PIERO: Unsigned memo.
MR. SMITH: Unsigned memo.
MR. BIRMINGHAM: 157 is the signed letter that's addressed to interested parties. And 158 is --
MR. SMITH: And the memorandum to Mr. Anton (phonetic) is 158.

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MR. BIRMINGHAM: Thank you very much.
(DFG Exhibits Nos. 157, 158 and 159 were marked for identification.)
HEARING OFFICER DEL PIERO: Okay? Okay.
Mr. Satkowski, further questions?
MR. SATKOWSKI: No.
HEARING OFFICER DEL PIERO: Mr. Smith?
MR. SMITH: No.
HEARING OFFICER DEL PIERO: Mr. Herrera?
MR. HERRERA: No.
HEARING OFFICER DEL PIERO: Mr. Canaday?
MR. CANADAY: Yes.
HEARING OFFICER DEL PIERO: Go for it.
MR. CANADAY: First to clarify some old business that we had in the morning session, you asked a question of me, Mr. Del Piero, if, in fact, a comment letter by the regional board did, in fact, have attached to it a scientific paper titled Diatom Community Structure Along Physio-Chemical Gradients in Saline Lakes, and I went back to the records and, in fact, it has been, and it is part of our record.
HEARING OFFICER DEL PIERO: Thank you very much. Mrs. Forster wants a copy of that to take home with her.

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MR. BIRMINGHAM: She hasn't been sleeping well?
HEARING OFFICER DEL PIERO: That's exactly the point. We're going to guarantee that she gets a good night's rest.
Q BY MR. CANADAY: Mr. Wong, earlier you testified that and made a suggestion that the -- this salmonid restoration manual could possibly be used in this particular process?
A Yes.

Q Would you again read me the name of that manual, please?
A California Salmonid Stream Habitat Restoration Manual.
Q And that has a publish date of 1991?
A Yes.
Q And you've testified that this has been adopted by the department?
A It has been utilized by the anadromous fisheries branch and stream restoration -- when you say "adopted," it's one that's literally being utilized.
Q Adopted was your word.
A Yes. I'm clarifying it. There may or may not be a signed letter somewhere that attests to that.
Q And you've read this document?
A I have not read the entire document, but I have

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attended a training session regarding this document and utilized portions of it.
Q Do you know if this document was offered to the planning team, the RTC planning team?
A No, I don't.
Q Are you aware that -- do you know that in that document there may be language that clarifies what good condition is?
A Not to my knowledge.
Q You were in Lee Vining last Friday; is that correct?
A Yes.
Q For the testimony of the residents?
A Yes.
Q And is it your recollection that we heard testimony by two individuals that in Lee Vining Creek, the fish were generally between eight and ten inches?
A I do recall that.
Q And that their recollection was in Rush Creek, the fish tended to be larger than that, we'll characterize that, just larger than eight to ten inches?
A Yes.
Q Do you know of any other data, anecdotal or otherwise, that would support a characterization of desirably-sized adult vertebrate fish?

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A No. I really -- I'm not aware of any.
Q So in your opinion, we're left with this particular anecdotal information to characterize what the historic fishery may have been?
A That's correct. There has been some attempt to use Vestal's 1954 paper in that regard, and I would caution very much against utilizing that entirely for a number of reasons. That is, for one thing, that that is a paper which was peer reviewed and has been edited. It may or may not represent Mr. Vestal's actual beliefs at the time.
It also contains -- in looking at the type of fishery that was being depicted in that paper, basically, what was happening, as near as I can determine from reading it, people were literally being attracted to that site off of Highway 395 for the catchable trout that were being planted there. So the

kinds of anglers that you were basically attracting were, shall we say, perhaps not the most sophisticated anglers that there may have been in the area.

And that more or less also is or can be construed from the fact that 43 percent of some of the anglers had zero catch. For a catchable trout program that is not a very high rate of success. Also -- I don't have it handy, and I won't take the Board's time. But also

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Mr. Vestal remarks in that paper that he's amazed that the brown trout population was able to hold up. So basically you had anglers that weren't necessarily brown trout anglers, so you're not really sure if you're trying to pull out the brown trout, wild trout portion of that population that may have been down there. By only utilizing those kinds of anglers to try to depict that, it could be -- it could easily affect your conclusions.

I personally know that brown trout can make it very well in very heavily-fished waters at times just because most catchable trout anglers are not fishing for that kind of fish, which is a more wary type and more difficult to catch. So in terms of using Vestal's paper, I think the information that you have which best describes it would be those that have been compiled in a manual or a report such as the one that Trihey has attempted to put together or is putting together regarding pre-1941 conditions in terms of habitat.

Also, you have people who were there and can attest to that, and you have photographs of what that habitat was like. And my personal opinion, or my professional opinion is that that may be the best that you can do to actually try to listen to these people, get corroborating evidence from them and believe them.

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Q You testified that one element of good physical condition, good condition of a fishery, is, in fact, the physical environment in which that fishery lives; is that correct?

A Yes.

Q Is it your professional opinion that there would be significant benefits of rewatering the historical channels below Rush Creek Narrows?

A Based on the information I've seen and what I've heard, yes.

MR. CANADAY: Thank you. That's all I have.

HEARING OFFICER DEL PIERO: Thank you very much.

I think we have finished with you Mr. Wong.

MR. BIRMINGHAM: Excuse me, Mr. Del Piero. I've not done this before, and I don't plan on making it a habit. There have been a couple of issues that have come up in response to questions asked after my last recross, and I was wondering if I could take a few minutes and ask a few extra questions.

HEARING OFFICER DEL PIERO: Mr. Dodge?

MR. DODGE: I would object to that. We're going to get on a slippery slope if you allow it once.

HEARING OFFICER DEL PIERO: I'm afraid I'm going to have to turn that request down.

You're excused, Mr. Wong.

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Ms. Cahill, you have a panel?
MS. CAHILL: I do. Do you want to take a break and let them set up?
HEARING OFFICER DEL PIERO: Yes.
MS. CAHILL: We'll have six people on this panel. The direct will take -- the direct will take a considerable amount of time, but we will actually handle two of the major streams, and it will handle all six of these witnesses.
HEARING OFFICER DEL PIERO: Fine. We'll be on break for ten minutes.
(Whereupon a short recess was taken.)
HEARING OFFICER DEL PIERO: Ladies and Gentlemen, this hearing will again come to order. Nice of you Gentlemen to join us this afternoon.
Ms. Cahill, you want to proceed?
MS. CAHILL: Yes, I would. First, I would like to note that we have provided today all parties copies of DFG 149. It was a slide that was used by Dr. Stine in his presentation yesterday.
And I have now obtained almost sufficient copies of DFG Exhibit -- we have numbered DFG Exhibit 158 an unsigned -- unsigned memo to Ed Anton (phonetic) regarding Rush Creek. Because we have the signed version it seems appropriate to use it instead, and so
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I will substitute a labeled DFG 158, the signed one, in place of the unsigned one. And we can do that at the next break.
This is our panel on the instream flow studies on Rush and Lee Vining Creek. We have a panel of six experts, and I think I will identify them now and then have each identify his own individual testimony as we get to his portion of the presentation.
HEARING OFFICER DEL PIERO: None of these Gentlemen, I think, has been sworn.
MS. CAHILL: I think it would be wise to swear them.
HEARING OFFICER DEL PIERO: Gentlemen, would you please rise and raise right hand? Do you promise to tell the truth during to course of this proceeding?
(All say yes.)
HEARING OFFICER DEL PIERO: Please be seated.
Proceed.
DIRECT EXAMINATION BY MS. CAHILL
Q To my right is Gary Smith. He is with the Department of Fish and Game.
Next is David Christophel of Beak Consultants, Inc. Beak was basically the contractor on the Rush Creek study.
Next to him is Dr. Stacy Li who did fieldwork on
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the Rush Creek study, who is the principal in aquatic systems research, and he was the contractor on the Lee Vining study.
Next to him is Thomas R. Payne of Payne and Associates who did the calibration work on the Lee Vining study.
To his right is Dr. Matt Kondolf, who has

submitted testimony with regard to flushing flows and who was also involved in both of the studies.

And last at the end of the table is Peter Vorster, who also was involved in hydrology on the studies. Peter Vorster will be called later by other parties on other matters, and I would request everyone's cooperation today to limiting the questions pretty much to the studies at hand.

I'd like to begin by introducing Gary Smith. Gary, would you please state your name for the record?

A BY MR. SMITH: Gary P. Smith.

Q Mr. Smith, have you examined DFG Exhibit 3?

A Yes, I have.

Q Is that a copy of the testimony you're submitting in this matter?

A Yes, it is.

Q Do you have any corrections to make to that testimony?

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A No, I don't.

Q Would you please look at DFG Exhibit 4? Is that a true copy of your qualifications?

A I believe it is, yes.

Q And could you please summarize your qualifications for us?

A I have a Bachelor's and a Master's of Science degree in fisheries management from Humboldt State University. I am an environmental specialist with the Department of Fish and Game. I am currently the department's manager of instream investigations within the Mono Basin and the Upper Owens River.

I began my career with the department in 1969. My experience in the eastern Sierra began in 1970. I have active experience in 25 streams in the state. In my former capacity as the department's instream flow coordinator, I was involved in 2 to 300 other investigations at various stages or at various stages throughout most of my career.

In -- excuse me. I have been involved in fisheries investigations in the eastern Sierra, as I said, since 1970. I designed, implemented, and conducted the Eastern Sierra Trout Habitat Criteria Investigation, and I'm the Smith of Smith and Acitunal.

Q Mr. Smith, were DFG Exhibits 53 through 63 stream

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evaluation reports that were prepared under your direction?

A Yes, they were.

Q And is DFG 115 a copy of the publication Smith and Acitunal Habitat Preference Criteria for Brown, Brook, and Rainbow Trout in Eastern Sierra Nevada Streams, was that a publication for which you are an author?

A Yes, it is.

Q Would you please very briefly summarize your testimony?

A All right. I designed, administered, and managed the studies on Mill, Wilson, Parker, Walker, South Parker, Lee Vining, Rush Creeks, and the Upper Owens River for the Department of Fish and Game. It's been the department's policy since 1983 to require the use

of IFIM in instream flow assessments where it's appropriate.

Beak Consultants was selected jointly in a cooperative study to conduct an investigation on Rush Creek. They began their investigation in 1987. Aquatic Systems Research also was conducted -- excuse me, was selected to conduct instream investigation on Lee Vining Creek. They began their investigation in 1990. These two investigations employed the IFIM PHABSIM complex. Studies on Parker, Walker, South

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Parker, couldn't use the IFIM PHABSIM complex because of the degrading conditions the streams were in. So other names were used to develop stream flow recommendations.

The Basco (phonetic) Environmental was selected -- when I say "cooperatively," there's a number of parties that have been involved on all of these investigations in selecting the -- in various phases of developing the study -- it's like a contractor and -- following the investigation through to complete the report.

Back to where I was, Aquatic Systems -- excuse me, Basco (phonetic) Environmental was selected to conduct investigations on Parker and Walker and South Parker Creeks and the Upper Owens River. From those studies, the department has developed stream flow recommendations, and we've presented them to the Board.

For Rush Creek, the stream flow recommendations are included -- are presented on the easel there underneath the fish, and those recommendations are included in DFG Exhibits 52 and 53.

In Lee Vining Creek, investigation recommendations are just now being put on the easel, and they are in DFG Exhibit 54, 55.

Walker, Parker and South Parker -- before I go on,

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you will note that the stream flow recommendations vary by month and by water year type. The Lee Vining recommendation includes a flushing flow. The Rush Creek -- excuse me. The Rush Creek recommendations do not include a flushing flow recommendation. It is -- it will be necessary to develop flushing flow recommendations. Dr. Matt Kondolf is here to present testimony on that point.

Parker, Walker stream flow recommendations are, in Walker Creek, from April 1 through September, stream flow of 6 cfs. October through March, four and a half cfs with a flushing flow. Parker Creek recommendation, April through September, 9cfs, and October through March, 6 cfs. Again, with a flushing flow recommendation.

The Upper Owens River, Darrell Wong covered that earlier, and I will be very brief. That is, the recommendations are in Exhibit DFG 62, 63. The recommendation essentially is all the natural flow that's in the river is needed for -- to make it -- if water is diverted out of the Mono Basin, through the Mono Craters Tunnel into the Upper Owens, it should come out in a stable manner with a maximum flow

immediately downstream of the portal in the confluence of the Upper Owens of 200 cfs.

MR. DODGE: Could I have a clarification, Mr. Del Piero?

HEARING OFFICER DEL PIERO: Yes.

MR. DODGE: When Ms. Cahill presented this panel, I understood it to be recommendations on Rush Creek and Lee Vining Creek with the idea that Parker and Walker and the Upper Owens River would be covered later. And I'm just wondering whether my understanding was correct.

MS. CAHILL: It is correct that Walker, Parker, and the Upper Owens River will be subsequently dealt with.

MR. DODGE: Thank you.

Q BY MS. CAHILL: Does that conclude your direct testimony?

A BY MR. SMITH: Yes, it does.

Q Mr. Smith, were you familiar with the document that we are now providing as DFG Exhibit 158? This is the signed version.

A Yes, I am.

Q There has been some confusion, I believe, as to whether the recommendations being presented today are the official recommendations of the Department of Fish and Game. Are they?

A On which --

Q On -- at this time on Rush and Lee Vining Creeks.

A Yes. They are the official recommendations of the department.

Q And are you familiar with the document, DFG 158?

A Yes, I am.

Q And that document states that the addendum stream flows, which are those on the graph, are stream flow requirements necessary to keep Rush Creek's brown trout resources in good condition as required under Fish and Game Code Sections 5937 and 5946; is that correct?

A That's correct.

Q And it's your understanding that that, then, is the department's official recommendation?

A Yes.

Q Thank you.

I would next like to introduce Mr. David Christophel. Mr. Christophel, would you please state your name and spell it for record?

A BY MR. CHRISTOPHEL: David B. Christophel, C-H-R-I-S-T-O-P-H-E-L.

Q Mr. Christophel, have you had an opportunity to examine DFG Exhibit 5?

A Yes, I have.

Q And is that a true copy of your testimony?

A Yes, it is.

Q Do you have any corrections to make to that testimony?

A No.

Q And have you examined DFG Exhibit 6?

A Yes.

Q And that's a statement of your qualifications. Is it accurate?
A Yes, it is.
Q And DFG Exhibits 75 through 86, these are slides that you have provided us to be used today; is that correct?
A I -- to tell you the truth, I'm not sure on the numbers, but -- well.
Q 75 through 86?
A 87.
DR. LI: 73.
A BY MR. CHRISTOPHEL: 73 through 87.
Q 73 through 87, thank you.
And DFG Exhibits 52 and 53, those are -- the report that was prepared by Beak Consultants for the Department of Fish and Game; is that correct?
A That is correct.
MS. CAHILL: Because there's going to be a joint presentation on Rush Creek by Dr. Li and Mr. Christophel, I'd like to do Dr. Li's preliminary

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materials also now.
Q BY MS. CAHLL: Dr. Li, would you please state your name and spell it for record?
A BY MR. LI: Stacy K. Li, last name spilled L-I.
Q Dr. Li, is DFG Exhibit 7 a copy of your testimony?
A Yes, it is.
Q And do you have any corrections to make in that?
A No, I don't.
Q Do you -- would you please compare the exhibit numbers in your testimony with the exhibit numbers on the reports?
HEARING OFFICER DEL PIERO: Dr. Li, you're going to need to get the microphone closer.
DR. LI: Okay.
Q BY MS. CAHILL: Dr. Li, should we, in fact, correct your testimony to show that the two reports by Aquatic Systems Research are DFG Exhibit Nos. 54 and 55?
A Yes, we should.
Q Dr. Li, is DFG Exhibit 8 a statement your qualifications?
A 8. Yes, it is.
Q And is it true and correct?
A Yes, it is.
Q Would you briefly summarize your qualifications for us?

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A Yes. I received my -- the bulk of my education at the University of California at Davis where I received a bachelors, a B.S. in zoology, an AB in psychology, a masters of arts in psychology, and a Ph.D. in psychology specializing in evolution, ecology, and animal behavior.
I -- upon graduation, I taught animal behavior at the University of California at Davis and also two semesters of ecological methods for Sacramento State University.
Q And how are you currently employed?
A I am the principal of Aquatic Systems Research.
In addition, I guess I'm noted for -- I have been

a consulting biologist since 1980, have participated in about 60 different stream assessments, 20 to 25 of which used IFIM.
Q Mr. Christophel, I've already forgotten whether I asked to you summarize your experience.
A BY MR. CHRISTOPHEL: You did not.
Q Would you, please?
A Yes, I will. I have bachelors and masters degrees from California State University at Sacramento, both of which are in biological sciences with an emphasis on fisheries and wildlife management. I'm presently a senior scientist with Beak Consultants in the

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Sacramento office.
I participated in the Rush Creek field studies and in the preparation of the report, and I've been involved in numerous other instream flow and fisheries investigations in California.
Q Thank you.
Dr. Li and Mr. Christophel will go back and forth a bit. It's a joint presentation.
Would you please begin Mr. Christophel?
A As Mr. Smith indicated, Beak was awarded the contract to conduct the instream flow investigation in Rush Creek in 1987. At that time, Dr. Li was with Beak, and he it was project manager. As the project manager, he was responsible for all aspects of the project including the study design, the collection of field data, and the analysis of those data.
Dr. Li left Beak in 1989 prior to the completion of the report, hence he did not participate in the development of the instream flow recommendations.
What we'd like to do the give a brief summary of our testimony and using slides to aid in that process, Dr. Li will give the initial portion, which constitutes the field studies and the analysis. I will present the portion on flow recommendations.
MR. BIRMINGHAM: Mr. Del Piero?

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HEARING OFFICER DEL PIERO: Yes, Mr. Birmingham.
MR. BIRMINGHAM: The copies of the slides which we are about to see, in fact, copies of all the photographs that were submitted by the Department of Fish and Game to Los Angeles Department of Water and Power, were black and white photocopies of photographs, and it's very difficult to discern anything in any of it. And I'm wondering if we could get copies of the slides or photos.
The Department of Fish and Game has subsequently provided us with color photocopies of the photographs they're using, and they're much better. And if we could get copies of those, we would appreciate it very much.
MS. CAHILL: We can do that.
MR. THOMAS: Well, I'm responsible for the budget in this project, and if you would pick specifically something you need to find, we'd be happy to do so, but we are not subject to the great deep pocket that Los Angeles offers to some of the other witnesses, so we pay out of our taxpayers' money. So we would

appreciate you limiting your cost to exactly --
MR. BIRMINGHAM: If I can explain the problem I have.
HEARING OFFICER DEL PIERO: It's difficult to know

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what you're looking for.
MR. BIRMINGHAM: Sometimes it's very difficult to know without looking at a photocopy. For instance, yesterday, Dr. Stine put a slide up and that slide was difficult to see. And now in reviewing the color photocopy that's been provided to us, we can see a lot more detail. And I have some questions I'd like to ask Dr. Stine about that slide. And I presume I'll have that opportunity when Dr. Stine comes back.
I understand Mr. Thomas' budget constraint, but at the same time, when I'm looking at a black and white photocopy of a photograph or a slide, it's very difficult for me to judge whether or not there's something that I should ask about in that photocopy.
MS. CAHILL: I --
HEARING OFFICER DEL PIERO: Wait. Wait. Wait. Wait. Wait. Wait. Wait. Mr. Thomas?
MR. THOMAS: Just ask him whatever he needs.
MR. BIRMINGHAM: I need it all.
MS. CAHILL: In fact, to accommodate things, Tom, if you have your black and whites, we have one set of color Xeroxes here that we will provide so that you can have them at counsel table and have them for cross, except they're numbered, well, yours are numbered.
Liz, you don't have a black and white numbered

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set?
HEARING OFFICER DEL PIERO: We'll do the best we can. Mr. Thomas, you see if you can arrange to get a full set of the copies made.
MS. CAHILL: Actually, Tom, they'll be on the screen during the presentation. We will lend you the color copies during your examination.
HEARING OFFICER DEL PIERO: Do we have duplication capabilities?
MR. SMITH: Not color.
HEARING OFFICER DEL PIERO: Mr. Thomas, let me suggest something. If there's a real budgetary problem, Dave Kennedy's got duplication capability, okay?
MR. THOMAS: Dave Kennedy has the State Water Project.
HEARING OFFICER DEL PIERO: I understand that, okay? If it necessitates me calling the secretary of resources to get a duplicate copy made by the Department of Water Resources, I'll be happy to do that. But I don't think I have to, but I'll do it.
MR. THOMAS: We'll do our best.
HEARING OFFICER DEL PIERO: Now.
Q BY MS. CAHILL: Dr. Li, would you please begin?
A BY DR. LI: The Rush Creek instream flow

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investigation was conducted in the summer of 1987. Now, instream flow investigations prior to this time, from my perspective, suffered from one weakness, and

that weakness was experimental bias. Therefore, when Beak was awarded the Rush Creek instream flow investigation, we decided to control that bias by using a two-stage, stratified, random-sampling, experimental design. That design selected reaches of the stream and habitat types within those reaches to sample.

The basis for the sampling was based upon a compilation of habitat types identified numerically, then randomly selected using random number tables. And this greatly facilitated arguments on the stream in terms of which habitat types would be -- would be used for the sampling.

With any instream flow investigation, we have a scoping meeting that was conducted in -- let's see. This was conducted in Lee Vining where all the -- all the interested parties listed here on this -- can we have numbers for these slides?

Q No. This is -- just read off who it was that participated.

Q On this slide is Department of Fish and Game, Los Angeles Department of Water and Power, Beak Consultants, Incorporated, EA Engineering, U.S. Forest

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Service, U.S. Fish and Wildlife Service, Mono Lake Committee, and Cal Trout. At this meeting, our study design was presented, and we accepted input from these parties.

Next slide. This is the study area for the study in 1987 beginning at Mono Gate One and going down to the county road consisting of six separate reaches.

Next slide, please. This is a photograph of Mono Gate One. It is the structure by which Rush Creek receives water from Grant Reservoir.

Next slide.

Q That was DFG 73. And the next slide is DFG 74?

A DFG 74 is a slide of the return ditch, Reach One. It's a -- it's an artificial channel that delivers water from Mono Gate One to Rush Creek.

Next slide, please.

Q Next slide is DFG 75.

A This is Reach Two. It is characterized by still having an existing riparian canopy, having relatively steep but stable banks with a moderate grading.

Next slide, please.

Q DFG 76.

A Reach Three extends from Reach Two -- we call Reach Two "The Gorge" because it seemed to be a canyon. And this extends from The Gorge to The

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Narrows. That is moderate gradient reach that, at this flow in the summer of 1987 with the flow of 19 cfs, had relatively little riparian vegetation.

Next slide, please.

Q DFG 77.

A This is The Narrows. It's that great big notch of rock down at Rush Creek. It's a relatively short reach of something like 300 feet or so, fairly steep, characterized by deep-plunge pools and steep cascades.

Next slide, please.

Q DFG 78.

A This is -- this is Reach Five, what everybody has been calling The Bottom Lands or The Meadows, and as you can see back in 1987, it didn't have much riparian vegetation.
Next slide, please.
Q DFG 79.
A Reach Five is between The Narrows to what's been called The Ford.
This is Reach Six. It is our downstream-most reach. It extends from The Ford to the county road and, as you can see, it wasn't much of a stream back then.
Next slide. We start our investigation with aquatic habitat delineation. The purposes of the

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delineation is to define the sampling universe that we use for the stratified sampling procedure. Using habitat mapping, biologists walk along the stream, identify the habitat types, measure its thalweg length, and compile that so that we can determine the habitat-type composition and representation within each reach. Next slide.
MR. CANADAY: Mr. Li, can you spell thalweg, please?
DR. LI: Thalweg, T-H-A-L-W-E-G.
Q BY MS. CAHILL: And you might define it as well.
A BY DR. LI: It's the deepest thread along the stream course.
MR. HERRERA: Ms. Cahill that's 20 minutes.
MS. CAHILL: Mr. Del Piero, I would apply for an additional 20 minutes at this time.
HEARING OFFICER DEL PIERO: Granted.
DR. LI: Here's the guys on the stream back in '87 measuring it with a open-reel tape.
Next slide. The guy in the blue cap with the Dodgers hat on was Mr. Christophel.
Q BY MS. CAHILL: The last slide was DFG 80 and the next one is DFG 81.
A These are the kinds of habitat types that we were identifying during the course of this survey. This is

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riffle. It's characterized by being relatively shallow with turbulent water surface and generally fairly fast water velocities.
Next slide. This is a run. Runs are characterized as being relatively deep habitats with moving water but the water surface elevation is fairly stable and not dropping.
Q This is DFG 82.
A Next slide, please.
Q DFG 83.
A This is a picture of a pool. Pools are simply deep aquatic habitats, relatively slow water velocity, relatively tranquil water surfaces, generally controlled by some structure that controls where the water surface is.
Next slide, please.
Q DFG 84.
A This is an example of the infamous Rock Gardens. They're characterized by having large boulder elements,

ponding behind those boulder elements in a diverse water flow pattern around those -- around those rocks.
Next slide, please. This hydrology is an important element of an IFIM study. There were two components in the Rush Creek study. The first to take measurements to determine whether the stream is gaining

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or losing stream flow as it flows downstream. So you have an idea of how much you're losing as it traverses and also whether that pattern changed from season to season.
The second portion of the hydrology component is an examination of the hydrological record.
Now, these elements were developed for the Rush Creek study by Peter Vorster.
Next slide. Here's the -- a representation of the hydrological record from 1937 to 1987 expressing mean monthly flows, and you can see that the bulk of the water is -- goes down the stream between May and July and then it recedes to a lower level the remainder of the year.
Q This is a color version of Figure 8 in DFG 52.
A Next slide, please. Habitat discharge relationships is the core of the Rush Creek study. We randomly selected 51 sampling sites that was measured using 78 transects. The selection of the sampling sites and transects was open to all parties and personnel from Los Angeles Department of Water and Power that represent us participated in that.
Next slide please. We collected stream flow at four different stream flow levels; 100 cfs, 60 cfs, 19 cfs, and about 13 cfs during the summer.

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MR. BIRMINGHAM: Excuse me, Dr. Li. Can I ask, who is that good-looking man standing in the middle of the photograph?
DR. LI: He's not quite in the middle. He's sort of a rightist, as we know.
This is Gary Smith and this is David Christophel standing behind the auto level, and that's Lawrence of Loomis, Stacy Li sitting here doing something.
(Laughter.)
HEARING OFFICER DEL PIERO: Obviously, you couldn't identify them because of the quality of the photograph; is that it?
MS. CAHILL: It's because of the light in the room. This is DFG 87.
HEARING OFFICER DEL PIERO: That explains it.
MS. CAHILL: And the fish which I didn't even see was DFG --
DR. LI: I don't think we've gotten to the fish yet.
MR. DODGE: It looks to me like Mr. Birmingham will have greater problems than just having a black and white copy of that one.
HEARING OFFICER DEL PIERO: It's because we haven't gotten it dark enough in here yet. If we cover all of watch faces, we probably could get it dark

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enough.

DR. LI: That field data is collected by stringing, essentially, a tape across the streams and measuring depth, velocity at most of the flows, water surface elevation, a measurement called "stage of zero flow," which is a measurement of the downstream hydraulic control.

HEARING OFFICER DEL PIERO: Doctor, they told us you could even watch the slides and talk at the same time. This is a test.

DR. LI: Yes, it is.

Next slide, please. And after the data's collected, the model is calibrated to those measurement flows and weighted usable area stream discharge relationships are --

HEARING OFFICER DEL PIERO: Mr. Birmingham? Grab Scott. Make him sit down and let go of the light switch. That's fine.

(Laughter.)

MR. STEIN: L.A. DWP's expert had the lights on in the front of the room where the slides were and the lights off in the back of the room where they weren't.

MR. DODGE: I believe that Dr. Stine has arrived.

(Laughter.)

HEARING OFFICER DEL PIERO: Really? I hadn't

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noticed.

(Laughter.)

Q BY MS. CAHILL: This is Figure 21 from DFG 52.

A BY DR. LI: Anyway, you develop relationships for four life stages of brown trout; spawning, adult, juvenile, and fry.

Next slide. Fish resources. We also collected information of fish species and their populational characteristics in 1987.

Next slide, please. Here we go again. Gary's playing D.W. Griffith (phonetic) here and photographing us. This is David Christophel applying the electric field to the fish, and that's how you catch fish, you estimate numbers of fish within a confined part of the stream. It's blocked off by nets to preclude movement of fish in or out of these sections, and based upon a removal pattern, fish abundance is estimated.

Q This is DFG 85.

A Next slide, please. This is a picture of one of the larger fish that was caught in 1987. This fish was about 14 and a half inches long, as I recall.

Q DFG 86.

A Next slide, please. Effluvial geomorphology was an important component in the Rush Creek study and Dr. Kondolf was responsible for those elements.

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Next slide, please. Water temperature modeling is an important component, particularly in Rush Creek.

Next slide, please. We measured water temperatures at four locations in Rush Creek. Station One is right at Mono Gate One where the water comes out of the lake. Station Two is at Old Highway 395. Station Three is at The Narrows, and Station Four is at The Ford.

The -- what you see with this, in brief, is very

small fluctuations of daily water temperatures at Station One increasing downstream, and I will point out that in -- at Station Three and at Station Four, water temperatures exceeded 80 degrees with flow of 19 second-feet in August. 80 degrees is sort of a rule-of-thumb temperature that is indicating that water temperatures may be too high for trout populations.

Q Dr. Li, you may have misspoke and you said August, but I think you pointed at July. Can you clarify that, please?

A I misspoke. It is in July. July and August tend to be the highest water temperature times for our region of the country.

Q And this is Figure 42 in DFG 52.

A Next slide, please. We made assessments of riparian vegetation, and now we're coming to instream

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flow recommendations. And David will run you through those.

A BY MR. CHRISTOPHEL: Dr. Li has just gone through and described the various study components that were part of the instream flow investigation and, to one extent or another, each of those studies was used in the development of the instream flow recommendations.

Before I begin, though, I'd like to repeat our objective because I think it's important in the understanding of why we approached this the way that we did. Our objective was to identify a flow regime in Rush Creek that would maintain brown trout habitat that was within the context of the channel as it existed in 1987 and consideration of the flows unimpaired by diversions at Grant Lake.

MR. BIRMINGHAM: Could the Reporter mark that, please?

MR. CHRISTOPHEL: We approached that objective based on a goal of maintaining the median habitat level of Rush Creek that would occur in the absence of diversions. The median habitat is simply the amount of habitat that is there at least half of the time. It's also the habitat level about which habitat values fluctuate.

We also developed the flow recommendations in

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consideration of hydrologic conditions and, as you've heard, we developed our flows for dry, normal, and wet conditions.

We obtained the median habitat values from a habitat duration analysis -- and could I have the first slide? These values for weighted usable area were tabulated then for each brown trout life stage, for each month, and for each hydrologic condition. From those median habitat values, then, we identified the flow level --

MR. BIRMINGHAM: Excuse me. I wonder if you could possibly go to the other side of the screen.

MR. THOMAS: I would rather block counsel for L.A. than the Board member.

MR. BIRMINGHAM: I didn't mean to request --

HEARING OFFICER DEL PIERO: We can see just fine. Stay right where you are. All of us can see just

fine.
MR. CHRISTOPHEL: Okay. Well, I prefer to speak to you, too, but -- we identified the flow levels --
HEARING OFFICER DEL PIERO: If you speak into the microphone, we'll be happy. Okay?
MR. CHRISTOPHEL: -- the flow levels that were associated with those median values; in other words, those are the flows that would produce those median

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values in the stream. Those flow levels were obtained from the habitat discharge relationship that Dr. Li had indicated earlier. As an example -- if I could have the next slide, please.
MS. FORSTER: If you stand at the corner of the podium, I think we can see.
MR. CHRISTOPHEL: For example, in September under dry conditions, the median habitat value was 180,493 square feet.
Next slide, please. From the habitat discharge relationship, then, that flow or that habitat amount corresponded to a flow of 39.6 cfs. Those flows, then, associated with the median habitat values, were the basis for our flow recommendations -- can we have the next slide, please? -- which are indicated in the white. Those white numbers, then, are the flows associated with the median habitat values for each of those months and under each hydrologic condition.
We also considered the results of the other investigations in an effort to adjust those accordingly. One of the considerations that we made was for water temperature and, based on our water temperature modeling, we found that for the flows that that we were recommending based on median habitat values, water temperature would not be a concern hence,

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water temperature was not used to adjust those flows any further.
We also considered the studies on effluvial geomorphology and specifically, the sediment transport model. From that modeling, we found that spawning gravel in Rush Creek, particularly in Reaches Two and Three, became mobile at flows of 60 cfs and greater. Our concern was that if spawning gravel was blocked by Grant Dam, that continued or sustained flows greater than 60 cfs would adversely influence spawning habitat in Rush Creek. What we did to avoid that was to limit our flow recommendations, our monthly flow recommendations, to 60 cfs. And those months where we made those adjustments are indicated in the green.
We also made adjustments during the -- excuse me, the spawning period, November and December. Based on the median habitat values that were generated and the flows that corresponded to those, we noticed that under all hydrologic conditions, the flows during December were less than the flows that occurred during November. Our concern was that eggs deposited in the gravel during November may be adversely influenced by flow reductions in the following month, in December. What we did in that situation to avoid that potential problem is to take the average of the two months and

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apply that average flow level to both months.
A final consideration was made during dry hydrologic conditions. During August, October, and March, the flow levels that were associated with those months were considerably different than the flows that occurred in the months preceding and following. To provide a smoother flow transition from month to month, we took the average of the preceding month and the following month and applied that value to the month in question. For example, in March, based on median habitat, the flow that we would recommend would be 52 cfs. But, to smooth the transition, we took the average of the 32 cfs in February and 35 cfs in April and used a value of 34 cfs during that month. These flows, then, as adjusted, served as the basis or served as our instream flow recommendations to the Department of Fish and Game, and they are the flows that appeared in our report.
Subsequent to that report, and in consideration of the gravel replenishment program that was going on, the California Department of Fish and Game removed the restriction that we had imposed, the 60 cfs cap, and returned the numbers back to what we would have recommended if spawning gravel considerations had not been an issue.
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May I have the next slide, please? These flows, then, are the final recommendations made by the Department of Fish and Game.
And that concludes my testimony.
Q BY MS. CAHILL: Those final flows, by the way, are in an addendum that should be in the beginning of everyone's copy of the Rush Creek report. And if they are not, let us know, and we will attach one. Those numbers are also found in the testimony of Gary Smith.
Thank you, Mr. Christophel.
Dr. Li, would you now basically explain the Lee Vining IFIM study? And I think we can have lights.
A BY DR. LI: Aquatic Systems Research was awarded the Lee Vining Creek study in 1990 and not surprisingly, I guess, the thought pattern that was developed in the Rush Creek study was continued and elaborated upon in the Lee Vining Creek study.
It also is a two-stage stratified, random-sampling design by reach and by habitat type. The habitat types were defined through improved methods of habitat delineation. There was a component of hydrology that studied the same components as the Rush Creek study in terms of determining the stream gains and losses and examination of the hydrological record. And there are a variety of other complementary studies that were --
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that were performed.
But to cut to the quick with this --
Q If you want to take down the fish --
MS. FORSTER: Oh, no.
MS. CAHILL: I don't want to risk our borrowed fish being hurt.
HEARING OFFICER DEL PIERO: Who does the fish

belong to?
MR. LI: The fish belongs to Ken Rockel (phonetic), Bridgeport Hardware Store up there.
HEARING OFFICER DEL PIERO: My nine year old didn't believe you, did he?
DR. LI: What he said was he caught one that big, but you didn't.
HEARING OFFICER DEL PIERO: He did. It was a salmon, though. He didn't tell you it was out in the middle of Monterey Bay.
DR. LI: The flow data for Lee Vining were collected at three separate flows, about 50, about 35, and about 3 cfs. Tom Payne did final calibration of the model to make sure that they were calibrated, and from that we get weighted usable area discharge relationships for life stages of brown trout, spawning, adult, juvenile and fry.
I am pointing to a blowup of Figure 16 from DFG

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54. I'm going to be writing on an easel here, and I want to provide the Board my thought process for developing the flows for Lee Vining Creek.
Fish and Game -- there are two target life stages used to develop the instream flow schedule. Adults, and this life stage was under consideration from April through September, and spawning, which occurs between October and March. The period from October to March covers not only the period when the fish are actively spawning, but also takes into consideration the incubation environment of the developing embryos in the gravels.
The goal for our study was to mimic the natural hydrograph, so we developed our recommendations bases upon water years, dry, normal.
MR. HERRERA: Ms. Cahill, that's 20 minutes.
MS. CAHILL: Mr. Del Piero, I would apply for an additional 20 minutes.
HEARING OFFICER DEL PIERO: Given the nature of the panel, it's granted. I think that will be the last 20 minutes.
MR. BIRMINGHAM: Excuse me, Mr. Del Piero, there are a number of witnesses here, and it is a subject which is of importance, and the Department of Water and Power would have no objection if Ms. Cahill got

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additional time beyond this 20 minutes. There are a number of other witnesses on the panel.
HEARING OFFICER DEL PIERO: I understand. I also understand that this is a summary of written testimony.
MS. CAHILL: In fact, both Mr. Payne and Mr. Vorster will simply identify their testimony.
HEARING OFFICER DEL PIERO: That's fine.
DR. LI: So since we're to mimic the natural hydrograph, we recommend 80 percent of the measured weighted usable area in dry years. This 80 percent seems to be reasonable. Dr. Hardy identified that as a reasonable level to recommend.
90 percent in -- 90 percent of maximum measured in normal years, and 100 percent in wet years when there

is enough water for -- to completely satisfy the fish but also to allow diversions, too.
Q BY MS. CAHILL: Dr. Li, would you clarify, too, those are percentages of habitat rather than percentages of flow; is that correct?
A That's correct. Now, initially, I thought an 80-, 90-, and 100-percent schedule would be adequate for the spawning period. But as it turns out, 80 percent of the maximum flow for spawning would only support something like 60 percent of the adult habitat, and

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since we have to balance for life stages, we increase this to 90 percent, which accounted -- which would support approximately 70 percent of the adult habitat. And I made a similar adjustment for normal years and increased this to 100 percent, which supported approximately 80 percent of the adult habitat in normal years.
There were other -- so, if we go through this -- if we go through this process in using one of the more easy ones to demonstrate, 100 percent in the wet year, you go to the adults, comes to -- the highest measure comes down to about 95 cfs. And that applies to the wet period for the adults. In addition to these -- the schedule, there are provisions in normal years for a three-day flushing flow of 160 second-feet during the runoff period. And during wet years, there would be a channel maintenance flow of 160 second-feet for 30 days in the wet years. These recommendations are based upon the recommended flow or the natural flow, whichever is less.
That ends my testimony for Lee Vining.
Q Thank you, Dr. Li.
Mr. Payne, would you please state your name and spell it for the record?
A BY MR. PAYNE: My name is Thomas R. Payne, P-A-Y-N-E.

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Q And have you had the opportunity to review DFG Exhibit 15?
A Yes, I have.
Q And is that a -- would you, please, in that -- is that a copy of the testimony you've submitted?
A Yes, it is.
Q And could you tell us what number should be inserted as the DFG report numbers?
A This was prepared prior to the assignment of these numbers, and in Paragraph Number 3, that should state "Exhibits DFG 54 and DFG 55."
Q And with that correction, is this a true and correct copy of your testimony?
A Yes, it is.
Q And have you reviewed DFG Exhibit 16?
A Yes, I have.
Q And is that a true and correct statement of your qualifications?
A Yes.
Q Would you briefly review your qualifications for us?
A I have a bachelors and a masters degree in fisheries biology from Humboldt State University. The

bulk of my experience since graduation has been at two jobs; one about eight years with the U.S. Fish and

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Wildlife Service as a fisheries and fish and wildlife biologist, and for the past 11 years, I have been a principal of Thomas R. Payne and Associates, a fisheries consulting firm that specializes in instream flow studies.

Q Could you very briefly, just in a sentence or two, tell us what your role was in the Lee Vining Creek study?

A Thomas R. Payne and Associates was a subcontractor to Aquatic Systems Research, and we participated in the field data collection for Lee Vining Creek study and performed the hydraulic calibration of the model for the Lee Vining study.

Q Thank you.

If we could mark Dr. Li's last exhibit before we forget, DFG 163.

Mr. Vorster, let me come to you next. Would you please state your name and spell it for the record?

A BY MR. VORSTER: My name is Peter Vorster. That's V, as in Victor, O-R-S-T-E-R.

Q Mr. Vorster, have you had the opportunity to review DFG Exhibit 13?

A Yes, I have.

Q Is that an accurate copy of your testimony?

A Yes, it is.

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Q Do you have any corrections to make?

A No, I do not.

Q And of you reviewed DFG 14?

A Yes, I have.

Q Is that a statement your qualifications?

A At the time I prepared this, it was.

Q Do you have corrections to make?

A No. Just minor additions since that time.

Q Is it basically true and accurate?

A Yes, it is.

Q Could you briefly summarize your qualifications as they relate to the work you did here, if that makes a difference.

A Yes. I've been investigating the hydrology of the Mono Basin since about 1978 and intensively since 1979. I did my master's thesis on the water balance of the Mono Basin, and I have been investigating the hydrology continuously since 1979 and have worked on the Rush Creek IFIM study, the Lee Vining Creek IFIM study, and have provided expert witness testimony in all the Mono Lake water rights cases. And I'm also a member of the restoration planning team for Rush and Lee Vining Creek.

Q Mr. Vorster, what parts of the Rush and Lee Vining Creek studies did you work on?

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A I worked on the flow history of the two streams, the water availability investigation as well as the flood analysis for Lee Vining -- the Lee Vining Creek study.

Q And are the results of your work accurately

reflected in the DFG reports that we've referred to today?
A Yes, they are.
Q Thank you.
Dr. Kondolf, would you please state your name and spell it?
A BY DR. KONDOLF: My name is G. Mathias Kondolf, K-O-N-D-O-L-F.
Q Dr. Kondolf, have you had the opportunity to review DFG Exhibit 11?
A I have.
Q And is that a copy of your testimony?
A Yes, it is.
Q And do you have any corrections to make?
A Yes, I do. On Page 9, I have some changes -- I'll begin with the fifth line from the bottom of the sentence, "For the purposes of flushing flows, a wet year is defined as one with runoff whose exceedence frequency is less than 34 percent, comma, a normal year with runoff with exceedence of 34 to 77 percent, comma,

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and a dry year as one exceedence frequency over 67 percent, period."
Q And with that correction, is that a true and accurate copy of your testimony?
A Yes.
Q And would you -- have you had an opportunity to look at DFG Exhibit 12? And is that a copy of your qualifications?
A Yes, it is.
Q And is it true and accurate?
A Yes, it is.
Q Have I already asked you to summarize your qualifications?
A Not yet.
Q Please do.
A I have a bachelor's degree in geology from Princeton University, a master's degree in earth sciences from University of California at Santa Cruz, and a Ph.D. in geography and environmental engineering from the Johns Hopkins University. My dissertation research concerned the spawning gravels of salmon and trout.
I am presently an assistant professor of environmental planning at University of California Berkeley, where I teach courses in hydrology for

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planners, environmental geology for planners, natural factors in design, and restoration of rivers and streams. My research concerns environmental river management, and my focus is on management of gravel in river systems including the effects of reservoirs and instream gravel mining. This has included some research into flushing flow requirements on eastern Sierra streams, the Trinity River, and looking at the problem in a general way.
I was part of the Rush and Lee Vining Creek study teams. For both those studies I conducted synoptic flow studies along those channels. I also conducted a historical geomorphic analysis of Lower Rush Creek and

an evaluation of spawning gravel resources with Scott Stine on Lee Vining Creek.

Peter Vorster and I have written several papers about geomorphology and hydrology of streams in the Mono Lake system.

Q And, in fact, is DFG 94 a paper that you and Peter Vorster wrote on hydrologic studies for Lee Vining Creek instream flow studies?

A Right. I wouldn't call that a paper, but a report.

MS. CAHILL: Could I inquire how much time we do have?

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MR. HERRERA: You have nine minutes.

Q BY MS. CAHILL: Dr. Kondolf, would you please summarize your testimony?

A Yes. Because the Rush Creek instream flow report did not include flushing flow recommendations, my direct testimony concerns flushing flows for Rush Creek.

Flushing flows are controlled high-flow releases from reservoirs prescribed to mimic functions of natural floods. Typically, the objectives can be summarized as sediment maintenance objectives, which usually are to remove fine sediments accumulated in gravel and turning over gravel deposits to maintain a loose texture.

The other set of objectives would fall under what I call channel maintenance,and below large reservoirs, this typically includes preventing vegetation encroachment. Here on Rush Creek, I think the channel maintenance objectives would largely be to promote channel narrowing, development of a complex bed topography, and deposition on developing flood planes. So on Rush Creek, the objectives of flushing flows should be to turn over the gravels and inundate shallow flood planes permitting deposition within the riparian vegetation establishing there, thus encouraging

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building of the flood plane. And by narrowing the channel and focusing some of the power of the stream, the expectation would be a more complex bed topography would develop.

I've recommended flushing flows of between 2 and 300 cubic feet per second. The duration of those, I have proposed, in wet years should be between 20 and 40 days, in normal years between 5 and 15 days, and no flushing flows in dry years. I have defined the years on the basis of exceedence probability of annual flow. So by taking the annual runoff for all years of record, those can be ranked, and then we can identify flows at the 33 percent exceedence level and the 67 percent exceedence level. The top third of the flows then would be considered the wet years. The middle third would be considered the normal. The bottom third would be considered the dry. And, in practice, the April forecast of runoff from the Basin could be used to indicate where the flows fell.

And here I'm recommending using the records of actual flow at the dam site, and this includes the

effects of regulation by the Southern California Edison projects higher in the basin. It could be argued that natural runoff should be used, unimpaired by Edison, and that probably is how one would interpret the

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testimony of Dr. Beschta and Hanson, I believe, also. And that's really just a matter of argument.

But I've chosen to take the actual flows, since those are the flow conditions that were present in the stream in 1940.

Many variables are involved because the Rush Creek system has been so profoundly altered. Historically, Rush Creek occupied multiple channels, and there seems to be general agreement that these should be rewatered. That certainly would be a consideration.

And the need for ramping has to be addressed. Ramping is really most important on the recession limb of a high flow. Natural hydrographs commonly have a steep rising limb and a more gradual recession limb. If recession is unnaturally rapid and flows are simply shut off, it's possible to strand fish, and it's also possible to induce bank failure as saturated banks drain and a positive poor pressure is developed.

The 10 percent ramping rate suggested by Hill and others, which is a paper DFG 72, and I think also Darrell Wong has suggested this is reasonable. I would regard this as a reasonable guideline for the recession limb. The rising limb could be more rapid.

Based on inspection of mean daily flows but not a systematic analysis of these rates of change, this 10

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percent figure looks quite reasonable.

Sufficient uncertainty exists that any flushing flow recommendation is really only a starting point. I would recommend systematic, scientific monitoring be undertaken to evaluate the effectiveness of the flushing flows. And in order to evaluate effectiveness, you have to articulate the objectives, which, again, I would say here would be gravel mobilization and maintenance of gravel quality, inundation of point bars in other incipient flood planes, and the development of a more complex bed topography.

I would argue that flushing flows be reconsidered in five or ten years in light of these observed effects.

MS. CAHILL: Thank you, Dr. Kondolf. Thank you, Gentlemen.

HEARING OFFICER DEL PIERO: Mr. Birmingham?

CROSS-EXAMINATION BY MR. BIRMINGHAM

Q I'd like to start with some questions about IFIM generally. And this is directed to anybody on the panel with the exception of Mr. Vorster.

Is it correct that the basic premise of IFIM is that more habitat means more fish?

A BY MR. SMITH: I will take that. That's one of

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the -- excuse me, yes.

Q Now, as I understand the IFIM studies that were conducted being presented by your testimony, and this

includes for you, Mr. Smith, the Owens River IFIM, the studies tried to identify criteria that would establish habitat to keep fish in good condition. Is that correct?
A I'm sorry. Would you repeat that again?
Q Well, the basic purpose of the IFIM was to identify minimum flows to maintain habitat sufficient to keep fish in good condition; is that right?
A The purpose of the investigations that we conducted was to identify flow regime which would maintain fish conditions in Rush and Lee Vining Creeks.
Q Now, what was the criteria used for the Rush Creek IFIM? Was it 50 percent of the brown trout, adult brown trout habitat?
A BY MR. CHRISTOPHEL: No, it was not. It was the median habitat value. Habitat expressed as weighted usable area.
Q So it was not 50 percent of the brown trout habitat exceedence?
A It was the 50 percent exceedence value, which is the same as the median value was.
Q Thank you.

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And on -- on Lee Vining Creek, as I understand Dr. Li's testimony, it was 80 percent of optimal habitat condition generally; is that correct?
A BY DR. LI: For dry years.
Excuse me, Mr. Birmingham, the 80 percent of maximum measured weighted usable area for adults in dry years, and that's for the period from April to September.
Q And then for wet years it's 100 percent?
A 100 percent.
Q Normal years,it's 90 percent?
A Yes, Sir.
Q And then for spawning periods, it's -- for normal years, it's 100 percent of the spawning habitat?
A That's correct.
Q And 90 percent of --
A Maximum in dry years.
Q You Gentlemen will have to forgive me because normally I am a little bit better prepared when I cross-examine a panel, particularly a panel like this. But we went here last night until nine o'clock, and it reduced the amount of time I had to prepare. I apologize for that.
Now, as I understand your response to my earlier question, Mr. Smith, about the basic premise of IFIM,

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it was my first question, IFIM is not related to fish numbers, but it's based on physical habitat?
A BY MR. SMITH: Correct.
Q And it follows basically what Mr. Wong said today. If you create habitat, you're going to protect fish.
A If you create habitat, fish should respond accordingly.
Q Now, did I understand, Mr. Li, that you stated that -- excuse me, Dr. Li. I beg your pardon. Dr. Li, that the recommendations that you developed for Lee

Vining Creek were intended to mimic the natural hydrograph?
A In that we varied the recommendation by wetness with water year, yes. That would be runoff.
Q Is it correct that the minimum flows that you have recommended for different months are in excess of the flows that are actually present in Lee Vining Creek during those months?
A I think we're getting into an apples-and-oranges situation here. May I amplify on it?
Q Please do.
A If you take all the water years and simply use Table 12, what you're doing is you're not accounting for water availability. But if you stratify those data

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by wetness of water year, you'll get a difference, and those differences are reflected in -- let me refer you to Figures 65 through 67, Page 164 through 166 of DFG Exhibit 54. These figures have a representation of the flow recommendations compared with the 50 percent exceedence flow by water year.
Q Well, let's take a look at Figure 65.
A Yes, Sir.
Q And focus on the month of October.
A Yes, Sir.
Q 65 is the dry year recommendation; is that correct?
A 65 --
Q Figure 65 is a --
A Yes. Dry hydrologic conditions.
Q Thank you.
Now, looking at Figure 65, in October, the recommended stream flow is 25 cfs; is that correct?
A That's correct.
Q And is it correct that the stream flow in October, the long-term average --
A 50 percent. The median.
Q 50 percent of the median?
A 50 percent exceedence.
Q 50 percent exceedence. In other words, 50 percent

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of the time --
A Half the time you're going to have flows greater and half the time you're going to have flows lower.
Q So half of the time in Lee Vining Creek during a dry year, the way you've defined a dry year, half the time you're going to have flows that are are lower than the proposed minimum number flow?
A In which case, we will accept natural flow.
Q So your answer to my question was yes?
A Yes.
Q Let's look at 66. 66 is the graph for normal years; is that correct?
A That's correct.
Q And the -- again, let's look at the month of October. Now, during normal years in the month of October, half of the time there is going to be less water in the stream than you have proposed as a minimum flow?
A That's correct.

Q And the same is true for the months of August, September, November, December, January, February, and March. Is that right?
A That's correct.
Q BY MR. SMITH: Mr. Birmingham, may I add something to Dr. Li's response?

Q If it's necessary in order to respond my question, please do.
A Thank you. Something should be pointed out here. The stream flow recommendations in the Lee Vining Creek study are the flows included in -- on the -- what's that table -- I'm sorry. I can't see it from here -- Table 35 in the report, or the flow, the natural flow, if you will, whichever is less. The natural flow in this case is defined as the flow that reaches L.A. DWP's diversion facility. So, in the cases -- in the months and water year-types that you've inquired about, the actual flow that would be going down Lee Vining Creek is the flow that's demonstrated -- excuse me, that's demonstrated in, we'll say, Figure 65 here by the squared line -- the squared symbols on the figure. It's not actually Fish and Game's recommendations. It would be the natural flow. Again, natural defined as I previously defined it.
Q So if I understand what you just said, Mr. Smith, and I look at Table 66, what you're telling me is that during normal years, and during 50 percent of the time during those -- let me restate the question. This is really ambiguous. What I said was really ambiguous.
What you're telling me is that for the months of August, September, October, November, December,

January, February, and March, 50 percent of the time, all of the water that is in the stream is required to keep fish in good condition.
A First off, I believe you were referring to the Figure 66 rather than Table 66.
Q Figure 66.
A Why just so the record will be clear. And if I -- let me restate your question just to make sure I understand it. In the months of August, September, October, November, December, January, February, March -- and did you include April?
Q No, I didn't. But you're right, I should have.
A And April. What is the question regarding those months?
Q 50 percent of the time, all of the water that's in the stream is required -- at least 50 percent of the time, all of the water that is in the stream is required to keep fish in good condition.
A Is to maintain the habitat to keep fish in good condition.
Q Now, as I understand it, these flows are the actual flows that come into the diversion facilities of DWP; is that correct?
A That's correct.
Q These are not the natural flows, are they?

A Lee Vining Creek is not a natural system at this

time.
Q So these flows are not the natural flows?
A These are -- these are the flows that are impaired by SCD operations.
Q So using the common understanding of "natural," these are not the natural flows?
A That's correct.
Q Now, this is a question that I might have to direct to Mr. Vorster, and I hate to but, Mr. Vorster, you're free to jump in here if it's necessary to answer the question.
Isn't it correct that the natural flows are actually less than the impaired flows that are coming into the DWP diversion facilities during many periods?
A BY MR. VORSTER: During the fall and winter months, the effect of the upstream reservoirs operated by SCE is to augment the flow that would occur naturally in the stream. Not all the time, but commonly.
Q So your answer to my question is yes?
A Yes.
Q Thank you.
So during -- during the fall and winter months, the natural flow is less than the flow depicted in these charts or these figures, generally?

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MR. DODGE: Objection. It misstates Mr. Vorster's testimony, as I heard it. I heard him say "winter."
MR. BIRMINGHAM: I believe Mr. Vorster said fall and winter. Perhaps we could ask the -- we'll just ask him. Was it fall and winter, Mr. Vorster?
MR. VORSTER: I believe I said fall and winter, and I believe you're using the word "natural" now in a very strict sense. We've now heard "natural" used in several different ways, so --
Q BY MR. BIRMINGHAM: Let me tell you the way I'm using it so we can make sure that the record's clear. "Natural" means unimpaired by man. Is that a common understanding of the word "natural"?
A That's the way we're now using it.
Q Is that the way you were interpreting my use of the term "natural" when you answered my question?
A Yes.
Q Now, was there a draft copy of this report? I think this is Department of Fish and Game 54, is that correct, Ms. Cahill? It is the Lee Vining Creek?
MS. CAHILL: Yes. The final is DFG 54.
Q BY MR. BIRMINGHAM: The final. Was there a draft report of this circulated?
A BY DR. LI: There were several drafts, unfortunately.
Q I don't know if all of you were in the room at the

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time, but I know, Mr. Smith, you were when Dr. Hardy was testifying and Mr. Hanson was testifying. Is that -- were you present then?
A I was present through some of their testimony. I am not sure I was here through all of their testimony.
Q And you heard Ms. Cahill or Mr. Thomas ask Dr. Hardy and Mr. Hanson whether or not it was correct that they had based their recommendations to the State Water Resources Control Board on a draft version of

Department of Fish and Game Exhibit 54?
A I believe that question was asked.
Q And the question -- well, forget that. Excuse me, Sir. I've forgotten your name. Is it Mr. Payne? Is that right?
A BY MR. PAYNE: Mr. Payne.
Q Mr. Payne, you had submitted some written testimony that was signed in September of 1993 to the State Water Resources Control Board; is that right?
A I don't have that in front of me at this point, but I believe that's when I prepared my written testimony, and that is the DFG exhibit.
Q And it's DFG Exhibit 15?
A As I recall, yes.
Q Let's make sure. I want to make sure I've got this correct. DFG Exhibit 15.

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It was necessary for you to fill in some blanks when you testified about this today; is that right, Mr. Payne?
A Yes.
Q And that was -- you needed to fill in the final Department of Fish and Game report numbers with respect to DFG 54 and 55; is that right?
MS. CAHILL: Objection. That does misstate the testimony. The testimony does not effect the stream evaluation report number, but only the exhibit number for this proceeding.
HEARING OFFICER DEL PIERO: Mr. Birmingham?
MR. BIRMINGHAM: I'm not suggesting that it effects the evaluation. I'll just ask you in a straightforward fashion.
Q BY MR. BIRMINGHAM: When you prepared your testimony, you didn't know what the Department of Fish and Game report number was for DFG 54?
MS. CAHILL: Exhibit.
Q BY MR. BIRMINGHAM: Exhibit 54?
A BY MR. PAYNE: I did not know the exhibit number at that time.
Q This report was finalized, DFG 54 was finalized in July and was distributed in August; is that correct, Mr. Smith?

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A BY MR. SMITH: I would have to look at the department's correspondence on that and confirm those days.
Q I'm showing you a document that appears to be an August 12, 1993, memorandum to interested parties.
A This is where -- one of the transmittal letters sending the documents to interested parties --
Q Excuse me, Mr. Smith. There's no question pending. What I'd like to ask you is looking at the document that I have just handed you, does it refresh your recollection as to when the Department of Fish and Game distributed DFG Exhibit 54 to the parties?
A I believe there are two transmittal letters regarding the report.
HEARING OFFICER DEL PIERO: Mr. Smith, you're not being responsive to the question.
MR. SMITH: I'm trying to be responsive,

Mr. Del Piero.
HEARING OFFICER DEL PIERO: The question he asked was did seeing that refresh your memory as to when the document was released? Not anything else. Just did it refresh your memory?
MR. SMITH: Partially.
Q BY MR. BIRMINGHAM: Is it correct that DFG 54 was circulated to the parties in August of 1993, Mr. Smith?

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A BY MR. SMITH: I believe, and this is where -- why I have said partial. There was also another --
Q Mr. Smith, if you don't know, an "I don't know" is perfectly acceptable, and we would prefer to have that rather than your speculating, seriously.
A I'm not speculating. I'm trying to explain why I can't answer your question definitely. I believe it was early August, but there was another cover letter to Mr. Anton (phonetic) at the board. And I cannot remember how many people were included on that cc list, and I can't -- and I don't recall if that's the exactly the same day that the interested party letter was prepared.
Q Now, with respect to the draft report. Between the time -- let me ask you this. After preparation of the draft report, did you do any additional in-stream study? Now, I'm talking about the draft that -- of the Lee Vining Creek stream evaluation report. After that was prepared --
A BY DR. LI: No.
Q Dr. Li?
A Dr. Li. No.
MR. DODGE: Excuse me, Mr. Chairman, I'm sorry to interrupt, Mr. Birmingham. I have an obligation elsewhere, and I would request to be dropped down in

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the cross-examination order if you get to me tonight.
HEARING OFFICER DEL PIERO: I'm not going to get to you tonight. We're going to go another ten minutes and then Mr. Birmingham will start up again tomorrow morning at 8:30. Okay? I assume you weren't going to be done in ten minutes, Mr. Birmingham?
MR. BIRMINGHAM: That's a pretty safe assumption.
MR. HERRERA: Two and a half minutes remaining in the first 20.
MR. BIRMINGHAM: I'll make an application for an additional.
HEARING OFFICER DEL PIERO: It's granted, and we will end this at 20 minutes to the hour.
MR. BIRMINGHAM: Thank you very much.
Q BY MR. BIRMINGHAM: Between the time the draft was circulated -- the draft report was circulated, wasn't it, Dr. Li?
A BY DR. LI: that's my understanding.
Q Between the time the draft report was circulated and the final report was circulated, did you prepare any additional hydraulic simulations?
A I did not do any hydraulic simulations that were included in this final report, but I was playing around with my data.
Q Did you change the methodology in which -- the

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methodology -- the way in which you calculated the weighted usable area?
A I'm sorry. I drifted. Can you repeat that?
Q Certainly. Between the time the draft report was circulated and the final report was circulated, did you change the methodology by which you calculated the weight usable area?
A No.
Q Now, when -- is it correct that if I were to compare the --
A Oh, I misspoke. Yes, I did.
Q How did you change the method -- methodology by which you calculated weighted usable area?
A The reason why I got confused was strictly speaking, I did not change the method, but I -- in the initial draft I did the sin of omitting data.
Q Can you identify for me, please, the data that are in the final report which are not in the --
A The data that is in the final report are all the data that were collected and compiled.
Q Which data did you exclude in the draft report?
A I omitted Reach Three.
Q You are say in the "draft report," Dr. Li, excuse me. I'm sorry. Were you conferring?
A Tom, there is a confusion here. Are you referring
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strictly to -- perhaps it would be better for you to repeat the question so that I'm clear on what you're asking.
Q Between the time you circulated the draft and the time you circulated the final report that has now been identified at Department of Fish and Game 54, did you change the methodology by which you calculated weighted usable area?
A Strictly speaking, no.
Q Now, it's correct, isn't it, that the total system-wide weighted usable area did change?
A That's correct.
Q And it changed because you included data in the final report that were not included in the draft report?
A That's correct.
Q And you said that those were what data?
A Reach Three.
Q So it was weighted usable area data from Reach Three; is that correct?
A That's correct.
Q I'm going to show you a document, Dr. Li, and I'm going to ask if you've seen this document before. It has not been identified as an exhibit.
MS. CAHILL: Could I see it?
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MR. BIRMINGHAM: I beg your pardon, Ms. Cahill. It's very rude of me. Ms. Cahill's not had an opportunity to see this.
Q BY MR. BIRMINGHAM: The document that I'm handing you, Doctor -- we've just cut to the chase. This is a copy of the draft report on -- on Lee Vining Creek stream evaluation report. Isn't that correct?

Dr. Li, is it correct that that is a copy of the draft report?
A BY DR. LI: Thank you, Mr. Birmingham. It appears to be one of the drafts.
Q Thank you.
HEARING OFFICER DEL PIERO: Tom. You can start asking all the important questions now.
(Laughter.)
MR. BIRMINGHAM: Well, let's see if I can do that, Mr. Del Piero.
HEARING OFFICER DEL PIERO: Mr. Dodge just left.
(Laughter.)
MR. BIRMINGHAM: Oh, did he. I thought you were commenting on the importance of the questions I'd asked up to this point.
HEARING OFFICER DEL PIERO: No. But he heard on the way out the door.
Q BY MR. BIRMINGHAM: Now, Page 152, do you have a copy

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of the draft report with you?
A No.
Q Well, let me read along -- read this and you can read along with me to make sure that I read it correctly. This is on Page 152, and states, "Reach Two alone provided weighted usable area stream discharge relationships that were meaningful. Reach Three estimates were unrealistic. Reaches Four through Six did not change significantly with change in discharge."
Did I read that accurately, Dr. Li?
A BY DR. LI: You read rather well.
Q Thank you.
So in response to my question, yes, I did read it accurately?
A Yes.
Q Now, when you wrote this draft report -- you were the author of the draft report Dr. Li?
A Yes, I was.
Q When you wrote this draft report, was it your opinion that Reach Two alone provided weighted usable area stream discharge relationships that were meaningful?
A Do you want the short answer or the long one?
Q Can you answer my question yes or no, and then if you feel an explanation is required, please explain

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it. I don't want to cut you off, but I think my question can be answered yes or no.
A Okay. The answer to the question is yes, and these are the reasons why. The strength of the two-stage stratified, random-sampling design allows anybody doing this to take a look at different reaches to see the effect of either habitat-type representation or weighted usable area contribution by reach or by habitat type. If you take a look at the data, it is not that reaches -- it's a bit misleading to say that Reaches Four through Six are not significant. They provide some habitat. It's simply that Reach Two, being the reach with the best habitat, had larger effect upon the total weighted usable area compilation. And it was, therefore, the most significant reach.

Q Now, you say here that, "Reach Three estimations were unrealistic." At the time you wrote this, was it your opinion that the Reach Three estimations were unrealistic?
A This again is going to be a long -- we're going to have a furry dog here at the end, Tom, but that's true. Do you want to know the reasons why?
Q Let me ask -- well, yes. If you would like to explain the reasons why, I really don't want to cut you off.

HEARING OFFICER DEL PIERO: When he gets done explaining the reasons why, I'm going to explain the reasons why we're going to be over. Go ahead and answer the question, Dr. Li, and then we're going to call it a day.
DR. LI: Reach Three is the steepest reach on Lee Vining Creek and, at the time I wrote that, I was putting greater credence on the amount of entrained air in the -- in the creek at the different flows and, based on that and knowing that very steep reaches are difficult to simulate, I, due to a lack of discipline, removed that data.
Upon rethinking that, I felt it was more responsible to provide those data in the final report. But whether you include Reach Three or exclude Reach Three doesn't make any difference.
HEARING OFFICER DEL PIERO: Ladies and Gentlemen, it's 20 minutes to five and, as I promised, we're going to be out of here before five o'clock.
Any questions before we adjourn until 8:30 tomorrow morning? None?
MS. CAHILL: Can I just inquire as to one of these witnesses?
I would like to inquire if any of the parties are going to have questions for Mr. Payne? It's most

inconvenient for him to be here tomorrow.
HEARING OFFICER DEL PIERO: Where are you going to be, Mr. Payne? Not that it's a whole lot of our business.
MR. PAYNE: I'm a contractor to the department on the Kantera (phonetic) chemical spill recovery assessment, and tomorrow there's a meeting regarding the restoration activities for the Upper Sacramento River.
HEARING OFFICER DEL PIERO: Whereabouts?
MR. PAYNE: It's in Redding.
HEARING OFFICER DEL PIERO: Inconvenient.
MR. BIRMINGHAM: I have no questions for Mr. Payne.
HEARING OFFICER DEL PIERO: No questions.
Mr. Roos-Collins?
MR. ROOS-COLLINS: I do have questions for Mr. Payne.
HEARING OFFICER DEL PIERO: How many?
MR. ROOS-COLLINS: Five to ten minutes.
MS. SCOONOVER: I have no questions for Mr. Payne.
HEARING OFFICER DEL PIERO: Mr. Dodge is gone.
What time is your meeting, Mr. Payne?

MR. PAYNE: 8:30.
MR. BIRMINGHAM: Mr. Del Piero, would it be
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acceptable for Mr. Payne to come back maybe after his meeting and we can take him out of order?
HEARING OFFICER DEL PIERO: When's your meeting over, Mr. Payne?
MR. PAYNE: There was no specified time, but it would probably last all day, is what I was anticipating.
HEARING OFFICER DEL PIERO: How are you getting there?
MR. PAYNE: That's undecided. I found out I was going to be here at about 10:30 last night. So I flew down this morning. I do have an employee who is in Redding that I could fly, otherwise I could fly back to Arcada tonight and probably drive over.
HEARING OFFICER DEL PIERO: So are you staying here tonight?
MR. PAYNE: That depends on the outcome of this discussion.
HEARING OFFICER DEL PIERO: My inclination, in all candor, is that I put you on at 8:30 tomorrow and have everybody ask you all the questions and have you out of here probably before nine o'clock. What's the flying time from here to Redding?
MR. PAYNE: It's an hour, depending on the scheduling.
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HEARING OFFICER DEL PIERO: Is it possible for you to you notify folks that you're going to be an hour and a half late?
MR. PAYNE: Yes.
HEARING OFFICER DEL PIERO: Why don't you plan on doing that?
MR. PAYNE: Okay.
HEARING OFFICER DEL PIERO: Okay. And then everyone else -- I don't know if anybody's going to have the opportunity to be in contact with Mr. Dodge this evening.
Dr. Stine, are you going to see him tonight?
DR. STEIN: I assume I will. Yes.
HEARING OFFICER DEL PIERO: Or at least is there a phone machine somewhere --
DR. STEIN: I can get in touch with him.
HEARING OFFICER DEL PIERO: Will you leave a message for him and let him know if he has questions of Mr. Payne he needs to be prepared to ask those tomorrow morning at 8:30?
Mr. Payne, I promise you I'll have you out of here. Okay?
Ladies and Gentlemen -- Mr. Canaday.
MR. CANADAY: Mr. Del Piero, we need to inform the parties that tomorrow is a shorter day than today. We
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are going to recess at three o'clock, Sir.
HEARING OFFICER DEL PIERO: What time did we notice it?
MR. CANADAY: Three o'clock.
HEARING OFFICER DEL PIERO: Then we're recessing,

Ladies and Gentlemen, at three o'clock. In fact, Ladies and Gentlemen, I think it's probably safe to assume we aren't going to break for lunch tomorrow. Take maybe a 15-minute break, and then we'll keep going. We're going to try and get as much done as possible, inasmuch as we aren't going to meet again until the following Monday.

Mr. Canaday?

MR. CANADAY: I don't know whether I should throw the idea out. Ms. Cahill, is Basco (phonetic) going to come and present testimony?

MS. CAHILL: It's flexible. If the -- Basco (phonetic) and one of their subs is going to come and Basco did Walker, Parker, and Upper Owens. The sub is ill, and so I was going to do Upper Owens issues probably next week.

Rick Sitz (phonetic) of Basco could be here tomorrow to talk about Parker, Walker, which I understand is not a very big issue, and so I could put on Rick Sitz (phonetic) of Basco on just Walker, Parker

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only, and George Hycee (phonetic) of the department on the fish passage problems tomorrow after we finish with this panel.

We would then have one duck panel jointly with the Mono Lake Committee on Monday, and following that panel, we would have one panel on the Upper Owens River, and that would conclude our case.

HEARING OFFICER DEL PIERO: Thank you very much. I appreciate particularly your efforts at paneling these witnesses.

MS. CAHILL: It is possible that we'll end up with some time tomorrow.

HEARING OFFICER DEL PIERO: Why don't you have him here?

MR. CANADAY: Mr. Sitz (phonetic) is a Sacramento resident, and we ought to take advantage --

MS. CAHILL: What I would do is put Mr. Sitz (phonetic) on tomorrow on Walker, Parker, and then I will bring him back on Upper Owens. And at that time, I believe that Gary Wulff (phonetic) will be with him as well, and if you have any Walker, Parker left-over questions for Mr. Wulff at that time, you could ask him.

HEARING OFFICER DEL PIERO: You all have a nice night, Ladies and Gentlemen. We'll see you at 8:30

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tomorrow morning.

(Whereupon the proceedings were adjourned at 4:45 p.m.)

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REPORTER'S CERTIFICATE

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STATE OF CALIFORNIA)
) ss.
COUNTY OF SACRAMENTO)

I, KELSEY DAVENPORT ANGLIN, certify that I was the official court reporter for the proceedings named herein; and that as such reporter, I reported, in verbatim shorthand writing, those proceedings, that I thereafter caused my shorthand writing to be reduced to typewriting, and the pages numbered 1 through 246 herein constitute a complete, true and correct record of the proceedings:

PRESIDING OFFICER: Marc Del Piero
JURISDICTION: State Water Resources Control Board
CAUSE: Mono Lake Diversions
DATE OF PROCEEDINGS: December 7, 1993

IN WITNESS WHEREOF, I have subscribed this certificate at Sacramento, California, on this 14th day of December 1993.

_____
Kelsey Davenport Anglin, RPR,
CM, CSR No. 8553