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 at:
901 P Street
Sacramento, California
Monday, December 6, 1993

VOLUME XVIII

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

BOARD MEMBERS

MARC del PIERO

STAFF MEMBERS

DAN FRINK, Counsel
JAMES CANADAY, Environmental Specialist
STEVE HERRERA, Environmental Specialist
RICHARD SATKOWSKI, Engineer
HUGH SMITH, Engineer

COUNSEL AND OTHERS

For the U.S. Fish and Wildlife Service:

ERIKA NIEBAUER
Assistant Regular Solicitor
Office of Solicitor
Pacific Southwest Region
2800 Cottage Way
Sacramento, California 95825

For the Sierra Club:

LARRY SILVER

For California Department of Fish and Game:

HAL THOMAS
VIRGINIA CAHILL
McDonough, Holland & Allen
555 Capitol Mall, Suite 950
Sacramento, California 95814

For the U.S. Forest Service:

JACK GIPSMAN
Office of General Counsel
U.S. Department of Agriculture

For the National Audubon Society and Mono Lake Committee:

BRUCE DODGE
PATRICK FLINN
Attorneys at Law
755 Page Mill Road
Palo Alto, California 94304

For California Trout:

RICHARD ROOS-COLLINS
CYNTHIA KOEHLER
Attorneys at Law
114 Sansome Street, Suite 1200
San Francisco, California 94104

COUNSEL AND OTHERS

For the City of LA and LA DWP:

THOMAS W. BIRMINGHAM
JANET GOLDSMITH
ADOLPH MOSKOVITZ
Attorneys at Law
Kronick, Moskovitz, Tiedemann & Girard
400 Capitol Mall, 27th Floor
Sacramento, California 95814

For State Lands Commission, Department of Parks and Recreation:

MARY SCOONOVER
Assistant Attorney General
1515 K Street
Sacramento, California 95814

For Meter Water District of Southern California and LA MWD:

VICTOR GLEASON
Attorney at Law
1111 Sunset Boulevard
Los Angeles, California 90050-0153

FRANK HASELTON
Haselton Associates

JOHN ARCULARIUS

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E X H I B I T S



SACRAMENTO, CALIFORNIA
MONDAY, DECEMBER 6TH, 1993, 8:45 A.M
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HEARING OFFICER DEL PIERO: Ladies and Gentlemen, this hearing will come to order. This is a continuation of the hearing being conducted by the State Water Resources Control Board regarding the amendment to the city of Los Angeles' water rights licenses on streams that are tributary to Mono Lake.

When last we left, those of us that were hardy souls were in the Great Mono Basin. We're all back here.

Mr. Roos-Collins, you don't appear remarkably different than you appeared at Mono Lake.

MR. ROOS-COLLINS: Well, as Mr. Dodge said, I wear this all the time.

HEARING OFFICER DEL PIERO: Well, for those of you that don't understand that, that's your tough luck, because you didn't go to Mono Lake.

Okay. This morning, I think we have representatives from the Mono Lake Committee. Is that true?

MR. DODGE: Yes. Before we start with that Mr. Del Piero, I, just a couple of minutes ago, finally received a voice mail from Professor Winkler at

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Cornell. And he will be out here on the 15th of December.

HEARING OFFICER DEL PIERO: Okay.

MR. DODGE: I assume we'll be in our case then. But in the event that we're not, I would ask to take him out of order and put him on as a bird panel with David Schueffer.

HEARING OFFICER DEL PIERO: Okay. Good enough. You'd make a note of that, Mr. Canaday, Mr. Herrera, so we can make sure we've got that on the schedule.

MR. DODGE: We would now call Stacy Simmon as a witness. Stacy, if you would sit up there and be sworn?

HEARING OFFICER DEL PIERO: Either one works. If you'd please stand raise your right hand. Do you promise to tell the truth during the course of this proceeding?

MS. SIMMON: I do.

MR. BIRMINGHAM: Excuse me, Mr. Del Piero. Before we begin with the testimony of Miss Simmon --

HEARING OFFICER DEL PIERO: Good morning, Mr. Birmingham.

MR. BIRMINGHAM: Good morning. I have a procedural question. The Department of Water and Power has some objections to some of the testimony of

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Miss Simmon, the written testimony. It contains opinions which we contend are -- Miss Simmon is not qualified to express.

To the extent that Miss Simmon is going to provide evidence on canoeing at Mono Lake and past activities of the Mono Lake Foundation, we have no objection. But to the extent that she expresses opinions concerning the qualitative changes that will occur to the canoeing experience at Mono Lake if the elevation of the lake is raised to 6390, we do object, because we don't believe she's qualified to express those opinions.

HEARING OFFICER DEL PIERO: Mr. Dodge?

MR. DODGE: Well, we certainly believe that based on her history of leading canoe trips at Mono Lake and getting the reactions of the visitors, she's qualified to give the opinions that are set out in her declaration.

HEARING OFFICER DEL PIERO: Mr. Birmingham, are you asking to object now or later?

MR. BIRMINGHAM: I'm asking whether I should object now or later.

HEARING OFFICER DEL PIERO: I think you should object now.

MR. BIRMINGHAM: I will object.

HEARING OFFICER DEL PIERO: I'm going to overrule

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the objection. But I'm going to note that the witness is an individual who conducts canoeing trips of Mono Lake. Her expertise is in taking individuals on those trips, and who may not necessarily have a significant

amount of expertise in terms of the particular hydrology of the lake.

So although the evidence will be admitted, it will be admitted, and this issue will go basically to the weight of the evidence. Although she is, in fact, an individual who conducts tours of Mono Lake by canoe, and obviously is capable of judging depths, nonetheless, she is not a technical expert in terms of lake levels.

And so from that standpoint, I'll allow the evidence, and her testimony to be admitted into the record.

Mr. Dodge?

MR. DODGE: Good morning.

MS. SIMMON: Good morning.

DIRECT EXAMINATION BY MR. DODGE

Q I'd like you to pull out your written testimony, which is National Audubon Society and Mono Lake Committee, Exhibit 1-R.

Do you have that in front of you?

A Yes.

Q And will you -- is that a correct version of your written testimony?

A Um-hum.

Q And do you have any changes to make in it?

A No.

Q Could you summarize for the Board your written testimony?

A This past summer I worked for the Mono Lake Foundation, which is a non-profit foundation dedicated to fostering understanding and preservation of the ecological, geological, cultural and esthetic resources of the Mono Basin.

Part of what the Mono Lake Foundation does, besides research is -- and other educational programs, is sponsor the canoe tours of Mono Lake, which occur -- have occurred for the past five summers, every weekend, six tours a weekend, and then occasional tours during the week to accommodate school groups and programs like that.

Generally, we take out -- our maximum has been about 120 people per weekend, and the tours operate from June, mid-June, until the end of September. This past summer, we took out over a thousand people on the weekends, and then quite a substantial amount more during the week, which we don't have as accurate

records of. Most of those were school groups.

We have recently, this year, we were featured in Paddler Magazine. And we've been in Sunset and on many local newspapers in the Mono Basin, talking about canoeing on the lake and our canoe program.

One of the -- the feature that makes the canoe tour different from any other way of viewing the lake is that you're getting a water based experience of Mono Lake. You're seeing Tufa, underwater Tufa forming, and the stages of the alkali fly under water, which you can't always get such a good look at from the shore.

So that has become the main topic of interest for

people, particularly people who do the walking tours relish the canoeing tour. They're seeing these aspects that are not available to them from the shore. We -- where we go in the canoes is dependent on where there's water, where it's deep enough.

In the year -- not since I've been running the canoe program, but since I've been canoeing on the lake, we've had to limit where we go, because it's become too shallow. We hit bottom. We've bottomed out, particularly that peninsula right on South Tufa where that Tufa island has become a peninsula.

When the lake is higher, there's more surface area for canoeing and more access, more tufa for people to

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see from the lake. There's also more water-based tufa which is, at least speaking just for the canoe tour, what people are interested in seeing.

The water-based tufa, looking down, seeing it underwater, contrasting that to the part above water is very interesting. Also seeing that tufa reflected in the water seems to be a popular phenomenon for photography, people like that.

And then, of course, viewing the submerged tufa, and tufa actually forming right underneath their boat is very popular.

Basically, the higher the lake level for canoeing to a certain point, the more valuable the experience is canoeing, because it is a water-based activity, the more water, the more access.

And that's -- basically, I have some photos that just show people canoeing out -- this is South Tufa. We leave from Navy beach and canoe through the South Tufa Grove. This is South tufa. There are three boats. We usually take six.

MR. BIRMINGHAM: Excuse me, Mr. Del Piero. I wonder if the witness could be asked to identify the exhibit to which she's referring?

MS. SIMMON: I'm sorry. It's NAS and MLC 45.

MR. BIRMINGHAM: Thank you very much,

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Mr. Del Piero.

MS. SIMMON: And NAS-MLC 46 is visitors viewing submerged tufa. You can see how clear the water is here, and you really, especially on a particularly clear day, can see quite a bit of tufa underwater from the canoe.

And finally, NAS-MLC 47 just gives a general idea of the setting in which the canoe tours take place; the overall lake, the Sierras to the west, and of course, that's Paoha in the center.

MR. DODGE: Okay. Thank you, Ms. Simmon.

Mr. Chairman, the record should reflect that on Saturday, I understand that Ms. Simmon took the Law School Aptitude Test, and that that's what it's called.

MS. SIMMON: Admissions.

MR. DODGE: So that after the cross-examination that's coming up, you may wish to reconsider your chosen field.

HEARING OFFICER DEL PIERO: Thank you very much,

Mr. Dodge. Mr. Birmingham?
MR. BIRMINGHAM: At this time, Mr. Del Piero, I'd like to make an application.
HEARING OFFICER DEL PIERO: Her future is in your hands, Mr. Birmingham.

MR. BIRMINGHAM: The first question, Miss Simmon, that I had intended on asking you is: Isn't it true that you took the LSAT on Saturday? And then I was going to move to strike all the testimony on the grounds that you lacked the capacity. Anyone that would take the LSAT is probably not qualified to testify anywhere.

CROSS EXAMINATION BY MR. BIRMINGHAM

Q From your testimony, I take it you worked one summer at Mono Lake; is that correct?
A No. Actually, on the canoe program, one summer. I've worked two summers at Mono Lake.
Q What is the Mono Lake Foundation?
A It's -- it's a foundation. It's a non-profit foundation with tax-exempt status from the IRS which gives grants to educational programs and research in the Mono Basin.
Q Is there any relationship between Mono Lake Foundation and the Mono Lake Committee?
A In that the Mono Lake -- yes, there is.
Q What is that relationship?
A The Mono Lake Foundation gives grants to programs if they are educational or research oriented to the Mono Lake Committee, and -- well, for instance, my -- basically, that's the connection.

Q Now, paragraph one of your testimony says that the Mono Lake Foundation supports litigation.
Does the foundation support the committee's litigation efforts?
A Not financially, as far as I know.
Q Isn't it correct that the canoeing -- the canoeing trips that are available to the public at the Mono Basin are the only recreational activity at the lake for which there is a charge?
A Yes.
Q And the charge is ten dollars per adult and five dollars per child; is that correct?
A Um-hum.
Q And does the foundation have adequate capacity to serve, or does it have adequate resources to satisfy the complete demand for canoeing?
A No.
Q Are there any entities other than the foundation that offer canoeing at the lake?
A It's open to private canoers.
Q But the only commercial activity is that offered by the foundation?
A If you can call it commercial, yeah.
Q I'm not suggesting it's being done for profit.
A Right.

Q But it is a commercial operation?
A Um-hum.

Q Could you answer affirmatively by saying yes, or negatively by saying no? The reporter has --
A Yes. Yes. And I might add that our limiting factor is, this past summer was personnel. We hadn't hired enough people to accommodate.
Q Your testimony indicates that you had to turn away about 20 people per week because you could not accommodate them; is that correct?
A Yeah.
Q Now, if all of the tufa were water-based, isn't it correct that access to the tufa would be limited to those individuals who could take a canoe trip?
A If all of the tufa were covered?
Q If the tufa were covered as described in your testimony, isn't it correct that access to tufa would be limited?
A Yes, to those tufa covered, yes.
Q And isn't it correct that families that couldn't afford to pay the $30 for a family of five to go canoeing would be denied access to the tufa?
A We give complementary tours to any one who cannot afford it.
Q So if someone walks up and says, "I cannot afford

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to pay the fee," it's complementary?
A Yes, that's what we've done.
Q Is land-based tufa photogenic?
A Yes.
Q In fact land-based tufa is one of the features of the lake that is frequently photographed by the general public; isn't that correct?
A Yes.
Q And sand tufa, is sand tufa an attraction at the lake that draws the public?
A It's hard to access. And I have not found that many people actually find it. And certainly not to the extent that they go to South Tufa.
Q Those people that find the sand tufa --
A Yes.
Q -- are they interested by the sand tufa?
A Yes.
Q And do -- have they expressed to you their feelings about the sand tufa?
A Not in my capacity with the canoe program, no.
Q Generally, have you heard people talk about the sand tufa?
A When I have done walking tours, yes. They've enjoyed seeing the sand tufa.
Q Sand tufa is one of the more unique features at

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the lake; isn't that right?
A Yes.
Q You're not aware of any other lake in the Western United States where there is sand tufa?
A No.
Q Your testimony says that the canoeing experience would be enhanced, because I understand from reading the Draft Environmental Impact Report that there would be more phalaropes visible to visitors.
If the Draft Environmental Impact Report is

erroneous in that conclusion, that there would be no more phalaropes visible --
A There would be more?
Q There would be no more phalaropes visible, based on the lake level, would that change your opinion?
A If there would not be phalaropes, then yes, that would be one less thing that people could see, yes.
Q Generally, the people that have expressed their opinion to you about canoeing at the lake, have they said that it was a satisfying experience?
A Yes.
Q And in fact, the article, Mono Lake Exhibit 44, National Audubon Society and Mono Lake Committee Exhibit 44, talks about the very pleasant experience that an individual can have canoeing at Mono Lake;

isn't that correct?
A Um-hum. That's correct.
Q When was this article written?
A '93.
Q And the elevation at Mono Lake in 1993 was 6375 feet; is that correct?
A Um-hum.
MR. BIRMINGHAM: I have no further questions, Mr. Del Piero.
HEARING OFFICER DEL PIERO: Thank you very much, Mr. Birmingham.
Good morning, Ms. Cahill.
MS. CAHILL: Good morning. The Department of Fish and Game has no questions for this witness.
HEARING OFFICER DEL PIERO: Thank you very much. Mr. Roos-Collins?
MR. ROOS-COLLINS: Good morning, Miss Simmon.
MS. SIMMON: Good morning.
CROSS EXAMINATION BY MR. ROOS-COLLINS
Q Richard Roos-Collins, attorney for California Trout.
Have you ever canoed at Rush Creek?
A No.
Q Thank you very much.
MR. ROOS-COLLINS: No more questions.

HEARING OFFICER DEL PIERO: Thank you very much.
Good morning, Ms. Scoonover.
MS. SCOONOVER: Good morning, Mr. Del Piero.
HEARING OFFICER DEL PIERO: We missed the presence of you and your colleague at Mono Lake. Although the representative for the department did a very good job. We aren't going to be able to make any comments about your attire, because you obviously weren't there.
MS. SCOONOVER: Thank you.
HEARING OFFICER DEL PIERO: Do you have any questions?
MS. SCOONOVER: I have no questions for this witness.
HEARING OFFICER DEL PIERO: No questions? Good enough. I'm sorry. Is there any one else? Mr. Frink?
MR. FRINK: Amazing how that happens.
HEARING OFFICER DEL PIERO: Monday morning.

Started at 5:30.
MR. FRINK: Good morning, Mr. Del Piero.

CROSS EXAMINATION BY THE STAFF

Q BY MR. FRINK Ms. Simmon, have you seen the elevation markers in the South Tufa Grove which show where the water level of the lake would be at various locations along the shore?

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A Yes, I have.
Q And you mentioned also that you used to give walking tours of Mono Lake?
A Um-hum.
Q Was that in the area of the tufa groves?
A Um-hum.
Q So you've experienced viewing the tufa both from land and from the water?
A Um-hum.
Q It appeared that some of Mr. Birmingham's questions seemed to be getting at the issue of a trade off in visibility of the tufa as the water level either rises or declines.

I was wondering from your experience in the area, do you have a personal opinion as to what water level you believe would be most desireable solely from the standpoint of recreational use and esthetics?
A As for a specific level, no, no numbers. But I do believe that a raising of the level -- covering a lot of the area -- you have just stretches of tufa there at South Tufa Grove that's beached. And I believe that covering quite a bit of that and having that be water-based, so that when you're walking along the shore on South Tufa, you're seeing islands of tufa, and you're seeing some on the shore.

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And then you're also seeing a background there of water-based tufa island, which is a better visual picture, would be. And I think that for canoeing, it's not questionable that it would be better. There would be absolutely more access, and there would be more area for canoeing.
Q Have you observed the location of the elevation marker that I believe is designated as being 6410 feet above sea level?
A Yes.
Q How would it affect the visual recreational experience if the water level of Mono Lake reached that height, in your opinion?
A 6410?

MR. DODGE: Objection. Ambiguous as to place.

MS. SIMMON: Yeah, I was going to say it's difficult to tell.

HEARING OFFICER DEL PIERO: When he does that, I have to say something.

I'm going to sustain the objection. So, Mr. Frink, you want to rephrase it so as to identify where you're asking about the lake?

Q BY MR. FRINK: In the area of the South Tufa Grove, to start with, how do you believe it would affect the visual and recreational experience at Mono Lake if the

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water elevation would reach the level of 6410 feet above sea level?
A It's so hard to speculate. That would cover quite a bit of the tufa. And it certainly, I don't think, would adversely affect canoeing. In terms of walking, it might.
MR. FRINK: I have no other questions. Thank you.
HEARING OFFICER DEL PIERO: Mr. Smith?
MR. SMITH: I had just one question.
Q BY MR. SMITH: Do you have Mono Lake Committee -- National Audubon Society-Mono Lake Committee Exhibits 32 -- pictures 32 and 33 in front of you?
A No. I don't.
Q Could I just show you these, please?
MR. SMITH: I'm hoping everyone has these two figures.
MR. CANADAY: Which ones, Hugh?
MR. SMITH: 32 and 33.
Q BY MR. SMITH: I'd like to ask if it's your testimony that this -- I'm pointing here to National Audubon Society-Mono Lake Committee number 32, which is approximately 6389.
Are you saying that this level of water would enhance -- would enhance the visual experience? Is that when you're --

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A Yes.
Q In comparison to what it is approximately today on National Audubon Society Mono Lake Committee 33, which is approximately 6375?
A Um-hum. In fact, that's what I was referring to in NAS-MLC 33, is the plain of rabbit brush there, the exposed alkali plain there, which I don't think is particularly visually appealing.
Q So you're saying that Exhibit 32 is a level of about '89. 6389 would be better?
A Yeah.
Q Okay. Thank you. That's all.
HEARING OFFICER DEL PIERO: Mr. Herrera?
MR. HERRERA: I have no questions.
HEARING OFFICER DEL PIERO: Mr. Canaday.
Q BY MR. CANADAY Ms. Simmon, you testified that this past summer you took about a thousand individuals out on the lake?
A Yes.
Q And this is the only summer that you've actually participated in the canoe trips?
A Um-hum.
Q Is a thousand people about, based on what you know of previous seasons, is that equal to or greater than what's happened in the past?

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A I believe it's greater. We hired -- we hired extra people, more than we've ever hired, this summer. And they still weren't adequate. In the past, they had fewer.
Q You mentioned that you took school groups out on tour; is that correct?
A Um-hum.
Q Were any of those schools from the L.A. Basin

area?
A Yeah. Well, different groups. Not school groups. Other youth groups from the L.A. Basin.
Q But youth groups from Los Angeles?
A Um-hum.
Q Thank you.
HEARING OFFICER DEL PIERO: Mr. Dodge, redirect?
REDIRECT EXAMINATION BY MR. DODGE
Q Now, these tours started at Navy Beach and went around the South Tufa Grove, correct?
A Um-hum. Yes.
Q Is there any reason why, at higher lake elevations, for example, you couldn't do canoe tours from say, the county park tufa grove?
A No, there's no reason.
Q How about the Wilson Creek Grove?
A We could do that, too. No. You could do that.

Q Based on your background, do you have any understanding as to what the canoeing experience would be at the county park grove, say at lake elevation 6400 feet?
A It would be canoeing around submerged and water-based tufa, which is what I've previously stated is attractive to people and the biggest draw. So I think it would be enjoyable. It would be popular.
Q I'm going to show you National Audubon Society and Mono Lake Committee Exhibit 25, which I'll represent to you is a photograph from Israel Russel in the 1800s with -- I want you to assume that Mono Lake is about 6411, and that's at the Wilson Creek Grove.
Do you have that exhibit in front of you?
A Yes.
Q Now, what you see on Exhibit 25, in your opinion, would that be an attractive vista for canoeing?
A Yes.
Q That's all I have. Thank you.
HEARING OFFICER DEL PIERO: Thank you very much. Recross, Mr. Birmingham?
MR. BIRMINGHAM: Thank you very much.
RECROSS EXAMINATION BY MR. BIRMINGHAM
Q You just said that, in response to a question by Mr. Dodge, that the water-based tufa is the biggest

draw.
You don't have any empirical data to support that, do you?
A Just what people tell me.
Q And the biggest draw compared to what? You don't know?
A I would rather change that to a figure of speech. It was a big draw.
Q It's a big draw.
A It's a big draw.
Q But you can't say it's the biggest draw, because you don't know what brings people to the lake?
A The alkali flies and the shrimp and the birds are also a draw.
Q Let's talk about the photographs that are submitted. Do you have copies of them in front of

you? You do.
First, let's examine a photograph -- that's been introduced into evidence -- excuse me, identified, as National Audubon Society and Mono Lake Committee 45.
A Um-hum.
Q This indicates that it's a photograph that was taken in 1991; is that correct?
A Yes.
Q Now, the photograph appears to depict three canoes

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being propelled through the water by individuals paddling; is that correct?
A Um-hum.
Q And the canoes are paddling towards some water-based tufa?
A Um-hum.
Q Now is that the kind of valuable experience that you described in terms of canoeing at the lake?
A Is which?
Q Does the photograph that's been marked as NAS and MLC 45 depict the kind of valuable canoeing experience that you've described at the lake?
A Yes.
Q Now, at NLC -- I'm sorry NAS and MLC 46 shows canoeists viewing the lake in 1989.
A Um-hum.
Q And it appears that the canoeists -- in your testimony you say that the canoeists are looking down into the water at the formation of new tufa; is that correct?
A No. I believe in this one they're just looking at underwater tufa.
Q I see.
A I'm not sure that any tufa's forming here.
Q And that's the kind of experience that you've

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described as being enjoyable to the people who take the canoeing trips?
A Yes.
Q Now, what was the level of Mono Lake in 1991, do you know?
A 6375.
Q And what was it in 1989?
A I don't know.
Q Let's talk in terms of the specifics about this article that was submitted, NAS and MLC 44, the article from the publication Paddler. On page 98 of the article, which is the first page of the article; is that correct?
A Um-hum.
Q That's the article on canoeing California's Mono Lake?
A Yes.
MR. DODGE: Mr. Chairman, can I raise a point of order. I don't -- with this witness it doesn't particularly bother me, but it's disconcerting to me that Mr. Birmingham asked her a bunch of questions that were beyond the scope of the direct examination, or any of the cross, because as you know, once this round is finished, I don't get another shot.

And I think it's important that if some witness is
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going to cross-examine my witness on a particular topic, that it be done in the first round, so I have a chance to ask questions in my redirect.
HEARING OFFICER DEL PIERO: Mr. Birmingham?
MR. BIRMINGHAM: Well, Mr. Del Piero, I don't think Mr. Dodge is objecting at this point, he's just raising a point of order.
But I would note that throughout our presentation of our case there were many times when attorneys asked questions that went well beyond the scope of any other cross or redirect.
Further, in this particular situation, I would note that, in fact, Mr. Smith asked specific questions about the photographs, which I've been examining this witness on.
And so my questions do relate to the subject that was specifically asked of the witness.
MR. DODGE: That's why I waited and didn't talk about any kind of paddler, which I'm quite sure no one asked her about.
MR. BIRMINGHAM: I'm going to ask only about the photographs that are the subject -- the photographs that are contained in the --
HEARING OFFICER DEL PIERO: The issue's been raised, Mr. Dodge, and been noted. Mr. Birmingham,
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proceed.
MR. BIRMINGHAM: Thank you.
Q BY MR. BIRMINGHAM: There are photographs that are contained in this publication; is that correct?
A Yes.
Q Do you know when those photographs were taken?
A Actually, this one --
Q The one on page 98?
A Yeah. That's the peninsula that I was talking about with Mr. Dodge that the canoe program used to go around through there. And that formed the summer of 91, so this photograph is between 91 and 93, the only -- in that time has that peninsula been in existence.
Q What is the depth of water that is required for a canoe to go through?
A It depends if there's tufa there or not. If there's no tufa, a couple of inches, though people dislike that.
Q If the level of Mono Lake were raised -- this was at 6375, this photograph on page 98; is that correct?
A Most likely, I don't know.
Q If the level of Mono Lake were raised two feet above the level that's depicted in this photograph, there would be plenty of water for people to canoe
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around that peninsula; is that right?
A Yes.
Q And the photograph that's contained on page 99, do you know when that photograph was taken?
A No, I don't.
Q Do you know approximately from your experience

what level of lake is depicted in that photograph?
A No. I don't even know what tufa that is.
Q Are there tufa -- at the existing level of the lake, are there tufa that are water-based that are similar to the tufa depicted in this photograph?
A Yes.
Q Thank you. I have no further questions.
HEARING OFFICER DEL PIERO: Thank you very much. Ms. Cahill?
MS. CAHILL: No questions.
HEARING OFFICER DEL PIERO: Mr. Roos-Collins?
MR. ROOS-COLLINS: No further questions.
HEARING OFFICER DEL PIERO: Miss Scoonover?
MS. SCOONOVER: I have no questions.
HEARING OFFICER DEL PIERO: Mr. Frink?
MR. FRINK: No questions.
HEARING OFFICER DEL PIERO: Mr. Smith? Mr. Herrera?
MR. SMITH: I have no questions.

HEARING OFFICER DEL PIERO: You want to make an offer, Mr. Dodge?
MR. DODGE: Pardon me?
HEARING OFFICER DEL PIERO: Do you want to make an offer?
MR. DODGE: Yes. I'd like to offer into evidence National Audubon Society and Mono Lake Committee Exhibit 1-R, and the numbered exhibits that are referred to therein.
HEARING OFFICER DEL PIERO: Any objections?
MR. BIRMINGHAM: Only the objection I expressed earlier.
HEARING OFFICER DEL PIERO: Mr. Canaday?
MR. CANADAY: Mr. Dodge, if you could specifically identify the exhibits noted therein so that we can be sure they be marked, please?
MR. SMITH: Could I make a point of order? Just a request? Could we not wait until the very end to accept all of the Committee's -- National Audubon Society's-Mono Lake Committee --
HEARING OFFICER DEL PIERO: That's what I did, Los Angeles, and it worked out well that way. If you don't have any objections, Mr. Dodge, rather than having a whole lot of problems, I'll do it that way.
Which would you prefer?

MR. DODGE: I would prefer to offer the testimony into evidence while I still have the witness in the room, in case there's some problem.
HEARING OFFICER DEL PIERO: I'm hearing no objections from any one. I'm not going to ask again. Do you have them there? Let's get this out of the way, because she's not going to be back, right?
MR. DODGE: Right.
HEARING OFFICER DEL PIERO: You want to identify the exhibits?
MR. DODGE: 1-R, 44, 45, is 46 in there? I'm not finding it. 46 and 47. Is that it?
MS. SIMMON: Yes, that's it.
HEARING OFFICER DEL PIERO: Any objections? It

will be so ordered. Thank you very much.
Thank you very much for your time. We appreciate it.
MS. SIMMON: Thank you.
HEARING OFFICER DEL PIERO: I hope things turn out well in terms of test results.
MS. SIMMON: Six weeks.
MR. BIRMINGHAM: Mr. Del Piero, while we're getting the next witness, you didn't identify what a good result would be.
HEARING OFFICER DEL PIERO: Mr. Birmingham, I'm

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old, I don't know what a good result is any more. 15 years ago I could have told you, but not now.
Good morning, Ms. Cahill.
MS. CAHILL: Good morning, Mr. Del Piero and Mr. Brown.
MR. BROWN: Good morning.
MS. CAHILL: A long time ago in a galaxy far, far away -- perhaps it wasn't as long as it seems. It was only early October that the Department of Fish and Game filed its opening statement in this case.
I would request the Board to go back and reread that as we proceed. It's a road map to what we'll be putting on today.
HEARING OFFICER DEL PIERO: I woke up to John Williams on the radio this morning.
MS. CAHILL: I was attempting to save a bit of time by putting in some of the Elden Vestal materials last week. And unfortunately, I seem to have used an exhibit number that had already been used. And I think I need to revisit -- revisit those exhibits.
What I'm going to do is leave the four exhibits that I presented last week with those numbers, and then ultimately renumber an earlier exhibit that had been named prior as 131.
So the four we put in last week will keep the

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numbers 137, 38, 39, and 40. And I have brought today exhibits to the Elden Vestal deposition, which I will now number as DFG Exhibit 141 and again, would seek to present as exhibits by reference.
And I was wondering whether perhaps we wanted to number the actual video tapes of Mr. Vestal's videotaped deposition.
HEARING OFFICER DEL PIERO: I think that's probably appropriate.
MS. CAHILL: And there are two volumes.
Mr. Smith, would you prefer a separate number on each volume of the Elden Vestal videotape?
MR. SMITH: No. A and B would be better.
MS. CAHILL: So we will make this 142-A and 142-B, will be the videotape of the Elden Vestal testimony.
MR. BIRMINGHAM: Excuse me, Mr. Del Piero?
HEARING OFFICER DEL PIERO: Mr. Birmingham?
MR. BIRMINGHAM: I have no objection to what Ms. Cahill is offering at this point, except I would note that many of the exhibits to Mr. Vestal's deposition, copies of the exhibits that we have, are not legible.

And I would request that if we are going to introduce the exhibits as -- to the deposition as exhibits by reference, then I be given an opportunity

to get additional copies from Ms. Cahill so that the copies I have are legible.

HEARING OFFICER DEL PIERO: Have you notified the Department of Fish and Game that the exhibits are not legible?

MR. BIRMINGHAM: No, because they were not the party that originally called Mr. Vestal to be deposed. This was several years ago.

MS. CAHILL: Quite honestly, Mr. Birmingham is correct. These were provided to me by Mr. Roos-Collins, and many of the ones are illegible. I don't know who has the originals.

HEARING OFFICER DEL PIERO: Mr. Roos-Collins?

MR. ROOS-COLLINS: The exhibits which Ms. Cahill is offering were originally submitted by the Mono Lake Committee and the National Audubon Society in the Mono Lake cases.

We are able to obtain the originals out of those exhibits on the basis of Mr. Birmingham's request from Mr. Vestal himself. He will produce those.

HEARING OFFICER DEL PIERO: Did you receive these copies during the course of the litigation in the El Dorado Superior Court?

MR. BIRMINGHAM: We received them as part of the discovery in that process, yes.

HEARING OFFICER DEL PIERO: Are the copies that you received as part of that discovery legible, no?

MR. BIRMINGHAM: No, some of them are not.

HEARING OFFICER DEL PIERO: Have you made a list of those documents that you believe to be illegible at this point?

MR. BIRMINGHAM: No, I have not. And all I'm requesting is an opportunity to make such a list. And then make the request of Mr. Roos-Collins. Then perhaps actually replace those that are being submitted today. Because if the copies that are being submitted today are not legible, then it's not going to be of much help to the Board.

MS. CAHILL: I agree.

HEARING OFFICER DEL PIERO: Mr. Roos-Collins?

MR. ROOS-COLLINS: The copies which Ms. Cahill is offering are exact copies of the exhibits introduced in 1990. Many of them are illegible. If it would assist the Board, we could provide better copies of any of those exhibits to you as well.

HEARING OFFICER DEL PIERO: Okay. Look, Mr. Birmingham, I understand your concern. What I'm going to do is, I'm going to ask my staff to go through the exhibits and attempt to determine if, in fact, the copies that are being introduced to the Board are the

best that we can get from the originals. I'll ask them to take a look at it.

I would suggest both Mr. Birmingham, Mr. Roos-Collins, Ms. Cahill, if you'd get together

with Mr. Canaday and attempt to identify those documents that you believe to be appropriate to a second effort at reproduction. Then we'll see what we can do in terms of trying to facilitate that.

I'm not going to put the responsibility on the back of Mr. Roos-Collins, and at this point, one, because I don't know that he's got access to better copies than anyone else has. Two, because everybody appears to have had the opportunity to try to get better copies of this for the last two or three years. But if it's at all possible to get better copies, then we will try to facilitate that process. Okay.

Mr. Canaday, you can arrange to meet with those folks afterwards.

MR. CANADAY: Okay.

MS. CAHILL: During the deposition of Mr. Vestal, he indicated there were some minor corrections that should be made to his testimony, mostly in terms of correcting exhibit numbers. And I believe Mr. Roos-Collins has brought corrected testimony.

HEARING OFFICER DEL PIERO: Fine.

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Mr. Roos-Collins, if you'd be kind enough to distribute those now, so that all parties have them.

MR. SMITH: While he's doing that, Ms. Cahill, could I inquire about that 137?

MS. CAHILL: The next number in order would be 143. And that will be the report of Sanitary Investigation of the Tributaries and Mountain Streams Emptying into the Owens River. It had previously been identified for identification only as Exhibit 137, but we would now make it 143.

Mr. Del Piero, this is the report that you thought you'd heard the last of. And now, I believe you have.

HEARING OFFICER DEL PIERO: Thank you.

MS. CAHILL: As its next witness, the Department of Fish and Game calls Doctor Scott Stine. And Dr. Stine is also appearing today on behalf of the Mono Lake committee and National Audubon Society as a joint witness.

Good morning, Dr. Stine.

DR. STINE: Good morning, Ms. Cahill.

HEARING OFFICER DEL PIERO: Ms. Cahill? Excuse me, Mr. Birmingham. Dr. Stine's not been sworn. I don't know if there are other witnesses here today. I don't know if there are other witnesses --

MS. CAHILL: Mr. Wong is also here and can be

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sworn.

HEARING OFFICER DEL PIERO: Those individuals intending to present testimony today, if you'd please rise and raise your right hand and respond affirmatively.

Do you promise to tell the truth during the course of this proceeding?

DR. STINE: I do.

MR. WONG: I do.

HEARING OFFICER DEL PIERO: Please be seated.

Mr. Birmingham?

MR. BIRMINGHAM: Ms. Cahill just stated that

Dr. Stine was being called on behalf of the Department of Fish and Game and Mono Lake Committee National Audubon Society and Cal Trout. It was my understanding --

MS. CAHILL: I did not say Cal Trout.

HEARING OFFICER DEL PIERO: I don't believe that --

MR. BIRMINGHAM: Excuse me. Not Cal Trout. It's my understanding that Dr. Stine's testimony this morning is going to be limited to his testimony on historical conditions that benefited the fisheries; is that correct?

MS. CAHILL: That is correct. Dr. Stine submitted

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separate testimonies on different topics. And it seemed most efficient to address each topic when it came up in terms of the overall presentation.

HEARING OFFICER DEL PIERO: That's fine. Because Dr. Stine's submitted comments and testimony on a number of issues, it's appropriate for all parties involved here not to wander off the path that's been laid out here in terms of the issues that are being addressed at a particular time in terms of his testimony. Okay? So -- and I will be conscious of that. So everybody knows on both sides.

Please proceed.

Mr. Canaday, do you have comments?

MR. CANADAY: Yes. In the submittal of Mr. Stine's testimony by the Mono Lake Committee, we had somewhat of a numbering confusion, whether it was Mono Lake or National Audubon Society-Mono Lake Committee W-1, or just 1-W. Can we get that corrected for the record?

MS. CAHILL: Dr. Stine, let me show you NAS-MLC Exhibit 1-W.

HEARING OFFICER DEL PIERO: Did I get a copy of the corrections? Pardon me for -- did I get a copy of the corrections? Thank you.

MR. DODGE: I think I can clarify that,

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Mr. Chairman.

HEARING OFFICER DEL PIERO: Mr. Dodge?

MR. DODGE: Excuse me. I believe that W-1 is testimony by Dr. Stine regarding various visual -- various photographs. And 1-W is what we're here about this morning.

HEARING OFFICER DEL PIERO: Okay. Is that satisfactory? Good. Ms. Cahill?

DIRECT EXAMINATION BY MS. CAHILL

Q Dr. Stine, do you have any corrections -- is NAS-MLC Exhibit 1-W a copy of your testimony?

A BY DR. STINE: Yes, it is.

Q And do you have any corrections you wish to make in that testimony?

A Three minor corrections. The first on page four. And on page four, the bottom of the second full paragraph, the last phrase there is, "NAS and MLS," which should be C, "182." The thing should read, "NAS and MLC dash 209." Somehow there was some numbering confusion there.

The second minor point here, and I won't bother to point out the typos, embarrassingly, but there are several of those as well. But on page six, the last paragraph on page six, I would say, let's see, third line from the bottom reads, "of this incision, the bed

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of," and there please add, "the active channel in the bottom lands today is dominated by cobbles."

And on page eight, under number five, that's a typo, the last word of the third line in the second full paragraph under number five there, third line down, last phrase should be, "300 percent" not 200 percent. And I referred to 300 percent elsewhere in the testimony.

And those are the corrections. As I say, I haven't bothered to deal with typos, and I apologize to everyone for those.

Q With those corrections, then, is this a true and accurate copy of your testimony?

A Yes, it is.

Q And, Dr. Stine, have you reviewed NAS-MLC Exhibit 141?

A Yes, I have.

Q And is that a true and accurate copy of your statement of qualifications?

A Yes, it is.

Q Would you please summarize briefly your qualifications?

A Yes. I'm a professor in geography and environmental studies at Cal State Hayward. I teach classes in geomorphology, biogeography, and Quaternary

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Science, among other things. I am an adjunct research scientist at Columbia University in New York and a fellow at the California Academy of Science.

As it relates to these proceedings, I wrote five of the 20 some odd auxiliary reports to the Draft Environmental Impact Report, including one relevant here. And that is auxiliary report number one called, "The Extent of Riparian Vegetation on Streams Tributary to Mono Lake 1930 to 1940."

Additionally, I've written 35 or so articles and technical reports on the Mono Basin, including two reports for the Court supervised planning team, as it's come to be called, the planning team, for the restoration of Rush and Lee Vining Creeks.

The two relevant ones there are "Past and Present Geomorphic, Hydrographic and Vegetative Conditions on Rush Creek" and, "Past and Present Geomorphic, Hydrographic and Vegetative Conditions on Lee Vining Creek."

I suppose I should point out I've spent about 400 or so, now, 400 field days doing research into Mono Basin. I've led trips for the Geological Society of America, for Friends of the Pleistocene, the American Quaternary Association, the Penro Foundation, California Soils Counsel, the National Academy of

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Sciences, and a number of other groups, field trips to the Mono Basin.

Q Dr. Stine, would you please summarize your testimony?
A Yes.
MS. CAHILL: Mr. Del Piero? May I stay up here? I'm sort of far back there.
HEARING OFFICER DEL PIERO: Certainly.
DR. STINE: It gives me comfort to have you here. Would you please stay?
HEARING OFFICER DEL PIERO: We aren't allowed to provide that in this room, Mr. Stine. Everybody's supposed to be uncomfortable.
DR. STINE: Touche. Actually, this seat is uncomfortable for backs.
MS. CAHILL: Actually, I believe this is the first time anyone's looked to an attorney for comfort.
DR. STINE: The only thing uncomfortable here is Mr. Birmingham is behind me. I'd much rather be looking at him eyeball to eyeball here. This is fine. I welcome this.
HEARING OFFICER DEL PIERO: It's Monday, right? It's going to be a great week. Please proceed, Doctor.
DR. STINE: What I will be doing here is trying to

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inform the Board as to the conditions that existed on the Mono Basin streams, particularly on Rush Creek prior to 1940, particularly during the decade or so prior to water diversions by the Department of Water and Power.
I want to look at what the streams used to be like geomorphologically from a vegetation point of view, and functionally as well, how they used to function.
I'd like to then talk about what they're like today, and talk about why they have changed and in what ways, functionally and geomorphologically, they have changed. As a prelude --
MS. CAHILL: Scott, you're going to have to take the microphone.
DR. STINE: I bet I don't.
MS. CAHILL: They require you to for the court reporter.
DR. STINE: What I wanted to do here was simply go over --
HEARING OFFICER DEL PIERO: That was a major mistake, Virginia.
DR. STINE: Being quiet is not my problem. Let's see. I think if I could move this a little bit farther without causing a calamity here.
MS. CAHILL: Do we have a way of telling if you're

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getting enough volume without the microphone?
THE REPORTER: I'm fine.
DR. STINE: What I wanted to do was simply go over the basic geography of the stream here for a second, so I won't have to repeat the locations.
That is a map, Rush Creek Plan Form 1930 to 1940, versus 1992. And what I'm doing here is showing the 1930 to 1940 channel in red, and the 1992 channel in -- 1991-92 channel in black.
We'll begin up here -- by the way, here's a half a

mile. The scale here is about one to 4,000, actually one to 3960.

HEARING OFFICER DEL PIERO: Dr. Stine, can you hold on for one second?

MR. BIRMINGHAM: I wonder -- this map, I don't believe was admitted -- marked as an exhibit. We have no objection to Dr. Stine testifying about it, but perhaps it should be marked as a Department of Fish and Game exhibit.

MS. CAHILL: Let's number it next in order, Department of Fish and Game 144.

HEARING OFFICER DEL PIERO: Is that the correct number?

MR. SMITH: Yes.

HEARING OFFICER DEL PIERO: Fine. So ordered.

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Please proceed, Dr. Stine.

(DFG Exhibit Number 144 was marked for identification.)

DR. STINE: I'll start up here at -- pardon me. The scale is where I was. One to 3960 is the scale, so that this bar right here represents about a half a mile. This is not a precise scale by any means, because it comes from aerial photographs. And the scale on the aerial photographs changes one photo to the other, also from one place on the photo to the other so -- but it's a good approximation of what the stream used to be like, and what it is like today.

Here's Grant Dam up here at pre-DWP times, and immediately downstream from the Old Grant Dam is C Ditch. C Ditch took off about, I think it was seven percent of the water of Rush Creek, something like that in an average year. C Ditch taking water off to the lands over on Parker and Walker Creek.

Downstream, then, we had A Ditch, which was the largest of the -- largest of the Mono Basin diversions, about 45,000 -- pardon me about 19,000 acre feet in an average year being taken off there.

Water then flowed down beyond A Ditch down the natural channel and hit B Ditch down here, the second largest of the irrigation canals.

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Immediately below the ditch is Old Highway 395, immediately below that, U.S. Highway 395 as it exists today. And then we encounter two tributaries, the two main tributaries to Rush Creek, Parker Creek and Walker Creek. Immediately downstream from Walker creek is the Narrows, and immediately downstream from the Narrows is the bottom lands, which I'll be talking about primarily here.

We have a road crossing down here that we referred to as the forward that existed in the old days, and still exists today. It's the upper of the two road crossings. The lower of the two road crossings is referred to as the County Road. And then Mono Lake in 1930-1940 stood right about here, roughly 6417 feet above sea level in 1940.

Today, Mono Lake, of course, stands considerably farther to the north. And by the way, north is to the right as you look at this. Mono Lake today standing at

about 6375 feet.
Okay. With those place names in mind, I would like to go through just very briefly the hydrology of the stream as it existed, hydrology and geomorphology, as it existed during the decade prior to water diversions by the Department of Water and Power.
Water was -- water came out of Grant Dam, right

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here, which I said in my testimony was ten feet tall. What I meant to say is it's at least ten feet tall. And my feeling is pretty strongly that this did indeed constitute a fish barrier. Fish could probably get over it in the downstream direction, but I see no way on the aerial photographs for fish to get upstream back into Grant Lake again.
Water was then taken off into C Ditch here, but a lot of water was released beyond C Ditch. Water was taken off from A Ditch. But a lot of water was released beyond A Ditch. Water was then taken off, finally, down B Ditch here.
Now during wet times or non-irrigation times, flow did go beyond B Ditch, all the way down to Mono Lake. But there were many months between 1930 and 1940, as many as nine months in a row, when all of the water in the channel was taken off at B Ditch, so that the channel was actually dry from B Ditch all the way down to just above Parker Creek, right here.
And this constitutes about approximately 11,000 stream feet, lineal stream feet there, down to immediately above Parker Creek. That constitutes about 17 percent of the total channel lake between Grant Lake and Mono Lake as they existed in say 1940. About 17 percent, then, was dry from time to time, and

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admittedly for extended periods of time.
At Parker Creek, we picked up other sources of water. And one of the sources of water was Parker Creek itself. Then we picked up Walker Creek down here. But in addition to those two stream inputs, those two tributary streams, there was some other water coming in. And I'll talk about that other water a second.
First, just a couple words on Parker Creek and Walker Creek. They flow from the Sierra Nevada, which would be in the up direction here, as I've oriented this. They come out of their canyons as single channels, but then hit their alluvial fans, and under natural conditions, split into several different channels, distributary channels, run across the fans in these distributary channels, then at the toes of the fans, under natural conditions, they would all come together into a single channel again, and then enter Rush Creek as a single channel, both Parker Creek and Walker Creek.
En route between their canyons and Rush Creek, itself, they would cross these permeable fans, and some of the water would be lost to percolation. And as a result, the amount of water flowing out of the Sierra was less than would actually reach Rush Creek here.

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Now, in addition to that loss, there was actually some -- a fair amount of irrigation that was going on on Parker and Walker Creek, so that Parker and Walker themselves were dry portions of the period between 1930 and 1940.

This third source of water that I was talking about is springs. And immediately above Parker Creek, right in here on Rush Creek, immediately above Parker Creek, we started to receive spring input to the stream. And this was constant. It varied somewhat, but it varied slowly, and it didn't vary a great deal.

It was a constant source of water, so that by the time we hit the Narrows, right down here, we had anywhere from six to eight to ten cfs constantly flowing down Rush Creek. So from there on down, just above Parker Creek on down, the stream was perenially -- the stream was perenially watered.

That spring system then continued down into the bottom lands, and indeed the biggest springs were in the bottom lands, not above the Narrows, but below the Narrows. I'll talk about that spring system in a second.

But first I'd like to talk about the bottom lands, here, and sort of what constituted the bottom lands, and why they are peculiar.

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MR. BIRMINGHAM: Mr. Del Piero, I'd like to just raise a point, if I may, not in the form of an objection. Dr. Stine has gone beyond his written testimony in some of what he's stated.

And as I indicated earlier, the exhibit which he's testifying from was not produced as part of the Department of Fish and Game's evidence, nor any other party's.

Again, I have no objection to Dr. Stine testifying on these issues and going beyond the scope of his direct examination, but it does hinder my ability to prepare a cross-examination. And I would like to request -- in lieu of objecting, I would like to request at this point an opportunity to -- when Dr. Stine comes back, to cross-exam him on some of these issues that he's raising now for the first time.

HEARING OFFICER DEL PIERO: Ms. Cahill?

MS. CAHILL: Dr. Stine, the information that you've just given us, is it contained in some of the reports that are referred to in this testimony?

DR. STINE: Yes, it is. It's contained in both the two Trihey reports that I mentioned, as well as in the auxiliary report number one to the Draft Environmental Impact Report that I mentioned -- that I mentioned in the testimony and that I mentioned at the

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table here a few minutes ago.

HEARING OFFICER DEL PIERO: Do you have any further comments, Mr. Birmingham?

MR. BIRMINGHAM: No.

HEARING OFFICER DEL PIERO: At this point, inasmuch as this is a summation of the written testimony that's been presented, I'm not inclined to grant a request like that, frankly, because of an

absence of specificity as to those things that you believe to be beyond the scope of what his written testimony was, and what his summation was.

Let me just point something out.

First of all, Mr. Smith?

MR. SMITH: Yes?

HEARING OFFICER DEL PIERO: How much time does Dr. Stine have left in terms of his summation?

MR. SMITH: I'm going to have to confer with Mr. Herrera on this.

MR. HERRERA: Eight minutes.

HEARING OFFICER DEL PIERO: I'm pointing that out, because it strikes me, in terms of summation, you may be going over.

But beyond that, in terms of areas beyond what's referenced particularly here, I'm going to be, as I pointed out, I'm going to be very cautious in terms of

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making sure that everyone is on an equal playing field here, both in terms of direct, as well as in terms of cross-examination.

So Mr. Birmingham's point at this point is not going to cause me to direct anything now. But I want to make sure that everyone understands that, in order to assure that from a procedural standpoint we don't have any problems.

Dr. Stine, you've got eight minutes, why don't you proceed with your summation?

DR. STINE: Thank you. I want to talk about the bottom lands here, and why they are different from the rest of the stream. Indeed, why the bottom lands environment is different from most streams in the Eastern Sierra Nevada.

If we look above the Narrows, what we see, basically, is canyon that looks like this. It's V-shaped, and there is a single channel typically coming out of that V-shaped canyon. If we look at the Rush Creek bottom lands, what we see is something that looks like this. It's a big broad bottomed canyon.

And, in fact, if we projected the sides here, what we would find is that this canyon, too, is V-shaped, but it's been filled up with debris. It's been filled up with stream sediment. And so instead of the stream

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flowing through a V-shaped notch. It's flowing over a broad bottom, about 1300 feet wide in many places.

The reason for that is best described using the analogy of the Mississippi River. We think of the Mississippi River delta as this delta that protrudes into the Gulf of Mexico. But in fact, the Mississippi River protrudes all the way upstream to Cairo, to Cairo, Illinois.

The Rush Creek delta down here is just the exterior portion of the delta and the bottom lands are the interior portion of the delta basically what happens is that when a stream goes down to a lake like this or to a water body and hits the water level say down here it will build itself out over time as a series of four set beds this way. And that platform will build out at sea level or at lake level. And you

can see that if the stream is building out a flat platform right here, it's going to have to agrade. It's going to have build itself up to keep a slope over that flat platform.

And as a result, the stream, upstream of the delta itself will constantly be building up. In other words, we say that a stream that is prograding has to agrade as well, a prograding stream is also an agrading stream.

MS. CAHILL: Dr. Stine, could you mark that as Exhibit DFG 145, please?

DR. STINE: Yes.

(DFG Exhibit Number 145 was marked for identification.)

DR. STINE: And as a result of the progradation of the Rush Creek delta here, we have built-up all of this debris in the bottom lands here giving us this wide -- a wide channel floor -- pardon me, this wide valley floor.

Now, as you would find on most deltas, you have multiple channels. Not only on the exterior portion of the delta but on the interior portion of the delta as well.

So if we were to look at the channels here in the Rush Creek bottom lands, we would find not just a single channel but a whole bunch of these distributary, not distributory, but distributary channels, sometimes as many as five abreast. Natural channels that result from deltaic processes, both at the mouth of the stream and in the valley of the stream as well.

These are not overflow channels. They're not braids. They're distributary channels associated with deltaic sedimentation. There were about 30,000 linear feet of these multiple channels in the -- in the bottom lands. And it's important to point out that these things were watered all the time. All of the channels were watered all the time with one approximately 100 foot long section as an exception, as far as I can tell.

This is the bottom lands. These are the Rush Creek bottom lands here. You can see, I hope, the multiple channels. Shall I put this up?

MS. CAHILL: Dr. Stine, could you identify that exhibit?

DR. STINE: Yes, this is exhibit. -- exhibit -- I'm sorry. 213, I guess. Yes. This is Exhibit 213. NAS-MLC 213, pardon me.

And once again, we're looking here at the multiple channels. And if you take a close look at this, you'll see that the multiple channels are all of them watered. And if it's not clear that they're watered on this photograph, you can look at the other accompanying photographs from this set, and see that they are all watered with one exception. And that exception is right down here. And I'm not sure exactly what was going on down there, but it is the exceptional site.

What is the flow at the time this photograph was taken, by the way which is December -- pardon me,

January 1930? The flow here is about 32 to 35 cfs.

It's very low. And yet despite the fact that it's low, all of these channels here hold water. As I say, these are not over flow channels, they're channels that contain water throughout the area even at low flow times.

How do we measure the flow down there? We have a gauge that goes back quite a ways here at Old Highway 395. We have another stream gauge down here at the Ford. And we can simply look at the difference between the highway gauging station and the Ford gauging station and tell how much water was gained from spring input to the bottom lands down here. And what we find is that, for instance, if the flows are zero here at the highway, which they were from time to time, and they're 40 cfs down here at the Ford, we know that there has to have been a 40 cfs gain. If they're 50 cfs here at the road, and 90 cfs down here once again we can infer a 40 cfs gain.

The average flow throughout the bottom lands here was approximately, the spring induced flow average, was approximately 30 to 35. It went as low as 18. It went as high as 52.

A couple other points about the Rush Creek springs here. They were used by trout, according to the old timers. There is a system right over here. And again,

I'm not sure if people can see this or not, but just immediately below the Narrows, there was a large patch of spring fed ground that emanated probably single digits to low double digits of spring flow there. And in fact, the trout were up in those springs rills.

Now, when I mentioned before 30,000 linear feet of channels here, I wasn't including the literally thousands of feet of spring rills that were associated with the spring system down here. That was in addition to the 30,000 feet of distributary channels. Trout used these. Trout were up in those spring rills. Trout were in amongst the crest beds eating the invertebrates that were in the springs here.

The springs also had a conductivity of approximately 89, based on the measurement we get today, 89 microsiemens, which is approximately, micromho, same -- basically, the same thing same kind of measurement. So roughly twice the Rush Creek conductivity was found in the spring system there.

They provided stable flows. They provided stable temperatures. They kept temperatures lower than what otherwise would have been the case in Rush Creek during the summertime, higher than what would have otherwise been the case in Rush Creek during the wintertime.

Now, how would this water, be it spring derived

water or stream derived water, how did it move through the bottom lands, the channels of the bottom lands? Basically, slowly and deeply. Much more slowly and deeply than it does today.

The multiple channels were narrow. They had relatively steep stream banks. They had abundant

holes, according not only to the observers of the time, not only to the aerial photographs, but for reasons that I'll describe in a little while. It's possible to go back into those channels and look at them. They're there to be held.

And one can make measurements, one can appreciate the gradients, one can appreciate the steep walls the number of holes that are there, the amount of vegetation that used to be there, et cetera.

MR. HERRERA: Ms. Cahill, that's 20 minutes.

MS. CAHILL: Mr. Del Piero, we would apply for an additional 20 minutes.

HEARING OFFICER DEL PIERO: How much more time do you need, Dr. Stine?

DR. STINE: 20 minutes, Mr. Del Piero. I have it timed, I hope, to the minute.

HEARING OFFICER DEL PIERO: Granted.

DR. STINE: Thank you.

Now, if we look at the way these channels used to

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work, and I'm simply going to blow up what I've already put here before, multiple channels like this, we had channels with fairly deep water in them like this. These were not deeply incised channels by any means.

But the effect of having water in multiple channels like this was to keep the water table high. And the water table here, represented by the dotted line or the dashed line that I'm putting on, remained high in the bottom lands. And this helped support a tremendous growth of riparian vegetation, mainly cottonwoods and Willows, but some other things down there as well.

Another important way that these multiple channels had a bearing on the weight of the functioning of the bottom lands is that they very easily overflowed, and it was eminently possible to get water out of the channels. In fact, very often and, in fact, what I'd like to do is show a slide of, if I may -- thanks, John.

HEARING OFFICER DEL PIERO: Mr. Birmingham?

MR. BIRMINGHAM: I'm going to wait to see the slide, and see I've seen it before as part of the evidence. And if I have not, I'll have an objection. Dr. Stine tells me that I have. Is that correct, Dr. Stine?

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DR. STINE: It's in there, Mr. Birmingham. I don't know if you've looked at it or not.

MS. CAHILL: Is there an exhibit number associated with this?

DR. STINE: There is an exhibit number. This one is Exhibit No. 209, and I've gotten slightly ahead of myself here. So I'll say something about this. This is 209 taken from a place called Triangulation Point in the early 1930s.

We're looking down on the spring system here, immediately below the Narrows. And you can see the multitude of channels down here. The water from the streams was then flowing on down to Rush Creek, right down here. And the fish in Rush Creek in the Rush

Creek bottom lands down here, had access to this as well as other spring systems.

Next slide, please.

HEARING OFFICER DEL PIERO: What year was this?

DR. STINE: This is 1934. It's an Aitken (phonetic) case exhibit. There is Rush Creek in 1940, June 24th 1940. This is just a few months before DWP starts to hold back water and divert it to have City of Los Angeles.

MS. CAHILL: Dr. Stine, can you give us the exhibit number on this one?

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DR. STINE: Oh, you attorneys are all a like.

MS. CAHILL: So much for the comfort level.

DR. STINE: This is Exhibit Number -- bear with me. 183. NAS and MLC 183. And it's -- can you tune that in just a tad, John? I think we can get that a little bit clearer. This is a real fortuitous junction of -- of clouds and lights and a camera in a plane. So that when the camera took this picture just as it took the picture there was light coming off of the bottom lands here and reflecting back up to -- back up to the camera lens. So can you see down here, this is the biggest bend and you can find that they're just above the -- upstream of the Ford. The Ford coming right through here, excuse me.

You can see how much water was standing in the bottom lands down there. This is not high flow. This is June 24th, 1940, flows as far as we can figure, some where between 100 and 135 and 140 cfs, something like that. Not a lot of water, and yet it was finding its way out of channel creating this huge broad wetlands down there, withstanding riparian vegetation.

The important thing I think here to note is that the entire bottom lands area down here was the flood plain. Flood waters, even at low flows, had access to this very, very broad area, and they were disseminating

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seeds and they were recycling nutrients. And there was an awful lot going on here including an important geomorphic element, that is to say, when the stream leaves the channel, it tends not to do any damage.

That's one of the ways that the stream can prohibit damage into the channel is simply by getting rid of the water. And that's what happened down here in the bottom lands. Very little flood damage for that reason.

Okay. Skip. Skip. Skip. We had this exterior delta beyond the Rush Creek bottom lands and I would put it at roughly the County Road right down here. Mono Lake had been high. It receded, then, down to where it is at this time, 1940. It had been high back in 1919, reached a historic high stand of 6428.07 feet on July 18th, 1919. And then start to recede like this.

And so we don't have a lot of arboreal vegetation, a lot of riparian vegetation down here. On the other hand, we have a lot of marshland vegetation because this delta is supporting a very high water table and there's lots of grassy marshland down there.

One other thing to point out that I think is worthy of pointing out, can we put this up again, Jim? Thanks. It relates to this exhibit again, which is,

help me out --

MR. SMITH: It's 213, I thought you said.

DR. STINE: 213, I probably did say. Thank you, Hugh.

There are -- Panum Crater is right here. And Panum Crater, when it blew up about 605 radio carbon years ago, it blew up and threw out this big blast deposit that you see right here. And that's called the Block Avalanche. And so Rush Creek is contending with a lot of those sediments.

This is loose, unconsolidated, pumicious, very pumicy, material that's easily erodible, and that will bear on what happened to Rush Creek when we get to the post-40 condition in a second here.

To say a couple things about vegetation, I've mentioned vegetation a couple times already, but it was lush. And you've seen some of the photographs of the Rush Creek bottom lands.

This is clear on the aerial photos that it was lush. It's also clear on ground photos, and it's clear from historical accounts, too, people wandering through Rush Creek bottom lands talking about how dense the vegetation is, describing it as a jungle, getting lost in the riparian vegetation down there.

This was at least in part due to flooding and to

the high water table. Conditions down there were right for dense riparian vegetation. And in fact, this is the case, really, that there is lush vegetation all the way up from Mono Lake all the way to Grant Lake with one exception. I'll get to that one exception here in a few minutes.

The efficaciousness of this vegetation and being able to hold the system together was really proved in 1938. In 1938, there's big flows. Second highest flows that we have in the history of record keeping in the Mono Basin. And yet there's no damage, no change in the plan form to the stream itself here at all.

Why? Because these channels are bound. They might as well have wooden walls. They're bound with roots and these roots are holding things together very, very well. That and the fact that the stream can overflow makes the bottom lands really a sturdy place, very, very stable channels down there over long periods of time.

Was the vegetation grazed? Absolutely it was grazed and browse lines and high lines on the vegetation are a good indication of that. But had this resulted in a change in channel form or in channel stability or in the amount of shading or in the temperature of the stream of the bottom lands?

Again, with one exception, I would say that there have not been -- the effect was not felt. If it was felt, it was local at most. The stream remains steep-walled with well-bound, undercut banks and a

closed canopy of trees.
Now, where is this one -- one channel that -- one spot that I'm referring to here as exceptional? It's immediately above Highway 395, and it's the site where Elden Vestal took a photograph.
God, you're lucky today.
It's the site where Elden Vestal took a photograph. This is Figure 6 from the direct testimony of Don Chapman and Bill Platts. And we can see here that there is a great deal of disruption of the vegetation at this site.
Now long before this became a controversy back in 1990 and 1991, I was right in that this was the one site on Rush Creek where the vegetation had been disturbed. B Ditch is immediately upstream, and there's several hundred probably close to a thousand feet of channel in here where things have been disrupted. Probably because of building of B Ditch, and building of Highway 395, which this person is standing on at the time the photograph is taken.
That and grazing as well have a big impact on this

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one spot, but this is the one spot. Everything else -- every place else in the system was really held together very, very well.
I have some other photographs here, and you're laughing, Mr. Birmingham, but then again, you're always laughing.
MR. BIRMINGHAM: Could the reporter mark this spot?
HEARING OFFICER DEL PIERO: The comment about the laughing, we'll make sure.
MR. BIRMINGHAM: I'm just a happy guy.
HEARING OFFICER DEL PIERO: We all are, Mr. Birmingham.
DR. STINE: Here's the Rush Creek delta taken by Mr. Vestal in 1947, and I'll be making reference to this photograph a little bit later on. Here's the Rush Creek bottom lands now. And the bottom lands, as I say, were marshy, swampy, lots of riparian vegetation. This is the Aitken case -- one of the Aitken case exhibits, taken in the early 1930s. This the exhibit NAS-MLC 205.
MR. SMITH: Both? All three? All of this is -- all of your pictures are from 205?
DR. STINE: All of those pictures are Aitken case. But this one right here, that was -- pardon me. That

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was 205 that I just showed. This is 211.
MR. SMITH: Okay. And the first one was?
DR. STINE: The first one. The first one. You've even gone beyond the attorneys now, was Exhibit 213. Okay?
Now, this is Exhibit 207 and once again we're looking down on the Rush Creek bottom lands. You can see the morassy kind of situation down there. This is taken in the wintertime, so there's no leaves on the trees.
By the way, the big exhibit back there that I had is also taken during wintertime. And so we're looking

down through deciduous trees without leaves on them.
And finally, this one here, again, showing the very dense vegetation. This is Exhibit 211, NAS-MLC 211.
And finally, this one, which is an Aitken case photo. You haven't seen this Mr. Birmingham, and my apologies, my deep apologies go out to you. This is Aitken case defendants Exhibit G dash 3. And it's Rush Creek immediately above the County Road, and showing one of the multiple channels that we see there, how steep-walled the banks are.
Now maybe this is high lined, and maybe it isn't. But if you tried to put a knife into that sod right

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there, you'd have a heck of a time getting the knife in. That is really tough. And can you find areas like this around the Mono Basin today, which you cannot penetrate without a hammer and a knife.
MS. CAHILL: Since that's not been previously given an exhibit number, let's number it DFG Exhibit 146.
(DFG Exhibit Number 146 was marked for identification.)
DR. STINE: Okay. And I may want to refer to that. All right. Now, having talked about --
HEARING OFFICER DEL PIERO: Excuse me -- copies can be made available?
MS. CAHILL: Yes, they will be.
HEARING OFFICER DEL PIERO: Soon, I would hope, Ms. Cahill?
DR. STINE: We have copies here Mr. Del Piero. xerox copies, okay?
HEARING OFFICER DEL PIERO: Are they legible xerox copies?
DR. STINE: I think they are. I think they're pretty good xerox copies. We did it on a color xerox machine. And they're really in pretty good shape.
What we see here in the Rush Creek bottom lands and indeed in most places on Rush Creek is a functional

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symbiosis or a functional sort of co-dependency between the vegetation and the channels.
The vegetation binds the channels and keeps them narrow and stable. And when the stable, narrow channels overflow, then, and when they maintain a high water table, this is exactly what encourages the vegetation. So they're positively feeding back on one another, sort of a geomorphological auto-catalysis.
Now, Lee Vining Creek, which I believe is the next slide here, Exhibit 188 -- oh. Excuse me.
Lee Vining Creek in many ways was the same as Rush Creek. It had a bottom lands. The bottom lands wasn't nearly as extensive as the Rush Creek bottom lands.
Here that's mouth Rush Creek -- pardon me, of Lee Vining Creek right up here. Here's the exterior delta, this little thing. Here's the interior delta right up here there are multiple channels through here, exactly what you would expect to find on the delta. In fact, can you see the multiple channels ramifying through here.

Again, this is this is a 1930 photograph, not many leaves on the trees. And so with you look down through what is very thick vegetation.

MR. BIRMINGHAM: Excuse me, Del Piero. I wonder if Dr. Stine could identify this by exhibit number?

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MS. CAHILL: I thought he did. I thought he said it was Exhibit 188.

MR. DODGE: Scott, it would be helpful to everyone if could you put a party -- we all have exhibits.

DR. STINE: Okay. NAS and MLC 188. I'm sorry. In fact, virtually all of these are, with a couple of exceptions here. I will do that.

HEARING OFFICER DEL PIERO: Dr. Stine --

MR. BIRMINGHAM: Again, I think Dr. Stine is going beyond what was contained in his written testimony on the historical conditions on Rush Creek. But I don't want to object.

HEARING OFFICER DEL PIERO: Okay. Question, for my information. Can you identify where the County Road is on this?

DR. STINE: Yes. Now this is Lee Vining Creek, rather than Rush Creek. And here is the County Road coming right through here. There's a fault. A real neat fault that comes this way and this way and the road crosses Rush Creek a part of Lee Vining Creek right there. And today, of course, Mono Lake is way down. This is a level of the lake here at 6419 feet.

HEARING OFFICER DEL PIERO: What year was this?

DR. STINE: This is 1930, actually, December of 1929, drought year, dust bowl, not much snow on the

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ground, no leaves on the trees.

Okay. Let me conclude here momentarily before I go on to what happened to the system, and I'll go through lickity split.

Not being a fish biologist, I don't have an opinion as to the direct impact, the direct impact now, of the flow regime or the grazing regime on fish, 1930 to 1940. But as a geomorphologist and someone who has studied Rush Creek extensively, I can say that the grazing pressure and the cutbacks in flows were not sufficient to materially alter the natural functioning of the geomorphic system of Rush or Lee Vining Creek with that one exception being immediately above Highway 395 there.

All right. Now, how have the DWP operations affected the system? I'll be brief and chronological.

First of all, beginning in the late 1930s the Department of Water and Power built some facilities that resulted in structural changes on the streams. They enlarged Grant Dam. They moved it 1600 feet down stream. They efface that much of the Rush Creek channel.

They build a dam on Lee Vining Creek and a tunnel from that dam to the Rush Creek drainage, so now they have the capability of putting Lee Vining Creek water

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into the Rush Creek drainage.

They build dams on Walker and Parker Creeks, and

this has the effect of not only allowing them to divert water that would not go into Grant Lake into Grant Lake, but it also makes the multiple-channeled systems on Walker and Parker creek single-channeled systems. And they have existed, then, as single-channeled systems since that time.

In November 1940, the Department of Water and Power begins holding back water that would otherwise go to Mono Lake. But not all is held back and releases and irrigation diversions continue through about 1947.

But in that year, the Department of Water and Power begins to take all the water and halts irrigation. Now, this results in the diminution of flows. And we heard some information to the contrary the other day, but if you could pass those out, I don't have a number on this, and perhaps Ms. Cahill can give us one.

This is simply a comparison of the minimum flows measured at the Ford between 1930 and 1938, the pre-DWP years, compared with the minimum flows at the Ford between 1948 and 1951. That is, during those years immediately after Department of Water and Power turns off the -- turns the off system.

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MS. CAHILL: This would be DFG 147.

HEARING OFFICER DEL PIERO: The source of this information?

DR. STINE: Yes, it is Department of Water and Power data analyzed by myself and Mr. Vorster.

HEARING OFFICER DEL PIERO: Thank you.

DR. STINE: And what we see here is if we look at 1948, we see a minimum flow at the Ford in that year of 12 cfs, which is lower than the minimum flow recorded in many of the years for which we have a record, prior to DWP's operation. The lowest flow that we had in there prior to DWP operation is 1933 at 18 cfs. We have a 12 cfs measurement in 1948. And 49, still, roughly the same, 13. In 1950, it's down to 2.5. Nothing rivaling that between '30 and '40, likewise, 1951.

So we did see an impact there to the system. In 1952, when these -- when the drought period is over, because it was fairly dry between '47 and '52. But in '52, irrigation is resurrected on Rush Creek, and a small bit of flow returns, but it's a minor amount of return. No flow returns to Lee Vining Creek.

And by 1953, Lee Vining Creek is so unnaturally dry that you get this rarest of all events, a fire going through a marshland woodland. And it basically

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destroys the vegetation.

This is flow regime, the one that I've just described, then, that characterizes the post-1952 period, and that continues through 50s and into the early and mid-1960s.

Now, another --

MR. BIRMINGHAM: Excuse me, Mr. Del Piero. I'm just going to note for the record that Dr. Stine is going beyond the scope of his written testimony on historical conditions that benefited the fishery in

question.
HEARING OFFICER DEL PIERO: So noted for the record. How much time is left?
MR. HERRERA: A little over four minutes.
HEARING OFFICER DEL PIERO: Okay. You need to start some --
DR. STINE: Okay. Good. Another important alteration that occurred at this -- during these years was that quarrying started to go on immediately downstream from Rush Creek -- pardon me, from Parker Creek on Rush Creek. This is not the Parker plug, now, that I'm talking about. It's the Marzano Quarry operation on DWP lands on the west side of Rush Creek.
And by 1965-'66 this quarry operation had pushed approximately 50,000 cubic yards of material out into

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the now dry Rush Creek channel. The final thing that went on during these years prior to 1967 is that Mono -- pardon me. Mono Lake was dropping in response to the diversions. It and dropped roughly 30 feet in 20 years, from 1947 to 67. It dropped from 6417 feet to 6387 feet, a big vertical drop.
And what happened there was that we exposed, through drop, on the delta a nick point. The delta, itself, is shaped -- the delta, itself, in profile is shaped like this. It has a relatively gentle delta plain. And let's say the water was up here at 6417 feet in 19 -- in 1947. By 1967, it's dropped down here to about 6387 feet. And it's exposed this nick point right here.
So this is situation, then, that we see in 1967. Mono lake has dropped 30 vertical feet, exposing a nick point on the delta. The vegetation over much of the stream is degraded, due to dewatering. Roughly 50,000 cubic yards of quarry cobble is sitting in Rush Creek just above the Narrows.
And all of a sudden in March, after a higher than normal snowfall already, it starts to snow. And it snows through March and it snows through April. And by the end of April, the amount of water in the Rush Creek drainage has doubled from what it was in early March, a

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rather peculiar year.
Now, into May, the snow starts to melt and run off. And the runoff on the Rush Creek watershed proves to be about 175 percent of the long-term normal. But in addition to this hundred and 75 percent of normal that's in the Rush Creek system, Lee Vining Creek water is being brought into the system now, too --
MS. CAHILL: Dr. Stine, what year was this?
DR. STINE: This in 1967. Lee Vining Creek water is being brought into the Rush Creek system. And so you have this monumental amount of water now moving into the Rush Creek system.
They're also diverting, of course, Parker and Walker Creek into Grant Lake. And so Grant Lake fills and then it spills and throughout the period that Grant Lake is spilling, DWP continuous to feed extra basin water to it, water from outside the Rush Creek drainage itself.

And so this spill resulted in flows as high as -- estimated to be, because all the gauges were washed out, estimated to be by DWP as high as 1500 cfs.

Now, in a wholesale way, these releases modify the -- Rush Creek. This is a time when Rush Creek's system really became, what, disarticulated. The linkages between the geomorphology and the vegetation

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and the hydrology and what not were broken at this time.

Now, what were the consequences? Numerous consequences. First of all, incision. Rush Creek insights. First at the mouth, here, because of the exposure of that nick point. And it incised about 15, 12 to 15 feet at that time. And that incision, then, worked it way headward up through bottom lands. And it reached about halfway up through bottom lands, and then pretty much feathered out.

There was also channel widening, typically to widths of 200 to 300 percent of the previously existing condition. There was channel straightening, including some large meander cut offs that occurred at the time. And we've got this pile of cobbles, 50,000 cubic yards of cobbles sitting up there near Parker Creek. And the stream, this blast of water comes down and carries all of these cobbles down, basically, as a slur.

What happens is that the cobbles wash through the Narrows, and they get into the heads of all of these multiple channels. And as soon as the multiple channel heads are clogged with cobbles, the stream no longer has access to that. So what does it do? It cuts a new channel. It cuts a new broad channel, and in the process creates more cobble, more cobble load, which

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then goes on to block other heads of other streams, other multiple channels.

MR. HERRERA: Ms. Cahill, that's 20 minutes.

MS. CAHILL: Dr. Stine, could you complete your summary in an additional wrap up minute if Mr. Del Piero granted it?

HEARING OFFICER DEL PIERO: You've got 60 seconds, Dr. Stine. Mr. Dodge?

MR. DODGE: Mr. Del Piero, that I believe that Dr. Beschta and Dr. Chapman got well in excess of 40 minutes for their summary. And I think in fairness, Dr. Stine ought to be allowed to complete his summary.

I would also say that -- it's my hope that I not call Dr. Stine on this subject in my case, but if he doesn't finish his summary, I'm going to have no choice but to call him. I'd prefer it was all done at once.

HEARING OFFICER DEL PIERO: Mr. Birmingham, how much time did I give Dr. Beschta?

MR. BIRMINGHAM: It was approximately 40 minutes. But Mr. Dodge is correct that Dr. Chapman and Dr. Platts did go in excess of 40 minutes. And we have no objection to Dr. Stine obtaining additional time to conclude his remarks.

HEARING OFFICER DEL PIERO: Dr. Stine, how much more time do you need?

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DR. STINE: Well, obviously, I'm not a good judge of this, Mr. Del Piero.
HEARING OFFICER DEL PIERO: Your well-planned delivery, how much more time?
DR. STINE: Can you give me another six?
MS. CAHILL: I would apply for an additional ten.
HEARING OFFICER DEL PIERO: I will grant you an additional ten.
DR. STINE: How well you know me. Thank you. I appreciate it.
MS. CAHILL: Let's number that last drawing DFG Exhibit 148.
(DFG Exhibit Number 148 was marked for identification.)
HEARING OFFICER DEL PIERO: And then at the end of your presentation, Doctor, we'll take a break, okay?
DR. STINE: That's great. Okay. Now, during this period of time, Lee Vining Creek is spared. There's a nick point exposed on Lee Vining Creek, but it's spared. Why? Because most of the Lee Vining Creek water is going into the Rush Creek drainage and helping to raise havoc over there.
But 1969 roles along and all of a sudden in '69 we have a just as wet a year as we did in 1967 and this time the Department of Water and Power releases the Lee

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Vining Creek water down Lee Vining Creek. And so basically we see the same series of events there in Lee Vining Creek that we did in Rush Creek in 1967, with two exceptions. There isn't the big cobble plug to help plug multiple channels on Lee Vining Creek. And so lots of the multiple channels, rather than being in a sense pre-served by these gravel plugs plugged and then preserve lots of the multiple channels, though by no means all, are wiped out. The other difference here on Lee Vining Creek is that the vegetation was gone. It had been burned. And there was no longer any binding of the sediments there. So when the big flows came down Lee Vining Creek, it washed off all the soils and all the fine sediments over that entire big flood plain that we see down there on Lee Vining Creek. So today we have the situation where the area down there has been basically stripped of soil except for a very small accumulation of fine material that's accumulated right along the channel itself recently.
Let's to go some slides. While John is putting that on, I'll say just a couple more things about the Lee Vining and Rush Creek situation. We had sort of a coup de gras occur in 1980, except that now 1980 the flows are big again, but Mono Lake has dropped an additional 14 feet, exposing another nick point. So in

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1980, when the big flows come down, we renew the incision. We get a big fresh cut about 14 feet deep, and that brings, basically, major changes, again, to both the Rush and the Lee Vining Creek systems.
Okay. Next slide, I guess I'll do that from here. This is Lee Vining Creek, here's town, right up here, town of Lee Vining, thriving metropolis there. And you can see August 1983, this is exhibit NAS and

MLC 164. You can see how much incision has gone on here, this bank right here is about ten feet -- pardon me about 12 feet high. Notice that we do have a braided system here. There are multiple channels through here now, not because of distributaries, but because of braids, because the stream is carrying huge amounts of debris that it's just eroded. Note that there's no vegetation in here the vegetation that is there today, grew up around multiple channels. It did not cause the multiple channels, and I've documented that, I think, very, very thoroughly in slides.

Next slide is a part of Rush -- Lee Vining Creek. This is NAS and MLC no exhibit number. Maybe we want to make this a Fish and Game exhibit number, next in order.

MR. BIRMINGHAM: Excuse me, Mr. Del Piero. I again rise only to note that Dr. Stine is going well

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beyond the scope of his written testimony on the historical conditions in Rush Creek.

HEARING OFFICER DEL PIERO: What year was that taken, Doctor?

DR. STINE: This is 1992.

MS. CAHILL: We can number it DFG Exhibit 149.

(DFG Exhibit Number 149 was marked for identification.)

DR. STINE: And the point that was to be made here is that these --

HEARING OFFICER DEL PIERO: Unless I hear an objection, that number is the designated number. Let's go.

DR. STINE: These lands here had a thick mantle of sediment and soil on them, thick, humic, horizons and wall-to-wall riparian vegetation in here. All of that has been washed off there.

Okay. Next slide is a similar shot of Rush Creek. This is now Exhibits NAS and MLC 214. It's the Rush Creek looking up toward the bottom lands. And you can see the incision that's gone on here, about 25 feet vertical feet of incision here on Rush Creek.

Next slide, I believe -- I've made a mistake there. That was exhibit NAS and MLC 163. I apologize. I'm doing some jumping here. I want to do

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some comparisons, now, between what the bottom lands used -- Rush Creek bottom lands used to look like and what they look like today. This is Exhibit NAS-MLC 205.

And the next slide -- leave that one, John. I'll tell you when to switch. The next slide is the same spot today, 1993. Now, let's see if you could get photo number -- that is NAS and MLC 206. If you could take out slide number five, John, and put it into slot 14. This is slide -- pardon me. Exhibit NAS and MLC 207 and note the morass, the meandering channel down there, all the vegetation.

NAS and MLC 208, taken from the same site, shows what that same site looks like today. You can see all the wood down here, dry channel. Why? Because Rush Creek is now in a single-channel system rather than a

multiple-channel system. It doesn't have access to these lands anymore, because it's too much incised.

Finally, if you'd put slide number one into slot number 16, John. This next slide will be Exhibit NAS-MLC 209. Go ahead. That's the Rush Creek bottom lands that we looked at a second ago. And 210 is the same photograph today.

Hang on for one second. Put it back for a second, John. Notice how wet it is down in through here, that

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we have a wetness area going through here and on the next slide, simply to show that the area is now desiccated. The remnant of a channel is here, but we have no more water coming out.

Conclusions here. Channels are no longer multi-channeled system, loss of 15,000 linear feet of channel. The heads are clogged with cobbles. And this is both a bane and a blessing in a sense, because the cobbles that plug these channels also prevented the high flows from going through and wiping them out.

So the channels are in a sense preserved today by these plugs that can now be removed. And we can, if people desire, get water back into these channels again and rewater the bottom land system to be like it used to be.

The springs are gone, there's a lower water table, due both to widening of the one channel and to incision of the stream. The stream no longer floods the old flood plain. It's carved a new one. And this new flood plain is only about five percent as wide as the old one used to be.

And the vegetation is now much reduced, particularly arboreal vegetation. It's coming back, but it's coming back only very, very slowly, very slowly, away from the stream itself.

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The last comment here. The changes that went on prior to 1940, dewatering for relatively short periods of time, things like that, were short-term impacts. They were impacts that could be rectified over a period of months or a couple years.

The changes that we've seen out there since 1940 are long-term changes. They involve having to get entire woodlands back, having to build the banks of streams again. We can expedite that system if we choose to by rewatering some of those channels, helping the stream to slim down. And we can make this a 50-year, a 40-year, or a 30-year process, instead of a 500 or a 1,000-year process.

Thank you.

MS. CAHILL: Thank you, Dr. Stine.

HEARING OFFICER DEL PIERO: Thank you very much. Ladies and Gentlemen, we're going to take a ten-minute break. And we'll be back.

(A recess was taken at this time.)

MS. CAHILL: I would like to inquire with regard to an anticipated stopping time, whether we're going into the evening this evening. And if so, how long?

HEARING OFFICER DEL PIERO: This evening we are going into the evening. And it is safe to assume that

we will be going until at least 10 o'clock.

MS. CAHILL: And tomorrow evening?

HEARING OFFICER DEL PIERO: Tomorrow evening we will break at about 5:30. We will not have an evening session tomorrow evening.

MS. CAHILL: Thank you.

HEARING OFFICER DEL PIERO: And Wednesday I would point out that we are breaking early in observance of a holiday. Okay? So I think we're going to break -- is it 3:00 or 3:30?

MR. SMITH: 3:30.

HEARING OFFICER DEL PIERO: 3:30 on Wednesday that we notified everyone that we're going to be breaking.

MS. CAHILL: Thank you.

MR. DODGE: Did that change? I thought it was 3:00 o'clock before.

MR. FRINK: Previously, we had said 3:00.

HEARING OFFICER DEL PIERO: Whatever we had said previously, is what it is on Wednesday. Okay? If it's 3:00 or 3:30. I'm not sure which time we gave. But that's -- it may well be earlier than that. If there's a natural break that comes about.

So tonight, late; tomorrow night, about 5:00, 5:30-ish we'll break; and then Wednesday, it will be whatever I said, 3:00 or 3:30.

MS. CAHILL: Thank you.

HEARING OFFICER DEL PIERO: Now, we're back in session, Mr. Birmingham.

MR. BIRMINGHAM: Mr. Del Piero, I have a procedural question.

HEARING OFFICER DEL PIERO: Did Mr. Stine provide you with the full employment opportunity that you were looking for, sir? At least for the next -- you don't have to respond.

MR. BIRMINGHAM: Next few days. I have a question, though. In terms of the order of cross-examination, at this point the National Audubon Society would normally follow Fish and Game in the rotation.

And given the fact that this witness is being called by both Fish and Game and Mono Lake Committee National Audubon Society, I wonder if it wouldn't be appropriate for Mr. Dodge to conduct any cross-examination he has of Dr. Stine at this time, and then allow me to follow in the normal rotation.

HEARING OFFICER DEL PIERO: Mr. Dodge, you had a comment?

MR. DODGE: The normal rotation would be Los Angeles next.

HEARING OFFICER DEL PIERO: That would be the normal rotation.

MR. BIRMINGHAM: I thought that when we were in Lee Vining last week with the first witness, we started with the Mono Lake Committee?

HEARING OFFICER DEL PIERO: And then we changed.

MR. BIRMINGHAM: Well, given the special

circumstances of this witness, inasmuch as he being called by both Fish and Game and Mono Lake Committee National Audubon Society, I wonder if it would not be more appropriate for Mr. Dodge to conduct an examination of this witness at this time out of order.

HEARING OFFICER DEL PIERO: Mr. Dodge?

MR. DODGE: Whatever you want, Mr. Chairman. I mean, normally, Los Angeles would go next. If you want me to go next, I will go next.

HEARING OFFICER DEL PIERO: Are you prepared, Mr. Dodge?

MR. DODGE: I've been more prepared in my life. I have a few questions for this witness.

HEARING OFFICER DEL PIERO: Thank you, very much. You're getting my drift very well. You are a very perceptive gentleman.

MR. DODGE: You'll have to give me 30 seconds.

HEARING OFFICER DEL PIERO: Take your time. I do want to point out for the record while Mr. Dodge is

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finding his place in his notes, that it's probably safe to assume that when witnesses are called jointly by the Department of Fish and Game and Mono Lake Committee from now on, in order to insure that we've got something of a relative playing field, this will be the process that we follow.

Alternatively, however, Mr. Birmingham, I want to point out that simply because a witness that might be called might provide testimony that appears to support another party's case, that is not going to be grounds for me to ask that this be done. So --

MR. BIRMINGHAM: I understand.

HEARING OFFICER DEL PIERO: I want that clear, okay?

MR. BIRMINGHAM: Yes, thank you.

HEARING OFFICER DEL PIERO: Please proceed, Mr. Dodge.

CROSS EXAMINATION BY MR. DODGE

Q Dr. Stine, you talked about Walker and Parker Creek, and you testified that the water hit the alluvial fans.

Do you recall that testimony?

A BY DR. STINE: Yes, I do.

Q Where are those fans on Walker and Parker Creek?

A The fans have their apexes or apices right at the

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mouths of the bedrock canyons and the glacial moraines. So basically, right at the site where DWP has their diversion facilities on Walker Creek and Parker Creek. It's very, very close to that, right at the bifercation point there is where DWP put their diversion facilities.

Q That's at the top of the fan?

A The apex at the top of the fan.

Q And the bottom of the fan would be where?

A The toe of the fan really extends -- feathers out all the way down to Rush Creek in a sense, though it has reached something of a feather edge right around Highway 395, which is why Highway 395 is where it is. They didn't want to build it across the fan, so they

built it basically at the toe of the fan.
Q And you were involved in 1990 when the channels of Parker and Walker Creek were reconstructed --
A Yes, I was.
Q -- were you not?
A I was involved, yes, in helping to assess what the historical condition was there. I didn't do any of the work.
Q Were you involved in locating the main historical channel?
A Yes, I was.

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Q And was that channel rewatered?
A The main historical channel was rewatered, yes.
Q Now, you told us in response -- or in summary, with Ms. Cahill this morning, that historically on the alluvial fans there were distributory channels or distributary channels. I'm never certain which it is. Which is right?
A It's distributary. And the only reason I said distributory is that both Drs. Chapman and Platts had used the term distributory, and there's no such word.
I wasn't going make that dig, but since you asked.
Q In any event, the historical distributary channels, were they, in 1990, redug and rewatered?
A The historical distributaries -- all of these were distributaries. Only the largest one was rewatered, so that the other natural distributaries of both Walker and Parker Creek were not rewatered. They remained dry.
Q They remain dry today?
A Today.
Q And you've read the Department of Water and Power's proposed management plan where they're not -- they're told not to -- they propose not to divert any more Parker or Walker Creek water, correct?

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A I did, yes.
Q With the existing Parker and Walker Creek channels, does this plan of no diversion present any problems?
A Well, in a sense, it does, in that the channel on -- channels on Parker and Walker Creek were used to distribute flood waters. And with all of the water now going down Parker Creek, and all of the water going down Walker Creek in one channel each, those channels are apt, over some period of time, to see higher flows than they've ever seen before. And this could throw the thing into some disequilibrium.
The better course would be to open those distributary channels up if no water is going to be taken from Parker or Walker, open those distributary channels up and allow the water to spread naturally amongst the distributaries.
Q And how complicated a process is that?
A One would have to take out the diversion facilities, the dams there. I would recommend not only taking out the dams, but also taking out the artificial plugs that have been put in at the heads of the

dewatered distributary channels and that wouldn't -- it would be far less involved than the operation of putting in the system back in 1940.

Q I'm not sure you answered my question. Maybe you don't know the answer.
How big a physical undertaking is this?
A I'm sorry. On a scale of one to ten? Or, I mean, how big -- I can't give you a price figure. All I can say is that destroying the system up there that today prevents the flow of Walter into the distributaries would be far easier than the construction of the facilities that block the distributary channels.
I think it would be simple, and I'd love to do it, given the right machinery and explosives and things.
MR. BIRMINGHAM: The record should note that Dr. Stine was mad at the world when he said that.
DR. STINE: Dr. Stine had gleam in his eye when he said that, at least in his heart.
HEARING OFFICER DEL PIERO: Just for the record since everyone's getting this on there. I am keeping score here. There's a small but very secret chart up here. L.A. DWP is on one side and Scott Stine's on the other side.
This relates to personal comments. It's got nothing to do with the evidence. Please proceed, Mr. Dodge.
MR. DODGE: Thank you.
Q BY MR. DODGE: At the end of your testimony, you were talking about a variety of changes, now versus then.
And you mentioned something about 30 years versus 500 years. Do you recall that?
A Yes, I think I was talking really about a few years, one or two years or some number of months versus 30 years or 100 years or 500 years, yes.
Q And to what did you have reference there?
A Well, the impacts, such as they were, that occurred prior to 1940 in terms of dewatering channels for particular periods of time, things like that, didn't affect the long-term stability of the stream.
The vegetation was able to hang on the vegetation remained in good shape despite the dewatering and so the banks of the streams were strong and resilient, and they could resist the flows.
The changes that have gone on today, on the other hand, require a long time for healing. I mentioned the incision of the Rush Creek and the Lee Vining Creek delta. Those are probably 1,000 to 5,000-year scars on the landscape. And it's going to take a long time for those things to heal.
It's going to take a half a century for big wood, as some people are fond of calling it, to come back on the Lee Vining and Rush Creek systems. In other words, these trees have to grow up. They have to mature. They have to reach senescence, and then they have to fall into the stream before you really start getting an interaction between big wood, dead wood, and the stream channels.

So we didn't see anything, any damage of this time scale prior to 1940, with the exception of the building of the pre-DWP dam, for instance, on Lee Vining -- or on Rush Creek.

Q Let me ask you specifically about the historical distributary channels in Rush Creek below the bottom lands.

You've testified that, as I understand it, the heads of these channels are clogged with gravel; is that correct?

A That's correct. I believe you meant to say below the Narrows. And in the bottom lands, and indeed the heads of the channels are clogged with cobbles from the Marzano Quarry.

Q And as I understood your testimony, the remainder of the channels, historical channels, by and large still exist today?

A They do, yes.

Q Okay. Now, absent intervention in a restoration program, would these historical channels be rewatered?

A They would not be rewatered. They would not be

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rewatered for multi, multi centuries, put it that way.

And the reason is that with Mono Lake at the level it is today, the stream -- Rush Creek is not in depositional mode. It's not doing its deltaic thing. It's carrying the sediment down to Mono Lake and carrying it off into Mono Lake and depositing it in real deep water off the mouth of the stream.

To get Rush Creek to start to agrade again, to get it back up to where it's even at the same level as some of these distributary channels requires getting Mono Lake up high again.

Now, having said that, there is a way around that, sort of an interim solution. One can build a check dam on Rush Creek that would act in a sense as a base level. And I would recommend, I guess, doing it, if I had my way, if I was king of the Rush Creek bottom lands, I would build a check dam, just a small check dam near the Ford, and that would then act as a base level.

There would be a pond behind it, and Rush Creek would start building a delta out into this pond. And as a result, Rush Creek would go back into -- into depositional mode again. It would start acting as a -- as a delta.

But even then, the stream is not going to be

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capable of carrying out these cobbles. The cobbles are going to have to be removed mechanically if we want water in those channels in less than many hundreds of years.

Q Now. Okay. Let's talk about, then, possible human intervention. In your judgment, is it possible to reopen these historic channels?

A It would be very, very simple to reopen those channels. Absolutely.

Q Explain to the Board how one would do that?

A One would get a backhoe or other equipment. And one could gently go into those areas and scoop out that

cobble. One would decide what one wants to do with the cobble.

There are lots of cobble aprons already in the Rush Creek bottom lands up against the canyon walls. You could put that cobble there. It's exactly the same kind of material as makes up the aprons of the -- the talus apron along the Rush Creek canyon walls.

Or if people thought it necessary, one could truck it out and sell it and make a little dough.

It would be a very simple process, though, to get the cobbles out of the channels.

Q Can you give the Board any idea of what the expense of that might be?

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A I looked at that. I, in the company of Tom Taylor and Scott English, looked at that problem, and we came up with the -- if we wanted to rewater every one of the bottom lands channels, and take out all of the material in those channels, and do the expensive thing and truck all of that material out of the Rush Creek bottom lands -- in other words, worse case scenario, we'd be talking about somewhere between 800,000 and a million dollars to do it all.

Q Why would you truck the material out of the bottom lands?

A We would truck it out if one board or one regulatory agency or another said that we had to truck it out. There's no real reason to truck it out. In my mind, it could be put up against existing talus aprons, and it would be much, much less expensive, and it would blend in within three or four years.

Q You've heard Dr. Beschta testify about the ills of heavy equipment?

A Yes, I have.

Q And you would be putting heavy equipment in to take out this cobble, correct?

A Yes, I would.

Q And in your judgment, what deleterious effect would the use of that heavy equipment have, if any?

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A To put in it terms of what's happened on Rush Creek since 1967 because of the DWP operations, it would be somewhere between one one hundred thousandth and one one millionth of the damage that went on because of the flows.

It would be infinitesimal. It would be nothing that can't be healed by the stream in three years, three or four years. And we're talking about a longer healing process out there than three or four years. This falls through cracks.

Q Quite apart from what DWP may or may not have done, the use of this heavy equipment to rewater the historic channels, what adverse effects, if any, will that have on the channels?

A It would have no adverse effects on the channels. It would leave --

Q On the banks?

A On the banks, it would have none. It would have none. And, in fact, what would happen is that water would get into those channels and vegetation would come

back, and the banks would be -- it would be improved instability.
Q How about the effect on the vegetation of this heavy equipment?
A You're going break some vegetation. You're going

drive over some sagebrush. You're going drive over a lot of turf, a lot of carricks down there in the meadows.
But again, this is tough stuff. And Platts and Chapman and Beschta have correctly pointed out that under the right circumstances, the vegetation down there heals very, very rapidly, explosively, I think, was word they used. And we would not see any evidence of heavy equipment having been down there over three or four years if it was done correctly. And I assume it would be done correctly.
Q Let me move to another subject, sir. You've told us that the springs that existed historically below the Narrows are largely gone. And I know that the planning team has a feasibility study ongoing of restoring those streams or seeing whether that's feasible.
Can you give the Board the status of that study?
A We've been looking at that study trying to -- pardon me. At that problem, which to reiterate it here in slightly different terms, would be a feasibility study to restore spring flows to the Rush Creek bottom lands. The conclusion that we're coming to is that it would be very difficult and probably not wise from the standpoint of the whole system, to try to restore the springs that existed on the east side of Rush Creek.

Now, there were springs coming in from both sides, but springs on the east side of Rush Creek were wholly artificial. They resulted from irrigation of lands by A Ditch and by B Ditch. They were completely artificial.
On the west side of Rush Creek, on the other hand, there was a spring system there that was, I believe, in a large part natural, but probably augmented somewhat by irrigation diversions on the Parker and Walker Creek fans.
What we're trying to do here is duplicate on paper the conditions that existed between 1930 and 1940 on the west side of Rush Creek that gave rise to -- fostered the spring system there along the west side of the Rush Creek bottom lands.
There's no magic involved here. Those springs were there for very good reasons, understandable reasons, and what we need to do is simply mimic those conditions.
Q Can you go up to DFG Exhibit 144? And point out to the Board where the bulk of the springs are, and then point out Indian Ditch to the Board, please? I have a sporting interest in this question.
A Here's the Narrows right here. As I mentioned, the spring system actually started above the Narrows.

We tend to think of it as a bottom lands phenomenon, but it really started right up here, immediately

upstream of the Parker Creek, coming in from both sides of the stream, all the way down to Walker Creek.

And then immediately below the Narrows, there was a large springs area right here. And this springs area was the largest of the springs in the Rush Creek bottom lands. And that put water then into -- additional water into the Rush Creek bottom lands.

Along the east side, there was stream flow all the way through here, as well as in this big alcove right up here, as evidenced not only by rills on the aerial photographs, but by the dense willow growth that we could see against the wall of the canyon, where the spring water was coming in.

Indian Ditch, now, the other feature you asked about is right here. It heads in Rush Creek. It's taking flow from Rush Creek that includes spring water that has come into Rush Creek from all the way up here above Parker Creek.

And so the Indian Ditch water here was simply Rush Creek water. It didn't come from some separate source. It took water -- whatever water was in Rush Creek, and put it back into Rush Creek down here, about a mile or so farther down stream.

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It was simply shifting Rush Creek water from one place to the other here. And it did some watering of some meadows, what we call the Lower Meadows right down in this area right here, which is why Indian Ditch existed, to improve pasture right here.

Q Is it true that Indian Ditch takes off below the great bulk of the historical springs.

A Yes, it absolutely is.

Q Now, I see you've got -- it looks to me like you've got three colors on this Exhibit 144. Orange for Indian Ditch and black for the current channel and red for the historical channels.

Let me ask you this: Are you confidence that none of the red channels were, in fact, irrigation channels?

A I'm absolutely confident. I've walked every one of these channels. I've spent hundreds of hours down there in the bottom lands walking these channels trying to understand how this system works.

If one was to walk Indian Ditch today, or any of the other diversion ditches in the Mono Basin, O Ditch H Ditch, Farmers Ditch, Curry Ditch, Lee Vining Ditch, A Ditch, B Ditch, C Ditch or any of the others, the Nye Ditch, one sees very clearly a real fresh cut.

A cut without soils on the slope. A cut that's been made in the last hundred years, probably in the

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last 50 or 75 years. One also sees what one always sees next to a diversion channels. It's cut.

People have had to dig it. They've taken the spoils out of this trench that they're building, and they put it next to the channel. And you cannot find an irrigation canal in the Mono Basin that does not have the spoils pile next to it.

Down here on all of these channels, every single one these channels, you have soils that are literally hundreds of years old on the sides of the channels.

Big, big thick humic horizons. You don't find that on -- pardon me. You don't find the thick organic layer, the humic horizons, the soil horizons on Indian Ditch or any of the other ditches throughout the Mono Basin.

Another feature here, and I could go on and on, but Indian Ditch has little feeder rills coming off of it to spread the water in the ditch on to lands. You find no such features down here in the bottom lands.

And would I end by saying, what in the world is a farmer, with so much time on his hands that he can go down and build a canal in a marshland that goes through the same marshland and ends in the same marshland, what is he doing with that much time on his hands that he can dig an irrigation canal to irrigate a marshland.

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So I'm confident that all of these channels down here are natural, that they have been there for literally hundreds of years. And that can be proven using the humic horizons and the 600 years old Mono Crater's ash.

Q Speaking of -- let's stay on irrigation for a while, Dr. Stine. Do you recall that Dr. Chapman testified that irrigation in the Mono Basin, and specifically in Rush Creek, went back to about the 1850s.

Do you recall that testimony?

A Yes, I do.

Q Do you agree with that?

A I don't agree with it. Certainly, the irrigation -- this not an accident, Ladies and Gentlemen. I'm not that exercised.

I just spilled water down my leg here. One these things that comes with age, you know.

What was the question again? Excuse me. This is a little embarrassing.

HEARING OFFICER DEL PIERO: Mr. Birmingham has asked that that be marked.

DR. STINE: I should think so. That's in the DWP column. But all such things should go into the DWP column.

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MR. BIRMINGHAM: Everything that is wrong with the world is DWP's fault. That explosion 600 years ago is DWP's fault.

DR. STINE: No, actually it isn't that way at all Mr. Birmingham.

HEARING OFFICER DEL PIERO: He's just jumped forward in his testimony.

MR. DODGE: I have 20 minutes here, now, and I want to use them.

DR. STINE: I apologize. I'll put your 20 minutes to rest, Mr. Dodge.

MR. DODGE: Can I have an extra 10 minutes, Mr. Del Piero? I'm having trouble with this witness.

HEARING OFFICER DEL PIERO: Mr. Birmingham understands about those kinds of problems with witnesses.

Q BY MR. DODGE: My question to you relates to the timing of the irrigation on Rush Creek.

A BY DR. STINE: Timing of irrigation on Rush Creek? Yes. In the Rush Creek drainage, itself, irrigation started probably in the 1860s or 70s.

By 1899, we have a map that shows irrigated lands in the Mono Basin. It's a beautiful map. It's an historical piece. And it very clearly shows squares of land up here on Walker and Parker Creek and a tiny,

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tiny square of land right down here by the County Road.

It shows the rest of this area in here, however, as woodland. And clearly there were no -- if this map is to be believed, there were no diversions down here in the Rush Creek bottom lands at that time.

A Ditch, B Ditch and C Ditch went in about 1915, and there's good reason to believe that the rest of the irrigation here on Rush Creek started about that same time.

As far as grazing goes, and the grazing relates to the irrigation, the grazing history, there were undoubtedly --

MR. BIRMINGHAM: Excuse me. I'm going to rise to state an objection that this is nonresponsive.

MR. BROWN: This is not what?

HEARING OFFICER DEL PIERO: Nonresponsive.

MR. DODGE: That's true. I just asked about irrigation.

DR. STINE: Okay. Excuse me.

HEARING OFFICER DEL PIERO: Sustained.

MR. DODGE: I think I just have a couple more questions, Dr. Stine. Let me just look at my notes here.

Q BY MR. DODGE: You testified about riparian vegetation growing around channels rather than causing

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channels.

Do you recall that testimony?

A BY DR. STINE: Yes. I was referring there to multiple channels on Lee Vining Creek. And thinking back to the video that Mr. Tilliman (phonetic) showed.

Q That was a direct comment. That's what I was trying to establish. That was reference to Mr. Tilliman's testimony.

A Yes, it was.

Q And you don't agree with that?

A I don't agree that the multiple channels that we see today on Lee Vining Creek have been caused by vegetation. Rather vegetation has been grown up around multiple channels. And we have ten photographs a year since 1980 documenting that.

MR. DODGE: If we could show these 205 through 210 once more in order, please.

Q BY MR. DODGE: Dr. Stine, I appreciate you were under tremendous time pressure, but I felt that you really raced through these exhibits.

A BY DR. STINE: You're right, I did.

Q Which one do we have there?

A This is -- what's the first one?

Q 205, on my list.

A 205.

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Q This is 205? Again, what -- get your notes if you need them.
A I don't.
Q What does 205 depict?
A 205 is the Rush Creek bottom lands taken as part of the Aitken trial in 1934, I believe it is, '33-'34. And it shows the Rush Creek bottom lands down -- well, right in through here. It would be right down in this area between the Ford and the County Road.

And one of the multiple channels here, it shows the crest beds. Out in here it shows a meandering channel. It shows a lot riparian vegetation. Again, this is wintertime, early springtime, so we don't see leaves on the vegetation, but a dense vegetation growth along a slowly moving meandering stream.
Q Let's go to 206. What is 206?
A 206 is precisely the same spot. And we were able to identify this based on the Panum Dome here in the background, and the moat here on Panum Crater the 600-year old volcano.
Q So basically the stream has moved?
A Well, yeah. The stream has moved. The stream is now back here. But the point is that the stream has incised, so now all the water is in one -- one channel, rather than it meandering out like this over something

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that it could easily flood. The stream no longer floods anymore. It floods over this wide area.

And so all of the riparian vegetation that was here that used to be so dense in here has been killed off. Not only because the stream is no longer here, but because the stream is incised and widened, and therefore, the water table has dropped. And so you've lost the wide area of riparian vegetation that used to be there.
Q Let's to go Exhibit 207. Now, what does this depict?
A A similar -- similar area, a little bit different angle, but again, we're looking up Rush Creek. We can see the meandering channel there, lots of crests, lots of vegetation. One of several actually tributary -- pardon me, distributary channels that we find in the Rush Creek bottom lands in this vicinity right here, and once again the very dense riparian vegetation.
Q Let's to go to 208. 208, I take it, is the reoccupation?
A Reoccupation. Same site. We were able to line it up with the mountains here, with the hills. Here's the old channel, right through here. And you can see the remains of the riparian vegetation there.

The riparian vegetation is now dead, not only

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along the channel, but of course, all of this is riparian vegetation out here. The stream formerly had access to this surface here as a big flood plain. The stream has now moved. It's incised. The water table has dropped. We've lost the vegetation. This is one of the channels that could be rewatered.
Q Let's to go 209. This is a historical Rush Creek looking down stream toward the bottom lands, correct?

A Yes. We're standing right above the Narrows. We're looking slightly east of north over the largest of the spring areas right here off towards Rush Creek into the bluff on the other side. The rills that drained the Rush Creek spring area, the bottom lands springs area appear on this photograph.

Elden Vestal and others have talked about juvenile and even occasional adult fish being up here in these channels amongst the crest beds that were here.

The skuds, apparently the invertebrate food that the fish fed on, were very, very rich in here. And the stream, then, that collected from these spring rills flowed out, as I'm indicating here, down to Rush Creek, and joined Rush Creek right down here, so that fish from Rush Creek actually had access to the spring system up here.

Q Okay. Let's look at, finally, at Exhibit 210.

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A That is the same area. Exhibit 210 shows the same site from the same site triangulation point just immediately below the Narrows. We're looking down on what used to be the springs area. There's still a little soggy ground down here, but it isn't -- we don't have any water flowing from here making its way even toward Rush Creek as surface flow.

Water does come out of the ground, goes back into the ground right here, presumably going into Rush Creek as ground water. And we don't have a connection, a hydrological connection, anymore between Rush Creek and the springs up here, because the springs -- spring flow has dropped tremendously.

Q Final question, Dr. Stine. You mentioned the feasibility of removing the -- the gravel plugs in the historical channels, and rewatering those channels, and you've also, several times, mentioned incision.

Now -- I take it if there were enough incision in a particular spot, you could leave an historical channel high and dry, if you will, couldn't you?

A And indeed -- you're right. Yes. And indeed, down here, basically from immediately above the Ford on down, the multiple channels down here, the old channels, have indeed been stranded. The channel is sitting up there above the present day channel. It

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would be more difficult to water these channels that are today stranded.

As you go farther upstream, however, what you see is that incision feathers out, as I was saying. And the incision can really only be traced about halfway up through the bottom lands. And even halfway up through bottom lands, its minor. So that all of these other -- all of these other rewaterings in here involve a grade change --

Q In here, what do you mean?

A From basically the upper -- upper half of the bottom lands. The rewaterings that would go on there involve a difference in grade between the existing stream and the stream to be rewatered of less than two feet and often less than one foot.

Now, there's one exception. There's been should

scouring right down here, just below the Narrows. And that scouring, local scouring, has put the stream down, I think it's about four feet, if I remember correctly, below -- below the channels so there is some hanging there.

But once again, that could be -- we could rebuild the left bank of Rush Creek right there, and divert the water off into those newly opened channels.

HEARING OFFICER DEL PIERO: Mr. Dodge, are you

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going to need the screen anymore?

MR. DODGE: No.

Q BY MR. DODGE: If I understand what you're saying correctly, if you were going to try to rewater historic channels near Mono Lake, the incision would present a formidable problem, but that -- immediately below the Narrows, it's not a particularly significant problem.

Q That's right from below the Narrows down roughly halfway through the bottom lands, the incision is basically a non-problem.

From there down, however, it becomes somewhat more problematical. And by the time you get down to immediately above the Ford, it is a problem. Not an insurmountable problem, but it's a problem.

MR. DODGE: Thank you. No further questions.

HEARING OFFICER DEL PIERO: Thank you very much, Mr. Dodge.

MR. ROOS-COLLINS: Mr. Del Piero?

HEARING OFFICER DEL PIERO: Yes, Mr. Roos-Collins.

MR. ROOS-COLLINS: Dr. Stine is testifying on behalf of California Trout, as well the Department of Fish and Game, the Mono Lake Committee and the National Audubon Society. I request, however, that Mr. Birmingham be allowed to proceed with his

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cross-examination next in order following our mutual order.

MR. BIRMINGHAM: I wonder if there's a specific reason for that.

HEARING OFFICER DEL PIERO: That's what I was wondering. Why?

MR. ROOS-COLLINS: I am comfortable with the order that we follow with all prior witnesses. To be very blunt about it, Mr. Birmingham's proceeding me allows me to deal with the issues which are clearly contested and not to deal with the issues that are not.

HEARING OFFICER DEL PIERO: The concern I've got, Mr. Roos-Collins, is the fact that Dr. Stine is, in fact, your witness. And is, in fact, presenting testimony.

The normal procedure followed is someone offers their direct testimony, and then the opposing parties are afforded the opportunity to cross-examine, and then we do redirect and recross. That's not something that I have to explain to anybody in this room.

The concern that I've got, and I indicated it earlier, is if, in fact, the witness is being called by a number of parties, it seems to me, in order, as I said earlier, to make sure that we've got a level

playing field, that we should follow the process of
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having those parties that are calling him by their opportunity for direct testimony and their initial comments, and then go to those individuals or those parties who are on the other side of the issue.
If you are calling Dr. Stine or someone in the future, I have no difficulty with pursuing the same order that we've followed in the past.
Alternatively, however, in order to insure that this is done in a fashion so that it doesn't appear that there's any favoritism or unfair advantage being afforded to one party or the other it seems to me that it would be appropriate for you to begin now.
MR. ROOS-COLLINS: Mr. Del Piero, I'm prepared to begin now.
HEARING OFFICER DEL PIERO: Good.
MR. ROOS-COLLINS: Good morning, Dr. Stine.
DR. STINE: Good morning.
CROSS EXAMINATION BY MR. ROOS-COLLINS
Q You didn't visit Rush Creek before 1941, did you?
A BY DR. STINE: Let's see. No. Of course I didn't. I was born in 1950.
Q Not withstanding your having been born after the period addressed in your testimony, you speak with great certainty about that period?
A Yes, about those things of which I am certain.
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Q In fact, in response to one of Mr. Dodge's questions, you said that you were absolutely certain about some pre-1941 condition?
A Yes. That was related to whether or not the multiple channels in the bottom lands with the exception of Indian Ditch were natural versus artificial.
Q Now, the Board and the parties here understand that you're a professor, and that your style is therefore somewhat reconcorial. But leaving that aside, let's discuss the basis for your certainty about the conditions that existed before L.A. began diversions in 1941.
Your testimony on page one refers to 300 field days in the Mono Basin?
A Yes. It's closer actually to 400 field days now. I cribbed that out of something I had written several years ago, and probably should have upped the number.
Q You testified in response to one of Mr. Dodge's questions that you have walked ever distributary channel in the Rush Creek bottom lands?
A Yes, I have. On several occasions.
Q Have you walked the entire length of Rush Creek from Grant Dam to Mono Lake?
A Yes. Actually, I have walked the entire length of
0122
Rush Creek from its head waters down Mono Lake.
Q Have you walked the entire length of Lee Vining Creek from L.A. DWP's point of diversion to Mono Lake?
A Many times.
Q In the course of these field visits, did you take samples to assess the historic and current

geomorphology of these creeks?
A Yes. I've taken many soil samples, many sediment samples and probably now roughly 40 radiocarbon samples for dating back to roughly 4,000 years ago.
Q Your testimony on page three also refers to documentation from a number of different sources, including the Aitken case aerial photos and historic accounts of hydrologist, Charles Lee, and fisheries biologist, Elden Vestal.
Did you rely on documentary evidence in preparing this testimony?
A Yes, I did, where I thought the documentors were reliable. And I based whether -- their reliability on whether or not I could see physical indicia, either existing today or on past photographs, which would verify their accounts. And I can give you examples of that if you're interested.
Q Let me ask you, specifically, about the basis for your mapping of the distributary channels in the Rush

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Creek bottom lands.
Is that mapping based in part on your field visits to the bottom lands?
A Yes, it is. What I have done here on this map is simply trace the channels that existed on the 1930 aerial photographs. And I went back into the field, having done the tracing, and I found several places there where the line wasn't drawn exactly as I wanted it to be, and so I corrected that.
Those corrections, however, they are very minor. They're not on here. But they don't change anything in terms of the lake, and they're very, very minor changes through here.
But again, that's a matter of being -- trying to be precise because it's fun.
Q And Cal Trout Exhibit 9, which is the January 1992 comparison of historic and existing conditions on Lower Lee Vining Creek, you discussed the channel form along Lower Lee Vining Creek, and among other things say, "The main channel was characterized by approximately 31 points where, over a distance of less than 70 feet, the stream changed direction by greater than 60 degrees." This is page four of your chapter in that exhibit.
A Yes.
Q Is it your opinion as a professional

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geomorphologist that historic photos -- excuse me. Let me withdraw that question.
Was that representation about Lee Vining Creek based on your interpretation of historic photos?
A Historical photos, yes. Although there is another record of the channels that existed during this same time.
There were some very accurate large scale Aitken case maps that were made. And, in fact, my suspicion is that the reason that the 1930 photographs, the Fairchild Aviation photographs, were taken was to provide a basis for Los Angeles Department of Water and Power to map the streams.
So I relied not only on the photographs, but on

these rather detailed maps that DWP had produced.
Q You would agree that your description of the channels in Lee Vining and Rush Creeks before 1941 is very specific, even to the point that can you estimate the number of points where the channel changed direction by a specified number of degrees?
A Yes. That is very easy to get off of a map or off of an aerial photograph. On the other hand, things like channel depth cannot be gotten from an aerial photograph.
So whereas we can be very, very specific based on

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aerial photography and on ground photography and accounts on some things, we cannot be as precise on other things.
For channel depth, we can't rely on aerial photographs. We have to go to previous -- or to historical accounts. Or in the case of the Rush Creek bottom lands, we can go into the channels that still exist today.
And we can basically push ourselves in the time machine back to 1940 and see what those channels were like, because they're still there, and they're still in place. Everything's in good shape.
Q As matter of definition, is geomorphology the study of land form as it existed at some time?
A It can be. Geomorphology is the study of land forms and the processes that create the land forms and the evolution of the land form. So it's a process science for sure.
Q Is it standard practice for a geomorphologist assessing historic conditions to rely on the types of sources you have used in preparing your testimony?
A Yes. Very common. These are the basic -- these are the most basic tools.
Q Your written testimony refers to several reports which you prepared regarding Lee Vining and Rush Creeks

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for the restoration technical committee in the Mono Lake cases; is that correct?
A That's correct.
Q Has is restoration technical committee received comments on your sections of those reports?
MR. BIRMINGHAM: I'm going to object on the grounds of relevance.
HEARING OFFICER DEL PIERO: I'll overrule the objection. You can go ahead and answer. Have they?
DR. STINE: I don't remember. I remember getting back comments from various people. I mean, I never put out anything on the Mono Basin without putting it across Peter Vorster desk.
HEARING OFFICER DEL PIERO: But do you know?
DR. STINE: Do I know if it has been put out for review? I always have people look at my writing and --
HEARING OFFICER DEL PIERO: Mr. Roos-Collins why don't you proceed with your questions.
MR. ROOS-COLLINS: Let me ask you a more specific question Dr. Stine. Cal Trout exhibit 13 is your September 1992 report entitled, "Past and Present Geomorphic and Hydrologic and Vegetative Conditions on

Rush Creek"?
A Yes.
Q Did L.A. DWP submit to the R.T.C any comments on
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this exhibit?
A They may have, but I don't really remember. They may have.
Q Both in your written testimony and in your testimony today, you refer to the Rush Creek bottom lands as unique or nearly unique; is that correct?
A Well, of course, yeah, every -- it's unique. Every stream is unique. I think what I said was, or what I was trying to imply in any case, was that bottom lands environments in the Eastern Sierra Nevada are very rare, and indeed they are.
Q Can you name any bottom land in the Eastern Sierra today which is jungle like in the same sense that you described Rush Creek before 1941?
A Yes. You won't like this answer.
Q Dr. Stine, you're here to tell the truth, not to please me.
A May the truth always please you. But it's probably down at Owens Lake. And there is a very small remnant of the bottom lands environment that used to be a very extensive bottom lands environment at the mouth of the Owens River.
It and used to be more extensive, because there used to be water Owens Lake. And so the Owens -- Owens River had a relatively extensive bottom lands.
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With that exception, I would say that most of the bottom lands, they were rare to begin with, and they're now gone in the Eastern Sierra.
Q Are you aware of any stream in 1941 that had a bottom lands comparable to Rush Creek other than the Owens River as you just described?
A Probably the Truckee River. And again, all of these rivers are rivers that flow into fluctuating lakes. And that's why the bottom lands were where they were. Probably -- probably the Truckee River near Pyramid Lake was comparable. But I don't think any others would have been comparable.
If you had extensive bottom lands on Lee Vining Creek and on Mill Creek in the Mono Basin as well but they weren't as large as Rush Creek. Rush Creek was certainly one of the biggest three bottom lands in the Eastern Sierra.
Q One last question about bottom lands. What distinguishes bottom lands from non-bottom lands in Rush Creek? When you use that term, what qualities are you referring to?
A I'm referring to relatively low gradient; multiple channels; channels that are well lined with vegetation; channels that typically meander to a greater extent than, say, a non-bottom lands environment system would;
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high water table; easily floodable. Those would the the primary considerations.
Q Have you read L.A. DWP Exhibit Number 1, the direct testimony of Drs. Chapman and Platts?

A Yes, I have.
Q Do you have an opinion whether the evaluation reach is representative of the other part of Rush Creek?
A The other part of Rush Creek meaning --
Q Let me withdraw that question and be more specific.
In your opinion is the evaluation reach representative of Rush Creek below the evaluation reach?
A No, it's not. They're vastly different. We have a -- basically a single-channeled system in a very narrow canyon above the Narrows. Below the Narrows, we have this very wide-floored, multiple-channeled system. It's very different.
It was also steeper and remains, for that matter, steeper above the Narrows than below. It's considerably rockier. There are lots of boulders and whatnot in the channel above the system -- above the Narrows, that is, very, very few boulders, if any, below the Narrows. So it's vastly different.

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Q Cal Trout Exhibit 13, your September 1992 report on past and present conditions on Rush Creek describes the creek by section, doesn't it?
A Yes, it does.
Q Does that set forth the qualities of the evaluation reach, as you understand it?
A Yes, although I wasn't calling it the evaluation reach at the time. But I did have information in there on things like width of the channel, width of the riparian band via type of bed elements that made up the channel floor, that is boulders versus sand versus cobbles versus gravel, et cetera.
Q Your report describes reaches one through five. Which reach does Dr. Chapman and Platts evaluation reach correspond to?
A Can I look at it for a second?
Q Sure.
A There are multiple numbering schemes out there. Everyone goes out there and numbers the channel in a little bit different way. It would be -- you'll to have refresh my memory. Did their evaluation reach go all the way up to Grant Dam? I believe it did. In which case, it would be reaches one through four, lower middle.
Q And the Rush Creek bottom lands are what reach on

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Exhibit 13?
A The Rush Creek bottom lands are -- is reach five, which includes 5A, 5B, 5C.
Q Thank you. You were also familiar with L.A. DWP exhibit -- excuse me.
MR. ROOS-COLLINS: Mr. Birmingham, what is the exhibit number for doctor Beschta's testimony?
MR. BIRMINGHAM: I wish I could tell you that. Unfortunately my legal assistant took my list of exhibits to be and hasn't returned yet.
Q BY MR. ROOS-COLLINS: Dr. Stine, you're also familiar with the direct testimony of Dr. Beschta submitted in

the proceeding by L.A. DWP?
A BY DR. STINE: I am.
Q Let me ask your opinion about a conclusion regarding the period from 1850 to 1940 set forth in the direct testimony on page 22.
Quote, Grazing and flow alterations, however, had generally precluded establishment of young willows, cottonwoods and other riparian species normally dependent on high flow events.
That conclusion applies to Rush Creek. Do you agree with that opinion?
A No. But could I look at it for a second? I think -- I thought I kind of memorized this. Is it

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number one here?
Q It is the final conclusion in the section entitled, "Conclusions Regarding the Period 1850 to 1940," on top of page 22.
A Yes, I have now read that. And do I agree with it? No, I don't agree with it at all. And I would point out that Dr. Platts, when he was on the -- on the stand up here, showed us a stand of willow near the Lower Meadows that in his assessment was ten years old in 1948. And there's a great deal of that in the Vestal photographs from the late 1940's. There's huge amounts of willow that were being established in there.
Q You testified, I believe, on your cross-examination by Mr. Dodge, that grazing had localized effects on Rush Creek before 1941.
A Yes, I did.
Q And those effects were principally found above Highway 395?
A Well, I would say that the impact of grazing, which is in this one site immediately above Old Highway 395 is difficult to differentiate from the effect of road building and ditch building. That is where it was most intense.
But what I was thinking of more was -- were sites at other places on Rush Creek, including low on Rush

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Creek where there had been bank trampling at specific sheep crossings, places where the sheep crossed time after time. And can you see that in a few places where the banks were actually trampled. But those are very few and far between.
Q What is the basis for your conclusion that the effects of grazing on Rush Creek were localized below Highway 395?
A I've looked at many, many photos, all of the Aitken case photos, all of the Vestal photos, and lots of other photos taken by individuals, long-time residents of the Mono Basin, and the aerial photographs as well, which I've studied for literally hundreds of hours with a stereoscope.
And I cannot see places where vegetation has been destroyed to the point where stream widening has occurred over areas of more than, say, 30 to 50 feet. I'll be conservative and say 100 feet. In all of these other places, the stream is very tight. It's boxed shaped. It had rounded edges to it.

But there are lots of streams that haven't been grazed that have a rounded brink to them in these sedge lands which tends to kind of give them an appearance of being rounded off any way.

I think that there's lot of evidence down there

that that stream system was very, very stable. It had been disrupted only very locally by grazing.

And in 1938, when we had these extremely high flows on Rush Creek, Rush Creek didn't come apart. It held together. And the system down there worked just as it had for hundreds, if not thousands, of years. It spilled the water. The water went on to Mono Lake and the system lived on.

MR. HERRERA: Mr. Roos-Collins, that's 20 minutes.

HEARING OFFICER DEL PIERO: Mr. Birmingham, you want the reporter mark that.

MR. BIRMINGHAM: Please.

HEARING OFFICER DEL PIERO: Was that the end of your time?

MR. ROOS-COLLINS: Yes. Mr. Del Piero, I request an additional 20 minutes for continuation of this.

HEARING OFFICER DEL PIERO: I'll be happy to grant that at 1:15. We're going to break for lunch.

MR. ROOS-COLLINS: Thank you.

(The lunch break was taken at this time.)

HEARING OFFICER DEL PIERO: Ladies and Gentlemen, this hearing will again come to order.

Some housekeeping, Mr. Roos-Collins, before you begin, sir, we're going to take a break between 3:00 and 4:00, whenever it seems to be appropriate and,

probably between 3:15, 3:30-ish for the afternoon break.

We're going to break for dinner at 6:00 tonight. We'll take a one-hour break. And we'll be back here at 7:00. Okay? And then it will probably be safe to assume that we'll be done at 10:00 or whatever is close to 10:00 in terms of cross-examination. Okay?

Mr. Roos-Collins, why don't you proceed, sir?

Q BY MR. ROOS-COLLINS: Dr. Stine, before lunch we were discussing the effect of grazing on Rush Creek before 1941. Let me draw your attention to Department of Fish and Game Exhibit 146, a photograph offered this morning into evidence.

Do you have that photograph in front of you?

A BY DR. STINE: I don't.

Q I show you Department of Fish and Game 146. Do you know when this photograph was taken?

A This was in -- an Aitken case photo, so it would have been early 1930s. And probably at the same time as many of those others that I projected up here were taken in 1933, 1934.

Q Do you know where the photograph was taken?

A Yes. This is one of the distributaries that existed immediately above clover ranch, which is the ranch that existed on the west bank of Rush Creek,

immediately above the County Road crossing there.

Q Could you show us on the plan form, which is

Department of Fish and Game Exhibit 144?
A Here's the County Road right here. It existed basically in this same place. It's modified now. It existed basically in this same place before and Clover Ranch is right here.
My guess is that it's this channel right here or this channel right here. But I don't know which of these channels it is. Clover Ranch was right here and this was immediately upstream.
Q Do you see any indication in this photograph, Department of Fish and Game Exhibit 146, of grazing impact?
A I think it's difficult to tell at this time of the year. I would assume that this vegetation in here is probably -- probably has a browse line on it. So I think that it probably could be said with fair certainty that this area was grazed. It would be easier to tell if there were leaves on the vegetation.
In terms of the channel, itself, I would say that the grazing had little, if any, impact on the shape of the channel. We still see steep banks in -- the banks, both on the upper portion of the bank as well as on the wall of the channel are covered with a thick, thick

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matt of gramanoid vegetation, grass-like vegetation that would include rushes and sedges, perhaps, as well as a number of different species of grass there forming a real tight matt.
So I would say that it probably has been grazed, not, though, to the point where it has affected the channel material.
Q On page five of your written declaration, National Audubon Society Exhibit 1-W, you state, "While photographs show browse lines on some stream side willows, these very willows can be seen to have remained extremely dense, quote, jungle like, unquote, according to some who fish the stream."
Then you go on to discuss how grazing had no discernible impact in the geomorphology of the stream.
In your review of photographs in connection with the reports you prepared for the Restoration Technical Committee, and in preparing this exhibit, have you ever seen any photograph that would lead you to believe that grazing was precluding the establishment of riparian vegetation below Highway 395?
A I'm sorry. That's a complicated question because I have not seen photographs that would indicate that. On the other hand, I assume that there -- that grazing did have something of an impact on the system. A mouse

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has an impact on a system, a deer has an impact on a system.
So undoubtedly the vegetation would have sort of unfolded differently between 1930 and 1940 had grazing animals not been down there. On the other hand, I have not seen photographs that showed any more than a very, very highly localized effect on the channel system of grazing. I'm not sure -- I'm not trying to skate your --
Q My question concerned photographs.

A Yeah. I have seen what I think to be sheep crossing sites, including one down by the Rush Creek delta that Elden Vestal took in 1947.

And in the foreground of that photograph, it's clear that there was a sheep crossing site there. So locally, right there, there was something of an impact. Not enough to ramify through whole system and make it unwind.

But the rest of the channel, out beyond that one site, which is the greater part of a channel length, is virtually unaffected. It is not materially affected by grazing. The channel shape remains as it would be had it not been grazed.

Q Thank you. Let's discuss the impact of irrigation diversions on flow in Rush Creek before 1941. You're

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familiar, as we previously discussed with Dr. Platts' and Dr. Chapman's testimony, which includes table A, showing flows of less than one cubic foot per second from 1934 to 1940?

A Yes, I am.

Q Is it your understanding that this table refers to flows in the evaluation reach?

A Yes.

Q You have reviewed the records for the gauge located at the bottom of the bottom lands?

A At the Ford, yes, I have, though not as extensively as Peter Vorster has. I've dealt with it somewhat. But my dealings with it have always been sort of seat-of-the-pants stuff. And then I go to him to get the nitty-gritty, and I make sure that I'm interpreting it correctly.

Q Have you seen any data that suggests that Rush Creek below Highway 395 had one or more days of zero flow from 1934 to 1941?

A I don't recall. It would be easy enough to look up. But I don't recall. It seems to me that most of the zero flow days were during the dust bowl period between 1924 and '34. Though really between 1938 and 'l34. Those were the real dry years.

Those were the years where we got the zero flows.

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The dry -- the naturally dry conditions in combination with the irrigation diversions.

So I guess I would not be surprised if there were very occasional days between 1934 and 1940 where flows went to zero. But they certainly wouldn't be nearly as common.

And there may, indeed, be no days after 1934, between '34 and '40, when flows went to zero.

Q You testified that the springs below the Narrows were a constant source of flow into Rush Creek.

A Yes.

Q Do you have any reason to believe that the springs dried up at any time between 1934 and 1941?

A No. I have no reason to believe that and it would be highly, highly unlikely that such a thing could happen.

MR. BIRMINGHAM: Could the reporter mark that please, Mr. Del Piero?

MR. ROOS-COLLINS: Let's talk, now, about the effect of L.A. DWP's diversions on Rush Creek after 1941.

Q BY MR. ROOS-COLLINS: Your testimony describes the loss in channel length in the bottom lands between 1941 and the present; is that correct?

A That is correct. More correctly, it would be the

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loss of channel length that occurred after 1967.

Q Does your testimony estimate the percent reduction in channel length between 1967 and the present?

A Yes, it does. And I can remember a few of the specifics, but I would want to look up the specifics.

Q Let me just confirm one point, though. I believe you testified in response to a question by Mr. Dodge that your testimony does not estimate in a quantitative way the loss of spring rill channel in the bottom lands.

A That's correct. I never made an attempt to measure the spring rills, because they're difficult to see on the aerial photographs. They're relatively small. One could take a stab at it, because many of those rills still exist up there, though, they're not carrying water anymore. I did not add it into the distributary channel length.

Q On page four of your written declaration, you state according to Mr. Vestal, trout migrated up these small tributaries as far as 2,000 feet from Rush Creek.

Are you saying there that the rill channels that led from the spring -- the springs to Rush Creek were in some instances 2,000 feet in length?

A Yes. In that particular case that I had in mind

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there and that you're now speaking of, it was a number of rills that had come together to form one larger rill, and that larger rill then carried all the water from the springs down to Rush Creek.

Again, it was a bigger channel than the spring rills that I was referring to. On the other hand, I still considered it a rill. I didn't add it into that 15,000 feet of loss that I've been talking about.

Q And is -- excuse me. Are the channel -- the channels leading from the springs to Rush Creek now occupied with water?

A Very few of them are occupied with water. None of them -- I should say none of them on the east side are occupied with water. On the west side, very few of them have water, and what little water is in there is not actually making it any where near Rush Creek. It's disappearing, again, into the ground as it runs off the springs there.

Q You testified that the operation of L.A.'s water supply system in combination with the catastrophic floods and fire were -- created a scar on the landscape; is that correct?

A Yes. Although I think what I had in mind there when I used the word scar was the fact that the streams had incised, Rush Creek, Lee Vining Creek, even Mill

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Creek, which DWP doesn't take much water from. They have a little water right there. But all of these streams incised in response to Mono Lake dropping. It's that incision that I think I referred to as a scar.

Q Let me ask you a hypothetical. Let's assume that in 1941 L.A. did not acquire licenses to operate its water supply system on Rush Creek.

Can you imagine any combination of natural circumstances which might have resulted in the same degradation you have described for the bottom lands and the lower portion of Rush Creek?

A Well, no. This particular combination of events that gave rise to what we see out there, the degradation, for lack of better term, the modification, to not put a qualifier on it, the modification that we've seen out there since 1940, that combination of events has, as one its components, maybe the biggest component, the drop of Mono Lake and the exposure at the nick point at about 6,400 feet on the deltas.

And this is the major problem, the thing that's hardest to undo, is the fact that these streams have incised anywhere from -- from 12 or 14 feet to 25 feet in depth. I mean, there are big, big cuts out there now.

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So I suppose that one could hypothesize that a drought comes along and -- because you did include natural in there, right? A drought comes along and draws Mono Lake way, way down. And then all of a sudden you'd have this huge blast of water that comes down the streams when the lake is low, in which case you could probably do the same thing.

What separates the artificial events that we've seen from what I just described, is that very seldom in a drought situation, a natural drought situation, would you completely cut off flows down Rush Creek and Lee Vining Creek.

So that as the lake dropped, yes, the streams would incise, but vegetation would be coming in along the stream as it slowly incised in response to the slow drop in lake level.

What separates the unnatural from what I just described hypothetically as a natural, is that we completely cut off the streams. We let Mono Lake drop way down, and then we put huge blasts of water in it with no vegetation there to hold the system together. And that's why this was -- was so catastrophic.

Q Let me ask you a more focused hypothetical. Let's assume that the irrigation diversions which occurred before 1941 continued to the present. Let's assume

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that L.A. DWP did not obtain licenses to divert.

What would the Rush Creek bottom lands look like today?

A To explain -- for everybody to understand where I would -- how I would approach this question, by spreading water as DWP was prior to 1940, and as the pre-DWP people were prior to 1940, you're probably increasing a little bit the loss of water from the Mono

Basin.
And so the irrigation diversions probably would have caused a small drop of Mono Lake. Not to the point, though, where it exposes the nick point on the deltas. Mono Lake probably would have been at 6,420 feet rather than the 6,420 to 30 feet that it would be under natural conditions. There wouldn't be a big, big change there.
My sense is that not much vegetation loss would occur on the streams, because water was getting back into all of these streams, and the flow in the streams was sufficient to support vegetation.
So I don't think that much would have gone on. I think that basically we were seeing between 1930 and 1940 a more or less equilibrium condition there.
Q One last question about that hypothetical. You would not characterize the human forces at work on Rush

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Creek in the 1930s as causing a continuous decline in the ecological health of Rush Creek?
A That's a tough question. To assess that, one needs two points in time. One needs to know what it was like in 1910, and then look at it in 1930 and see if there has been a change.
My sense is, from looking at the photographs from the 1930s, then from looking at the photographs taken a decade later, things were pretty much steady state there through about 1947.
If there had been some impact by grazing, it seems to me that the environment out there had probably come into some semblance of equilibrium with it. I don't see it. I see no reason to think that that system was in a downward spiral out there, even a slow down ward spiral. I just don't see evidence for that.
Q Okay. Let's turn to one final subject, which is the remedy to reestablish the historic fisheries.
You were here during Dr. Beschta's testimony, weren't you?
A I was.
Q You were sitting behind me, as I recall.
A I might have been, yes.
Q I sensed that you jumped when I stipulated to Dr. Beschta that the reintroduction of flows had caused

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a beneficial change in channel form and vegetation.
Whether or not you did, let me ask you a question.
A Reintroduction of flows recently, now, you mean?
Q Pursuant to the court orders.
A Okay. Okay.
Q Do you generally agree or disagree with Dr. Beschta's point that reintroduction of flow and the removal of grazing will cause a beneficial change in the Rush Creek system?
A I couldn't agree more. I agree with them 100 percent. I'm not sure I jumped. I might have gotten antsy or something.
Q Let me ask you specifically about a sentence on page 23 of Dr. Beschta's testimony. This is labeled number one in the section, "Recommendation for Guarding Riparian Vegetation."

He stated, "Within five to ten years seasonal rewatering of side channels should be allowed to occur without additional human intervention."

In your opinion, if no intervention occurs in the bottom lands, how long will it take the flow regime under current court orders to reopen these distributary channels that you described in your testimony this morning.

A There is no reason to think that they will

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reopen. Under the present court ordered flows, Mono Lake will stay low. And as a result, all the sediment going down Rush Creek, and the other streams for that matter, will go into Mono Lake and off into deep water.

Rush Creek right now is not prograding. It's not making itself longer, and therefore the stream is not building up. And until that stream starts to build up, there's going to be no tendency for the stream to branch out in distributaries. It may braid a little here and there, but it's not going branch out into distributaries.

And that, in a sense, is somewhat different than the stream actually opening up, somehow fortuitously, the previously existing distributaries. There's no reason to think that it will open up the previously existing distributaries.

If you brought Mono Lake up, it might make new distributaries, and indeed will make new distributaries after a long, long period of time. There's no reason to think it will open up the existing ones.

Those plugs of gravel are real solid. If 1500 cfs of flow couldn't move them, there's no reason to think that the present flow regime is going to move them out.

Q This morning you discussed a program of

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intervention to reopen those distributary channels. You specifically discussed the removal of cobble from the mouths of those channels.

Were you recommending that the State Water Board or the El Dorado Superior Court open up those channels?

A I believe, this minor point here, if I said mouths of channels, I was incorrect. I meant heads of channels.

Q That was my word and my mistake.

A Okay. Heads of channels. And the rest of the question is what now?

Q Are you making a recommendation to the State Water Board regarding the reopenening of those channels?

A No. I guess I wasn't. I mean, I don't know that it's my place to. I see no reason not to open those up, with the exception of cost. And I think the cost for what we would get out of it is minor.

So no, not necessarily a recommendation, but an explanation that I think the benefits there would be -- would be terrific. We would get back something closely approximating the system that had existed for thousands of years.

Q Dr. Stine --

MR. HERRERA: Excuse me, Mr. Roos-Collins, time,

20 minutes has elapsed.

MR. ROOS-COLLINS: Mr. Del Piero, I request two additional minutes. I have one last line of questions.

Q BY MR. ROOS-COLLINS: Dr. Stine, let's assume that the State Water Board finds that the distributary channels in the bottom lands are sufficiently beneficial for reestablishment and maintenance of the fishery that they need to be rewatered.

Would you then recommend that intervention occur to reopen the heads of those channels?

A Can I split it a little bit? Is this a yes or no?

Q Please answer as you see fit.

A I guess that I would recommend to the Board that all of the channels in the upper half of the bottom lands be rewatered, because there's no grade problem. The benefits would be phenomenal. The cost is -- doesn't seem to me to be outrageous.

I guess I would have problems, personally, recommending rewatering some of the distributary channels in the lower half of the bottom lands, because there you do have a grade problem. There you do have your distributary channels stranded some number of feet, sometimes five, six, seven feet above the existing channel.

So it would be difficult, not impossible by any means. I mean, we've built golden gate bridges and tunnels under the Mono craters and all of that. From an engineering problem, not a problem.

But cost -- the cost of rewatering those lower channels is considerably greater than it is rewatering the upper channels.

And I might suggest as long as you've given me the chance to be God here, that work be done someplace else, for instance, on Mill Creek. Because Mill Creek, even though DWP doesn't have the rights to any more than a second foot or so of that water, Mill Creek has been terribly degraded as a result of DWP-induced lowering of Mono Lake.

So if -- if we have to make up for some of the sins of the past or some of the problems of the past, some of the consequences of past actions, I would say let's not water the lower channels. Let's save a lot of money there. Let's go over to Mill Creek and start doing some work over there that will help resurrect Mill Creek to the system that it used to be.

Q Dr. Stine, with respect to the upper part of the bottom lands, would rewatering require one-time or continuous intervention?

A It would require one-time with heavy equipment, and then over some period of time, people would want to be out there with shovels removing amounts of sand or making sure that the system is -- that the system works.

Now, that's not to say that the system is to provide fish habitat or the system is to provide scenery or anything else. All we're talking about

there is removing the plugs, letting the water run down through the channels.

And the idea of being out there with the shovels would just be to insure that the water continuous to move. And I doubt you'd to have monitor it more than a year or two or three or four years, something like that.

Q Thank you.

MR. ROOS-COLLINS: No further questions.

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

MS. SCOONOVER: I believe Mr. Birmingham's next in order.

HEARING OFFICER DEL PIERO: I'm sorry. What am I thinking about? Mr. Birmingham?

MR. BIRMINGHAM: Dr. Stine is not being called by State Lands Commission or Parks on these issues?

HEARING OFFICER DEL PIERO: As far as I know, he's is not.

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MS. SCOONOVER: No, he's not.

MR. BIRMINGHAM: Dr. Stine, you're going to be sorry to hear this, but I've lost my cross-examination of you.

DR. STINE: Shucks. Why don't we wing it?

MR. BIRMINGHAM: Why don't we wing it? Sure. That's easy for you to say.

HEARING OFFICER DEL PIERO: You got it there, Tom? You want a minute?

CROSS EXAMINATION BY MR. BIRMINGHAM

Q Mr. Roos-Collins started out his cross-examination of you by noting that you speak with certainty about those subjects you've discussed. And you responded by saying you speak with certainty about those things of which you are certain.

Was that your testimony?

A Yes.

Q So with respect to those things that you've spoke about with certainty, you are certain?

A Yes.

Q There isn't any doubt in your mind as to any of the things about which you spoke with certainty?

A There is little doubt. And I think that that's what certainty is.

Q For instance, you said you were absolutely certain

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that in Rush Creek in the bottom lands, all of the distributaries were wet.

You're absolutely certain about that? No doubt? Guaranteed?

A I said that on the 1929-30 photographs, all of them are wet with the exception of about 100 foot or so section down there toward the mouth of Mill Creek.

Q So you're not so certain that in 1941, all of those distributaries had water in them?

A Depending upon what time of the year we're talking about, and how much water is in the system. I mean, if you can be more specific --

Q Let me read to you, if I may, Dr. Stine, from the deposition transcript of Elden Vestal. Mr. Vestal, as

you know, is a fisheries biologist from the Department of Fish and Game who was in the Mono Basin in the period immediately prior to DWP's diversions; is that correct?
A That's correct.
Q And you relied extensively on the reports of Mr. Vestal in forming the opinions that you've reached in connection with this proceeding; isn't that right?
A Yes, in addition to other things. But yes, Mr. Vestal was very, very helpful.
Q Well, just so we can establish the degree of

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certainty that you have, I'd like to read to you from the deposition transcript, and this was taken by way of deposition, because of Mr. Vestal's health. But on page 56, I have an exchange with Mr. Vestal.
Now, is it your understanding that in Mr. Vestal's historical reports, he refers to as the Narrows -- or he refers to the Gorge what we refer to as the Narrows?
A Yes.
Q On page 56 at line 13, I asked the following question of Mr. Vestal.
Question: Prior to 1941, in periods other than the run-off period, is it correct that Rush Creek consisted primarily of a single channel below the gorge?
Answer: Prior to 1941?
Question: Yes.
Answer: As I recall, it consisted of a, yes, a single, a main-stem channel, but at higher flows, any flood flows coming down there -- I don't know whether they were flush flows or spill flows or what they were. There was certainly spill out over the meadows and went through the meanders.
Excuse me. I misspoke. And went through meanders.
Question: And subsidiary channels?

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Answer: You might call it that, yes.
Question: Now is that the reason, now, that Cal Trout Exhibit 5-S contains a map of what's referred to as the test portion of the stream which is Rush Creek below the Gorge; is that correct?
Answer: On the right-hand side of the page, page 91?
Question: Yes.
Answer: Yes, that's correct.
Question: And is it correct that excluding periods of high run off, that map depicts the main channel of Rush Creek as it existed prior to 1941?
Answer: Yes, and this was determined from a combination of aerial photos and U.S.G.S. maps.
Now, the questions and answers that I just read to you, would that cause you to have any doubt about whether or not in 1941 all five channels of the stream that you've referred to had water in them all the time?
A Absolutely not. Absolutely not. I mean, I was waiting for punch line, Mr. Birmingham, and I'm not finding it there. He talks about a primary channel.

And if I -- if someone wanted me to pick out from that photograph which the largest channel was there, I could do it.

But, I mean, we're looking at the Rush Creek system there with about 35 cfs in it, and all of the channels there are watered.

Again, I don't mean to be combative or evasive. I just did not hear anything in there that would lead me to believe that Mr. Vestal believes that those channels were not watered from time to time.

Q The fact that Mr. Vestal said that as he recalled, Rush Creek prior to 1941 consisted primarily of a single channel below the Gorge.

A Primarily.

Q Would not cause to you doubt that it was -- that all five channels that you've described were watered all of the time?

MR. DODGE: Excuse me. Objection asked and answered. To the extent it hasn't already been asked and answered, it's simply argumentative.

HEARING OFFICER DEL PIERO: Sustained.

MR. FRINK: Mr. Birmingham, in order that our record's clear, there have been a number of depositions of Mr. Vestal. Could you identify the date of the one that you're reading from?

MR. BIRMINGHAM: Yes, this was the deposition of November 3, 1993.

MR. FRINK: Thank you.

MR. BIRMINGHAM: Thank you. Was that marked as a Department of Fish and Game exhibit?

MS. CAHILL: No, I think not.

MR. DODGE: The testimony, this year, was I think in lieu of his being brought here. And I believe it's all been admitted into evidence.

HEARING OFFICER DEL PIERO: That is correct. Except for the -- except for written testimony that was submitted earlier. That needs to be offered.

MR. DODGE: Mr. Del Piero, I believe I did offer the duck testimony, at least the written duck testimony. I'm quite confident I did.

HEARING OFFICER DEL PIERO: Forgive me, I don't recall. Do you remember?

MR. SMITH: We're talking about which testimony?

HEARING OFFICER DEL PIERO: We'll get it straight, Mr. Dodge.

Q BY MR. BIRMINGHAM: At the beginning of your testimony this morning Dr. Stine you referred to the fact that as part of your experience, you worked with what you termed to be the Court Supervised Planning Team. I think those were your exact words. I wrote them down very carefully.

A BY DR. STINE: I believe you're right.

Q I'd like to talk for a moment about that planning team. First, that planning team is supervised by Mr. Trihey; is that correct?

A Yes, although Mr. Trihey is supervised by the Court, and that was my choice of words. But yes, he's

the one who I deal with directly. Yes.
Q Isn't Mr. Trihey the agent of the Restoration Technical Committee?
A I believe that's the case.
Q So Mr. Trihey is not supervised by the Court. He's supervised by the Restoration Technical Committee.
A I'm not sure I'm capable of answering that. My understanding is that the Court has a big hand in overseeing this. And that's why I selected those words. If I'm wrong, so be it.
But we continued to try and carry out the mandate that the Court has laid down there. And that's why I thought I was correct in saying the Court supervised the planning team.
Q But if, in fact, Judge Finney has ruled and ordered that the -- that Mr. Trihey works as the agent of the Restoration Technical Committee, then you might change your statement that this is the Court-supervised planning team?
MR. ROOS-COLLINS: Objection. This is the subject of many days of hearing before Judge Finney. The

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attorneys can't rerun it. It's a legal matter. And it is improper to ask this witness to express an opinion on this legal matter.
HEARING OFFICER DEL PIERO: Mr. Birmingham?
MR. BIRMINGHAM: Mr. Del Piero, I believe that this matter has been expressly resolved by Judge Finney. I have an order dated April 29, 1993, he resolved this issue, I believe, and I'll get the order out if there's any question.
But the order expressly states that the Restoration Technical Consultant, Mr. Trihey, is the agent of the R.T.C.
MR. ROOS-COLLINS: Mr. Del Piero, there's no need for Mr. Birmingham to locate that order. I agree with that. I'm objecting to the portion of his question that goes to the supervision by the Court of the Restoration and Technical Committee consultant. That is a matter which requires legal opinion.
HEARING OFFICER DEL PIERO: Mr. Birmingham?
MR. BIRMINGHAM: I'm asking Dr. Stine about his statement that he worked on the Court-supervised planning team.
HEARING OFFICER DEL PIERO: Mr. Dodge?
MR. DODGE: I think all of this is irrelevant to anything we're about here. It really doesn't make any

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difference, you know, who is supervising Mr. Trihey.
In the real world, the facts are that the -- Mr. Trihey makes recommendations to the R.T.C. Historically, the R.T.C. has required a unanimous vote. They very rarely get a unanimous vote. It's brought to Judge Finney, and he resolves it. That has nothing to do with what we're about here.
HEARING OFFICER DEL PIERO: Mrs. Anglin, can you read back the objection.
(Whereupon the record was read as requested.)
HEARING OFFICER DEL PIERO: I'm going to overrule the objection. And I'm also going ask Mr. Stine to

answer a question for me.
Do you understand -- have you reviewed the decision wherein this issue was addressed by Judge Finney?
DR. STINE: No, I haven't. And my choice of words here was --
HEARING OFFICER DEL PIERO: That's enough. Mr. Birmingham, I think that it's obvious from his answer, he's not prepared to respond to this. So I think you out to pursue some other question.
MR. BIRMINGHAM: Certainly. Absolutely. My only point Mr. Del Piero -- I've heard this term from all of the attorneys Court-supervised Restoration Technical

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Consultant Planning Team. And I wanted to make sure we understood it was not Court-supervised.
Q BY MR. BIRMINGHAM: In your direct testimony you refer to a small dam that was constructed --
HEARING OFFICER DEL PIERO: Mr. Birmingham, I need to point something out for the record, okay? Whether we're sure it's not Court-supervised or not has not been asked. And although you've asked the question, it's not been answered by Mr. Stine. So I want that clear on the record, too.
The appropriateness of whether it's been supervised by the Court or not or the fact of whether or not it's supervised by the Court or not, I need to point out has little if any bearing, possibly no bearing, in terms of the decision by the State Water Resources Control Board.
MR. BIRMINGHAM: I understand.
Q BY MR. BIRMINGHAM: Dr. Stine, your testimony refers to a small dam that was constructed on Grant Lake in approximately 1925; is that correct?
A BY DR. STINE: That's correct.
Q And this morning you said that your testimony should have correctly stated that the dam was approximately -- was at least ten feet high?
A As least ten feet high, yes.

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Q And why was that dam built?
A The dam -- initially, the dam was built in, I believe it was 1915 to serve the C Ditch, A Ditch and B Ditch. And in 1925, it was simply enlarged, certainly to serve those three ditches.
Again, probably to have better control, maybe to have better control for a longer time of the year or something like that. I don't know exactly. With a bigger dam you can control the flows over a longer period of time during the year.
Q But it's your understanding that the dam was constructed to impound water that would subsequently be used for irrigation purposes?
A I can't say that. I can only say that that's what it indeed was used for. Whether somebody else had a scheme going that never materialized, I don't know.
Q Now, on page two of your testimony, you say that flows have fluctuated widely in Rush Creek prior to diversions by the Department of Water and Power.
Is it correct that daily fluctuations were in

excess of 100 cfs?
A Very rarely they were in excess of 100 cfs, yes. And I think that the phrase "not uncommonly" was used to express the -- the frequency. I would say that rarely you had flows -- flow fluctuations in excess of

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100 cfs. That's correct.
Q But there were daily flow fluctuations in excess of 100 cfs?
A That's correct.
Q Now, on page two of your testimony, you talk about conditions that benefited fisheries.
It's correct, isn't it, that you are not an expert in fish biology?
A That is correct.
Q And it's correct, isn't it, that you are not an expert in riparian vegetation?
A One cannot study streams without knowing something about riparian vegetation. And I know a fair amount about riparian vegetation. I would say that my -- my specialty is not in riparian vegetation, but I've got to know something about it to deal with streams.
Q Now -- so you would be qualified to express opinions concerning the effect that riparian vegetation has on the formation of streams?
A Yes.
Q But isn't it also correct, Dr. Stine, that in 1990, when you testified about the effects that particular flow regimes had on riparian vegetation, when you went beyond the effect that riparian vegetation would have on the streams, it was necessary

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for you to rely on opinions expressed by riparian vegetation experts?
A I'm not sure if that's the way it unfolded, Mr. Birmingham. I think that in that case, such information was available, and so I chose to do it that way.
But again, this is three years ago. And I don't remember exactly what was said. I think that I'm in a position to say something about that, though.
Q So in 1990 when you referred to experts on riparian vegetation, you were doing it because that information was available?
A Certainly. If someone who's less geomorphologist and more riparian vegetation specialist has information on riparian vegetation, I would tend to defer to them if they seemed to be reasonable, sure.
Q And the same is true, isn't it, with respect to experts on riparian -- excuse me, experts on grazing?
A Yes, as long as it's on grazing per se. As soon as we start talking about animal-induced modification of a channel, I'm going to jump in at some point there. Because all of a sudden we're talking about channel, rather than just grazing animals. And I think I have a great deal to say about channels.
Q Where, other than the Mono Basin, have you studied

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the effects of grazing on channels in the Western United States?

A In terms of actual studies? None.
Q So all of the experience you have in studying the effects of grazing on riparian systems in the Western United States has been in the Mono Basin?
A That's correct. Parker Creek, Walker Creek, Rush Creek, Lee Vining Creek.
Q Now, you talk about the effects of grazing in your written testimony, NAS and MLC 1-W. And you state -- and this is on page five.
"I conclude that grazing in the Rush Creek bottom lands did not alter, in any significant way, the natural functioning of the system. Rush Creek continuous to convey water in the same manner that it had for hundreds of years prior to the arrival of domestic animals."
That is, "through narrow, deep, extremely stable channels that crossed the wooded and grassy marshes of the Rush Creek bottom lands. Conclusions that the bottom lands must have been degraded by livestock because other places in the Western United States were so degraded, is attractive only to those who have not studied on the ground the Rush Creek bottom lands."
By that last sentence, concerning conclusions that

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bottom lands must have been degraded by livestock because other places in the Western United States were so degraded, "is attractive to only those who have not studied on the ground the Rush Creek bottom lands."
You did not mean to suggest that the opinions of Drs. Chapman, Platts, and Beschta were based simply on the effects of grazing in other Western United States?
A That's a question?
Q That's a question.
A Yes, I would suggest that. And there are a large number of indications that that's the case. They said so in their testimony. They said so in their written testimony, that these transient bands of cattle going through the Western United States, et cetera, et cetera, undoubtedly had an impact on the Rush Creek bottom lands.
I think it was assumed that these transient bands of cattle must have been in the Rush Creek bottom lands from basically 1850 on. Let me give you another example.
They say in there that prior to the -- prior to the advent of Europeans in the Mono Basin, the early inhabitants, the aboriginal inhabitants of the Mono Basin, had grazing animals. And their grazing animals grazed the Rush Creek bottom lands.

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That's fine for New Mexico and for Colorado and Arizona and even up into the Pacific Northwest. It doesn't work in the Mono Basin. The aboriginal population did not have grazing animals. They did not have the wheel. They didn't have grazing animals.
Even all the way down south in the Owens Valley, the only grazing animals that were down there that the aboriginal population had, were animals that they themselves shot. They didn't keep and heard the animals. They didn't keep domestic animals.

I thought that there were a number of indications in there that suggested me that these people, having done a lot of work on other streams, had concluded that the Mono Basin must be like all of these others. Rush Creek must have this long grazing history. There's no evidence that it has the long grazing history.

And that's why I balked. I also balked because if these people had spent time, as I'm sure they would like to have time, to spend in the Rush Creek bottom lands looking at the channels, they would see that the channels down there are, even today, narrow with very old soils on their slopes.

We just can't have a stream that was widened 100 years ago having soils that are hundreds and hundreds of years old on its slopes, locally.

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And so I think that the evidence suggests that the grazing impact on the streams down there was not nearly as severe as what some preconceptions, based on legitimate studies elsewhere, would have suggested.

Q Now, it's your understanding, isn't it, that Drs. Chapman, Platts and Beschta have conducted studies on the ground in the Rush Creek bottom lands.

You understand that, don't you, Dr. Stine?

A I understand that. And I understand how much time they have spent in the Mono Basin, too. And it's a very small amount of time.

Q And its your understanding, isn't it Dr. Stine, that Drs. Chapman, Platts and Beschta, have all studied the historical documents concerning grazing in the Mono Basin?

A Yes. I know that to be a fact, because they quoted my document extensively in writing up their own. So, yes.

Q And isn't it your understanding that Drs. Chapman, Platts and Beschta reviewed historical photographs and based their opinions about the impacts of grazing on historical photographs?

A In part, yes.

Q Let's talk about historical photographs. I have placed on the easel what I believe has been

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identified -- maybe can you tell me, Dr. Stine.

HEARING OFFICER DEL PIERO: Excuse me. Tom, is there a reason why you want to move -- everybody in the room's going to have to move. I can see it just fine in the other location.

MR. BIRMINGHAM: I certainly can leave it in the other location.

HEARING OFFICER DEL PIERO: We're getting our own migration of loads here as we go through rotation of the exhibits. Do you need it up there? If you need it, there's no problem with putting it up.

MR. BIRMINGHAM: I do need to take a moment, though, and compare this blow up with an earlier copy.

HEARING OFFICER DEL PIERO: Take your time.

MR. BIRMINGHAM: I've got to orient myself.

Q BY MR. BIRMINGHAM: Now, this exhibit that we're looking at, Dr. Stine, what is the exhibit number, do you know?

A BY DR. STINE: I can look it up. I'm sorry. Here let me look it up.
Q Actually, you can resume your seat. I just want to --
A This is exhibit NAS and MLC 213.
Q Now, in your testimony, I think that you say that you conclude that with the exception of one area, you

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do not see any effects of grazing from the historical photographs. Is that your testimony?
A Yes. That's not just this photograph, though, that's a lot of ground photographs. And I also said that I could see highly localized impacts from grazing in other photographs. Okay?
Q And I believe you said that the only one place where you saw more than a localized impact was above Old 395, Highway 395; is that correct?
A That's correct. Yes.
Q Now, what I'd like to do is, I'd like to ask you to step to 213, NAS and MLC 213. And I'm going to ask if from this aerial photograph, there is a fence line, which is visible. And I'm going to -- I'm going to draw what -- in red ink --
MR. DODGE: Mr. Del Piero, I object to drawing on my exhibit. I don't know why that's funny. I do object.
HEARING OFFICER DEL PIERO: Tell me what you wanted to try to display, Mr. Birmingham.
MR. BIRMINGHAM: I'm going to ask Dr. Stine -- and I'm pointing to a black line that is running off of the stream. And then there is another area that appears to be a line --
Q BY MR. BIRMINGHAM: Am I pointing to a fence line,

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Dr. Stine?
A BY DR. STINE: You may be pointing to a fence line, yes. Sure.
Q So this aerial photo shows a fence line. And the way that we're able to distinguish this fence line is that on one side of the fence, the area is shaded a little bit darker than on the other side of the fence; is that correct?
A That's correct.
Q That's an effect of grazing; isn't it?
A Yes, it is. But it's not along the stream. It's along Indian Ditch.
Q Let's go down to the stream. Now, let's -- I'm pointing to an area of the stream that appears to be within the fenced area that we've just identified; is that correct?
A I'm not sure which side of the fence is the fenced area. If both sides are the fenced area, then everything is a fenced area.
Q Well, within the area that is lighter, because of the effects of grazing, there is an area of the stream which is not covered with a riparian canopy; isn't that correct?
A That appears to be correct, yes.
Q And isn't it correct that in this portion of

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stream, the stream is significantly wider than in other portions of the stream that appear to be covered by a riparian canopy?
A Wider in some places, and not wider in others. I would say, however --
Q You can answer any question yes or no, and then explain it.
A Express it again, please, as a yes or no question.
Q Yes. Isn't it correct that the area of stream that I'm pointing to, and it is within the fenced area that we've identified as being lighter as an effect of grazing, isn't that portion of the stream wider than other areas of the stream not within the grazed area?
MR. DODGE: Objection. Unintelligible. I don't know whether it's the stream we're talking about, or whether it's the area we're talking about.
HEARING OFFICER DEL PIERO: I'm going to overrule the objection. Did you understand?
DR. STINE: I think I did understand it.
HEARING OFFICER DEL PIERO: Go ahead and answer.
DR. STINE: I think, Mr. Birmingham, you've pointed out, in a sense, something of a problem here in your interpretation.
You've said that there isn't riparian vegetation in this area, and therefore, or somehow related to

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that, the stream is wider.
And I would simply point out that the stream may very well appear to be wider right there because you don't have riparian vegetation there. You're not looking down through riparian vegetation. You're looking at the entire stream channel.
Q Now, as I recall your testimony from this morning, Dr. Stine, you said that one of the things that caused you to believe that there was no grazing effect except in a very localized area along Rush Creek was because the entire portion of the stream, from the Narrows down to the area just above the lake, was covered with a riparian canopy.
Wasn't that your testimony this morning?
A No. I don't think it was at all. But that's one of the reasons that I said that it would not be -- that it wasn't grazed?
Q I'm asking if that was your testimony.
A Absolutely not. No. No.
Q Now, if I were to tell you that experts, who have studied riparian vegetation in other portions of the Western United States, have looked at this area photo and said that these are classic signs of grazing, would that cause you to change your opinion?
A Not a bit. Not a bit. I would want these people

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who are so familiar with grazing, but not all that familiar with deltaic systems, to go down there and spend time looking at the soils on those channel walls.
Because we've got a problem of having an old marker on a channel that couldn't be there if the channel was younger than old marker.
The fact that we have these well-developed soils,

these humic horizons on the sides of the channels, indicates to me that the channel has to be stable, and it has to be there for a long, long time.

MR. HERRERA: Excuse me, Mr. Birmingham. That's 20 minutes.

MR. BIRMINGHAM: I would apply for an additional 20 minutes.

HEARING OFFICER DEL PIERO: Go ahead.

Q BY MR. BIRMINGHAM: Dr. Stine -- you can be seated if you like, Dr. Stine.

You said that you reviewed the Aitken photographs in reaching the conclusions that you've expressed here concerning the effects of -- the effects of grazing; is that correct?

A That's correct.

Q Again, focusing on this 1929 aerial photograph, that is a 1929 aerial photograph, isn't it?

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A It's either December 29 or January 30. Some of the photos are from December 29, others are from January 30. I took the shots at two different times.

Q On that portion of the --

MR. BIRMINGHAM: Mr. Del Piero, we're not going to have any kind of a record in terms of this photograph, unless we're able to mark this fenced line.

HEARING OFFICER DEL PIERO: Do you have a duplicate of it?

MR. BIRMINGHAM: I have a copy of that photograph, yes.

HEARING OFFICER DEL PIERO: Where is it?

MR. BIRMINGHAM: I have a copy of one part of that photograph.

HEARING OFFICER DEL PIERO: Is it the part that's subject of your immediate question?

MR. BIRMINGHAM: Yes, it is.

HEARING OFFICER DEL PIERO: Why don't we use that?

MR. BIRMINGHAM: All right.

MS. CAHILL: Would it be possible to do an overlay? Get a clear overlay sheet.

HEARING OFFICER DEL PIERO: It would be. But I don't want to lose any more time looking around for a piece of clear plastic in order to do it, unless

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someone has some handy.

MR. ROOS-COLLINS: What about a yellow stick 'em?

MR. BIRMINGHAM: That would be temporary. Why don't we mark my copy?

Q BY MR. BIRMINGHAM: Dr. Stine, how would we mark this historic photo if we wanted to do it permanently?

A With a pen?

Q Blue ballpoint pen?

HEARING OFFICER DEL PIERO: Anybody have a blue ball point? In the meantime, Mr. Birmingham, we're going to see if we can secure a piece of acetate for you to put over the top of that.

Q BY MR. BIRMINGHAM: Dr. Stine, I'm showing you a copy of a portion of the 1929 aerial photograph or January 1930 aerial photograph that makes up a portion of Exhibit 13; is that correct?

A BY DR. STINE: Not exactly correct. It's from the same set of photographs, but it's a different photograph.
HEARING OFFICER DEL PIERO: Gentlemen, hold on. Mr. Canaday, how long before?
MR. CANADAY: I'm told they're going bring it down from the graphics unit right now.
HEARING OFFICER DEL PIERO: You can proceed with that picture, Mr. Birmingham. Or if you have a

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different course of questioning you want to pursue until the acetate gets here, you can do that, too.
MR. BIRMINGHAM: I'll mark this.
Q BY MR. BIRMINGHAM: Does this depict the same area we've been talking about, Dr. Stine? When I say this, I'm talking about the small copy of the aerial photo.
A It depicts a portion of what we see on the large photo. It includes a segment of stream that we don't see on the large photo, but there's some overlap.
Q Now, am I correct? I'm now drawing a black line along a fence line which we identified earlier as a fence line; is that correct?
A That's close, yes.
Q And immediately, I'm drawing an arrow to a portion of the stream that we were discussing on Exhibit 13; is that correct?
A That's correct.
Q And it's the area of the stream that we talked about that has no riparian vegetation.
A It seems to have less riparian vegetation, but that's a real mosaic of dense and not so dense riparian vegetation, some of it arboreal, some of it arbuscular, some of it grass. And that probably has to do with water table and history and the last time the channel changed and an awful lot of things.

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Q But it might have to do with grazing?
A Statement or question, Mr. Birmingham?
Q Question. I'm asking the question.
A I think the grazing impact down here was minor. The stream was holding together, but the grazing impact was not enough to disarticulate the stream as I've defined it.
Q I'm going to write on this photograph L.A. DWP Exhibit 89. I'll present it to Mr. Canaday.
I'd like to show you a photograph that I believe is one of the -- what we referred to as the Aitken photographs. I'm showing you a photograph, the back of which states, "Aitken Exhibit G-3," paren, "Clover property," end paren, "northwest view of Rush Creek on property near entrance to lake."
Have you seen that photograph before, Dr. Stine?
A I believe I have, yes.
Q Is that one of the Aitken photographs on which you relied in forming the opinions that you've expressed today?
A I used all the Aitken photos. And yes, this is one of them.
Q Now, looking at this photograph, which again, is identified as Exhibit G-3. Now all of the Aitken

photographs were G-3; is that correct?

A I think the defendant's exhibits were G-3.
Q When I say the Aitken photographs, I mean all of the Aitken photographs that you relied on were marked as an exhibit in that proceeding as Exhibit G-3.
A I'd have to go back and check. But if that's the case, if that seems reasonable, I'll agree with you. I haven't looked at them in terms of the numbers.
Q Now, with respect to this photograph, do you see any effects of grazing?
A Yes, I do, local effects, certainly. The banks are trampled here. I think this is one of the areas where the sheep pretty consistently cross the stream.
Q And the area is -- has little, if any, riparian vegetation; is that correct?
A Yes, although Mr. Birmingham, I think this is one of the areas that has either been underwater or very close to the lake pretty recently. And so I would be a little bit hesitant to be talking about the lack of riparian vegetation being due to something other than it having been drowned by the lake very recently.
Q But the lack of riparian vegetation could be due to grazing? That's a question, Dr. Stine.
A I would consider it less likely than other explanation. I'm not trying to be evasive. I just -- you're -- yeah, sure, it could. It could be because of

a fire. It could be because of people going in there and clearing it. It could be because of people putting lots of water on there to try and kill the brush to make it past here. It could be because of grazing. It could be because of any number of things.
Q It could be because of grazing?
A Certainly.
Q Asked and answered. Now, in your testimony, you say that Exhibit 211 is a photo showing the nature of stream side vegetation; is that correct?
A I may very well have described it that way. I don't remember exactly which one 211 is.
Q Let me refer specifically to page five and six of NAS-MLC 1 dash W.
It says, "A photo showing the nature of stream side vegetation in the Rush Creek bottom lands in the 1930s are shown as exhibits NAS and MLC 211."
Is that what it states in your testimony?
A Yes.
Q I'd like to show you --
HEARING OFFICER DEL PIERO: Do you want to see if you can fix that? I don't know if it's going to be too late for tomorrow.
MR. BIRMINGHAM: That's okay.
HEARING OFFICER DEL PIERO: Well, somebody else

may need it then, Mr. Birmingham.
Q BY MR. BIRMINGHAM: Do you have a copy of 211 with you, Dr. Stine? I believe it was among the photos that you showed on your slide presentation; is that correct?
A BY DR. STINE: I would then have a slide of it, but I'm afraid that's all I have. Actually, I guess we

didn't get to these slides.
Q Why don't we just back up to 211.
A They're not numbered that way, I'm afraid. That's it there. I think that's actually --
Q One question -- one question I have about that photo, Dr. Stine, you're reversing it; is that right? When we looked at it earlier today, you had it reversed?
A I could very well have, yes.
Q You're changing it now --
A I just looked at this, and saw it was reversed. Would you like to --
Q Put it in for a moment please.
A You've described this as a photo which shows the nature of the stream side vegetation in the Rush Creek bottom lands.
Isn't it correct that that photograph contains evidence of grazing?
A Evidence of grazing or evidence of channel damage

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due to grazing?
Q Evidence of grazing.
A As I say, I think it would be something that would be easier to see if the leaves were on the vegetation, which it's not. But it looks like there may be some highlining in through here. So yes, there's evidence of grazing here, as there is in many places along Rush Creek.
Q Is that photograph typical of the Rush Creek channel through the bottom lands?
MR. DODGE: Objection. Unintelligible.
HEARING OFFICER DEL PIERO: You know, I'm going to sustain the objection. But I need to point something out, gentlemen. In terms of the degree of specificity, it would make things move along a little more briefly if we could get some definition in terms of these generalized examples.
I'm not talking to you directly, Mr. Birmingham, because other people have made the same types of questions during the course of their cross-examination. If you could do that, it will help us all.
MR. BIRMINGHAM: Let me ask a question very specifically, or as specifically as I can, Dr. Stine.
Q BY MR. BIRMINGHAM: In your opinion, is the portion

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of Rush Creek depicted in that photograph, typical of the channel of Rush Creek in the bottom lands as you've described it?
A BY DR. STINE: I would say that there are some typical things and some atypical things. The vegetation density right along the stream margin there, I would say is probably quite typical, where you have dense vegetation along the banks coming right down to the stream.
But I would say that this is not a typical site in that it is a site where you have one channel here that we're basically standing in coming together with another channel right over here.
So it's a point of confluence of multiple

channels. And so what we're looking at here, as long as we're taking it as a typical confluence, I would say, it's typical. But it's not going to be typical of a single channel.
Q In your testimony, you've said that Rush Creek flowed across the bottom lands through narrow typically 12 to 20 feet wide steep-walled channels that were recessed three to five feet below the surface of the alluvial plain.
Now, the photo that we're looking at now, NAS-MLC 211, does not represent that typical channel type; is

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that correct?
A No. It probably doesn't. But once again we're dealing with a wider wash here because there are two channels coming together.
On the other hand, we do have a surface over here that's probably three to four feet, maybe five feet, three to five feet above the -- above the surface of the stream, not at all like today's situation where, in this same place, you'd have the stream incised, oh, probably five feet, six feet down below where it is today.
The stream certainly has access to its original flood plain here, and it doesn't today.
Q You had a photograph that was part of your slide presentation that you said depicted the spring area. And it was a picture that was take a from vantage point that you called a triangular point?
A Oh, a triangulation point, which is what I think it was called on the old DWP maps.
Q Can we take a look at that photograph, please?
A Yes. It will take a little bit of hunting, but I think I can get to it here. That's the one right there.
Q And that's -- we don't know the exhibit number of that, do we?

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MS. CAHILL: I think it's 209.
MR. BIRMINGHAM: Thank you, Ms. Cahill.
Q BY MR. BIRMINGHAM: Looking at Exhibit 209, you indicate that this area depicts the spring rills.
It isn't possible for to you tell how deep the rills were from this photograph is it, Dr. Stine?
A Absolutely not. And I've gone out there to try to determine that, and I wasn't really able to determine that with any -- with any confidence. So I talked to Mr. Vestal about it.
Q Dr. Stine, I do have limited time, and if I could ask you just to respond to my questions, I would appreciate that very much.
I don't mean to cut you off, and I want to give you a full opportunity to explain your answers to my questions, but if you could just answer my questions that would be appreciated.
A I'll do my best. I just hesitate to take a chance on leaving a false impression. But I will do my best.
Q Thank you. Now, you indicated in your direct testimony or in response to questions by either Mr. Dodge or Mr. Roos-Collins, that there were two sets

of springs along the Rush Creek below the Narrows. One on the east side and one on the west side; is that correct?

A I'm sorry, not exactly. Can I explain?
Q Yes.
A It isn't two sets of springs. It's that we had springs located along the west side, and we had springs located along the east side. And it wasn't just two localities. It was -- it was a length of strata where water was able to come into the bottom lands.
Q Now, the springs that we're looking at in this photograph at 209, those are the springs on the west sides?
A That's correct. These are the springs on the west side closest to the Narrows immediately below the Narrows.
Q Now, it was your testimony, wasn't it, that the springs on the east side of Rush Creek were artificial?
A Yes. I believe that they were probably 99 percent artificial.
Q They were a result of the irrigation of the area that we call the Pumice Valley; is that correct?
A That's correct, with A and B Ditch water.
Q Now, again, Dr. Stine, if you just answer my questions, that would be much appreciated. I know you want to have a complete record here, but I do have limited time.
Now, the photograph that we're looking at, the

springs in the photograph, you said that those were natural springs; is that right?
A Yes.
Q And that the flow of those springs was supplemented by irrigation of the area above Rush Creek along Parker and Walker Creeks; is that correct?
A Yes, I did.
Q Now, have you quantified the extent to which the irrigation along Walker and Parker Creek contributed to the flow of these springs along the west side of Rush Creek?
A No. There's no basis for quantifying that.
Q So we don't know whether or not the springs that are flowing in this area today represent the natural flow or less than the natural flow; isn't that correct?
A No, is a powerful word, Mr. Birmingham. We do not know, but we have a basis for making a reasonable judgment.
Q Now, it's correct, isn't it, Dr. Stine, that up until 1990, Parker and Walker Creeks were dewatered?
A Were?
Q Dewatered.
A Yes. In most years, most of most years, yes. But not continuously. There were flows coming down.
Q Now, isn't it correct, Dr. Stine, that since the

rewatering of Parker and Walker Creek, the groundwater table that lies above the springs depicted in this photograph 209 are -- is being rewatered?
Do you understand my question?

A Not exactly. I'm doing my darnedest.
Q I believe you testified that as a result of the lowering of the water table, the flows in these springs were reduced; wasn't that your testimony?
A Yes.
Q Isn't it correct that the reintroduction of permanent flows into Parker and Walker Creek will help restore the groundwater table in that portion of the Mono Basin through which Parker and Walker Creek flow?
A Yes, it will. And if you rewatered the distributary channels that it remain unwatered, it would bring it up even more.
Q Which brings me to another point. You said that you were involved in the placement of the channels in 1990 when Walker and Parker were rewatered; isn't that correct?
A Yes.
Q In fact, I believe you were the person responsible for identifying the channel that was to be constructed; wasn't that right?
A It was my task to point out the largest of the

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distributary channels that existed on Parker and Walker Creek with an eye to rewatering one distributary on each stream.
Q Now, this morning you testified that artificial plugs were placed in distributaries along one of the streams; isn't that right?
A That's correct.
Q Which stream was that?
A I believe that is Walker Creek. There's a big fill there, and it's completely covered with sheep dung.
Q And there were artificial plugs that were placed in those distributaries in 1990; isn't that right, Dr. Stine?
A Yes. I would say that there was earth moved on top of the surface there.
Now, your last question was in 1990 there was?
Q Artificial plugs were placed on those distributaries in 1990?
A No. No. No. The plugs that I'm talking about, Tom, Mr. Birmingham, excuse me, go back to the time that the facilities were built there.
Q Are the artificial plugs the irrigation facilities that were built along the distributaries?
A No. I suspect it is in part the spoils that were

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dug out of the ground to create the settling pond, the forebay of the diversion facility.
And they put the spoils at the heads of the one of the -- of one of the distributary channels, but this was along 50 years ago or more.
Q Now, in 1990, was any earth moved to plug distributary channels along Walker Creek?
A Neither to plug nor to unplug is my -- is my recollection.
Q Isn't it correct, Dr. Stine, that in 1990 the Mono Lake Committee requested that distributaries be plugged to prevent the use of those distributaries for

irrigation purposes?
A No. First of all, I don't speak for the Mono Lake Committee, and I've never given them a dime.
Q I'm not asking you if you do, Dr. Stine. If you have no recollection of that, that's fine.
A I can see your error. And I'd like to correct you. It wasn't distributaries that they were trying to plug. I'm talking about natural channels when I say distributaries. But you're talking about irrigation ditches that go off the one distributary. And I think they or somebody else, Fish and Game, or someone, requested that those irrigation canals coming off one of the -- the one active distributary channel be

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plugged up.
Q Dr. Stine, you've spoken a lot about incision in your testimony; is that correct?
HEARING OFFICER DEL PIERO: Dr. Stine, would you like to sit down?
DR. STINE: Would you like me to, because I'd rather stand, actually.
HEARING OFFICER DEL PIERO: That's fine. We're very accommodating here.
DR. STINE: And I thank you.
MR. BIRMINGHAM: I notice that he's gotten away without the microphone for a long time, as have I apparently.
HEARING OFFICER DEL PIERO: That's okay. Both of you don't lack for projection capabilities.
MR. BIRMINGHAM: Actually, Dr. Stine, I am going to ask if you're going to stand, that you stand at least over at this portion of the room. I'll turn this off for the time being.
HEARING OFFICER DEL PIERO: Can we get a little light, Mr. Dodge? Thank you.
Q BY MR. BIRMINGHAM: Dr. Stine, I've put up on the easel two photographs that we've had testimony about before. The one on the top is a 1987 photograph, a portion of Rush Creek, approximately one-half mile

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above where Rush Creek flows into Mono Lake.
Are you familiar with what that area looked like in 1987?
A BY DR. STINE: Yes.
Q And does this area -- does this photograph accurately depict the way that that area looked in 1987?
A Certainly.
Q Now, I'm showing you on the bottom, a photograph of the same area that was taken in August of 1993.
Are you familiar with the way this area looked in 1993?
A Yes.
Q And does the photograph on the bottom accurately depict this stream section in 1983?
A 1993, yes.
Q I'm sorry, 1993. Thank you for correcting me.
Do you recognize that these two photographs are of of the same area, Dr. Stine?
A They're not exactly the same area, but they're

close, yes.
Q Now, you heard testimony from Dr. Beschta related to the effect that riparian vegetation has had on the narrowing and deepening of the channel as it's depicted in the 1993 photograph.

Did you hear that testimony?
A I did.
Q And then you heard Mr. Dodge get up and ask him some questions. How did Mr. Dodge ask him the questions? You would agree with me, wouldn't you sir, that that narrowing and deepening could be a result of incision? Do you remember Mr. Dodge asking that question?
A Yes.
Q Now, it's correct, isn't it --
HEARING OFFICER DEL PIERO: It's amazing, really.
MR. BIRMINGHAM: Many years of experience.
Q BY MR. BIRMINGHAM: You would agree with me, wouldn't you, Dr. Stine, that since 1987, there has been no incision along Rush Creek?
A No. I wouldn't. I fed Mr. Dodge the question. And if I could explain the very sound and convincing and compelling evidence for that I will.
MR. DODGE: Just answer the question, counsel.
MR. BIRMINGHAM: He's answered.
Q BY MR. BIRMINGHAM: Are you as certain about that as you are about the other things about which you're certain in this case?
A BY DR. STINE: I'm pretty darn certain about this, yes.
Q Let's talk about this certainty. Were you as certain about that in 1990 when you testified about incision?
A Yeah. I pretty much knew what was going on out there in 1990, I think. I had reached most of my conclusions then.
MS. CAHILL: Could we identify these by exhibit number?
MR. BIRMINGHAM: Mr. Smith, do you know the exhibit numbers for these?
MR. HERRERA: Also your 20 minutes have elapsed, Mr. Birmingham.
MR. BIRMINGHAM: I would apply for an additional 20 minutes, Mr. Del Piero.
HEARING OFFICER DEL PIERO: I don't think I could find it in my heart not to grant it to you, Mr. Birmingham.
MR. BIRMINGHAM: Perhaps during one of the recesses we could get together with opposing counsel, and I'll share his appreciation of cross-examination.
HEARING OFFICER DEL PIERO: Mr. Dodge, you know, it's the most supreme form of flattery when someone's capable of mimicking.
MR. DODGE: The embarrassing thing is that I didn't recognize the -- that he was copying me.
HEARING OFFICER DEL PIERO: Let me just point out,

sir, that everyone else did.
MR. DODGE: If I may share with everyone, the only -- the only reference, until Mr. Birmingham just did this rendition, the only reference to my examination method that I'm aware of that's ever been made by anyone, is to talk about Jimmy Stewart.
HEARING OFFICER DEL PIERO: Actually, there is a similarity, sir, and I know him. So can I tell you that there is a similarity.
MR. DODGE: I've always taken that as flattery.
MR. BIRMINGHAM: I believe, and I may be mistaken Mr. Smith, but I believe that these are L.A. DWP 11 A and B.
MR. CANADAY: I believe they're in Mr. Tilliman's testimony. And we're going to look at that. No?
MR. DODGE: They may simply just be part of Dr. Beschta's testimony.
MR. BIRMINGHAM: We identified them by number. And I believe that they're either 11-A or B or 11-B and C.
Q BY MR. BIRMINGHAM: But in any event, Dr. Stine, do you recognize that these are photos of an area of Rush Creek near where it flows into --

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A BY DR. STINE: Mono Lake, its mouth, yes.
MR. FRINK: Mr. Birmingham, our records do show them as 11-A and B.
MR. BIRMINGHAM: Thank you.
Q BY MR. BIRMINGHAM: Now 11-A is the 1987 photograph and 11-B is the 1993 photograph.
Now, you said that you fed Mr. Dodge the question that he asked of Dr. Beschta about incision, and that you were quite confident about what was going on out there; is that right, Dr. Stine?
A Yes, because I've watched this area evolve since 1980. And I've monitored it quite closely.
Q Did you provide testimony in connection with these proceedings in May of 1990? And when I say these proceedings, I mean Mono Lake proceedings, before Judge Finney?
A I believe I did in May, yes.
Q And were you asked some questions by Mr. Flynn about incision; isn't that right? Do you recall that?
A Not specifically, but I'll bet it happened.
Q Let's see if I can refresh your recollection. I'm referring to the reporter's Transcript of Proceedings from Thursday May 3, 1990, and May 4, 1990, in the coordination proceedings, special title, Mono Lake Water Rights Cases, Judicial Counsel Coordination

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Proceeding Number 2284.
And I'm looking at page 527, beginning at line 28, and going over to page 528. And Mr. Flynn asked the following question.
Question: Now if -- is it possible for the Lee Vining and Rush Creek channels to incise again.
Answer: Yes, it is. Although not under the present day conditions. Even if you were to -- even if you were to let a great deal of water down Lee Vining Creek, there wouldn't be incision despite increased

velocity, increased energy.
That's because the stream has already reached a gradient that is in equilibrium with the present day lake level of it.
On the other hand, if were you to drop the lake, drop the base level, the streams would then tend to incise again, once you let some amount of water down them.
As long as we are dealing with a relatively stable lake, a lake that stays above elevation of about 6,372 feet, you can expect no more incision on either Rush or Lee Vining Creeks or Mill Creek or any of the others for that matter.
Question: In your opinion, sir, if you wanted to insure there would be no further incision of Lee Vining

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Creek or Rush Creek, is there a level at which Mono Lake, itself, should not drop?
Answer: The lake should not go below 6,372 feet if the streams -- if you want to prevent incision.
6,372 feet, by the way, is the elevation of the historical low stand of Mono Lake. That was attained in December of 1981 and January of 1982.
Now, do you recall being asked those questions and giving those answer?
A Yes, absolutely.
Q And since 1987, the level of Mono Lake has not dropped below 6,372 feet, has it, Dr. Stine?
A That's correct.
Q And so in 1990, it was your opinion that so long as the elevation of Mono Lake did not drop below elevation 6,372 feet, excuse me, it is your opinion that there would be no more incision.
A That there would be no more incision below the level to which the lake -- or the stream had incised in December 1981 January 1982. And I hold by that.
What happened here, Mr. Birmingham, of course, is that the lake rose up and you got a filling. All of a sudden the stream started to deposit its delta in here at the mouth of the stream.
And so it agraded in ways that we were talking

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about this morning. The stream built itself up, and there's been a three-and-a-half or four foot drop in lake level between the time this photograph was taken and the time this photograph was taken.
And so that new deposit, the material that was built-up in the channel, here, between 19 -- between 1982 and 86, the big rise in the lake, nine-foot rise in lake level, that material has not been incised here leaving this little tributary, right here, for instance, hanging. Because here's the tributary right here, and there's in more water it.
I would also point out that this stream here actually has less water in it than this stream here. The reason that this stream is capable of carrying more flow in a narrower channel is because its incised about two-and-a-half feet. And there's the two-and-a-half feet right there. And here's the hanging tributary right over here.

Q But Dr. Stine, in 1990, when you testified on this subject, wasn't it your statement that if the level of Mono Lake did not drop below 6,372 feet, there would be no incision in Rush or Lee Vining Creek?
A There would be no incision, as I think I've pretty accurately stated there, there would be no more incision. That is to say that there would be no

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incision beyond what there had been in 19 -- up to 1982.
Q But that is not what you said, is it, Dr. Stine?
A I think that is what I said. Certainly what I had in mind when I said that. No more incision, meaning no incision beyond what happened prior to 1982.
If you bring the lake up, Mr. Birmingham, 30 feet let it sit in here, and drop the lake down to 6,374, you're going to incise the newly deposited sediment but you will not incise below the level to which it incised when the lake was at 6,372 feet.
Q Perhaps Dr. Stine, you can explain for me the following answer, how you articulated the thoughts that you've just expressed to us about no more incision.
Question: In your opinion, sir, if you wanted to insure there would be no further incision of Lee Vining or Rush Creeks, is there a level at which Mono Lake itself should not drop?
Answer: The lake should not go below 6,372 feet if the streams -- if you want to prevent incision, 6,372 feet, by the way, is the elevation of the historical low stand of Mono Lake. That was attained in December of 1981 and December of 1982.
MR. DODGE: Objection. Asked and answered.
HEARING OFFICER DEL PIERO: I'm going to sustain

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the objection.
MR. BIRMINGHAM: May I take a moment?
HEARING OFFICER DEL PIERO: Certainly. How much more time?
MR. BIRMINGHAM: I have probably --
HEARING OFFICER DEL PIERO: I'm not -- you take your time, and do what you're supposed to do here.
MR. HERRERA: 13 minutes.
MR. BIRMINGHAM: I will finish within 13 minutes.
HEARING OFFICER DEL PIERO: Ladies and Gentlemen, when Mr. Birmingham is complete, we're going to take a break.
Q BY MR. BIRMINGHAM: Dr. Stine, I believe you've described incision as a physical process; is that correct? I'm sorry. Let me restate the question.
A BY DR. STINE: As opposed to mental.
Q You described incision as a vertical process. Incision occurs vertically along the stream channel; is that correct?
A That's correct.
Q Now, I don't know the answer to this question, but I really would like to know what your opinion is. I preface it by saying I don't know the answer.
There's a portion of the stream, if can you step aside --

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HEARING OFFICER DEL PIERO: Actually, why don't you step that way, and I'll walk over here. Sitting in that chair gets old after a while.

Q BY MR. BIRMINGHAM: We're looking again at the historical photos. I believe it's NAS-MLC 213.

There's a large meander that I'm pointing to, a large meander in Rush Creek, that has been cut off. Is that correct, Doctor?

A That's correct. I call that biggest bend on my maps.

Q Now, as I understand it, you've indicated that the incision comes up the stream vertically, and it gets to a point somewhere between the Ford and the Narrows and feathers out; is that correct?

A Yes, it is.

Q What caused the cut off in this meander bend, do you know?

A Well, you can sort of piece it together, and I'm not supremely confident in this. And I maybe want to do a little bit more work out there, but I think what happened is that it was a combination of erosion in this way, with those massive flows cutting in this way like this, and incision this way, where the stream is actually cutting -- coming around this way, and cutting in here. And this wall, this, in a sense, waterfall,

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in a sense, is moving back up in this direction. And the combination just strands this meander right here, so that today the stream moves right through here.

In other words, it's being taken out from both sides like this. Headward erosion here, lateral erosion here.

Q Is it -- is it possible that the existence of the Ford at that location would have contributed to the cut off of that meander bend?

A You know, I did think about that, and I don't think it's the case. The Ford seems to me to not have moved all that much. It's a road. It was undoubtedly washed out.

I mean, I've seen it wash out in '80, '82, '83 and '86. And these were far, far bigger flows than in any of those years. I would think that it probably didn't have an impact, that this was probably a matter of very, very high flows running against a very tight meander bend that may have been pretty much ready to go in any case.

There's been a lot of meander cut off in here over time. So this is just one more instance of that, except it involved a low lake level and incision.

Q Now, is it your impression that as around that meander bend, as you move upstream from the lake, that

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the incision occurs only approximately a third of the way through the meander? Or do you have an opinion on the --

A I would say that -- I would say that it is -- that the incision -- a third of the way through the meander.

I'm of the opinion that the meander, itself, really hasn't been incised all that much. The meander

is hanging there. And this is one of those channels that I'm a little hesitant to rewater, because it's hanging, at least on one end of it, so far above the stream.

So I'm not sure that the meander, itself, was incised.

Q Dr. Stine, was there a fire, a large fire, some time in the Rush Creek drainage?

A Yes.

Q When was that?

A I don't know, but I'm sure there was a large fire there.

Q Is there evidence of -- is there evidence of a large fire in the soils of the Rush Creek bottom lands?

A We can see lots of evidence of lots fires in the Rush Creek bottom lands, particularly down low in this meadows area here, which probably, naturally, was not

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all that wet, but what we can see here, when the stream today sweeps by here and exposes some section here, going back about 1,200 years or so, we can see a number of buried soils in there many of which contain charcoal, which has led me to believe that on the margins of the Rush Creek bottom lands here, people were burning over the last 1,200 years, the aboriginal people.

So, yeah, charcoal is common along the walls.

Q Now, a channel like Rush Creek is a dynamic system; is that correct?

A Certainly.

Q And the existence of a channel doesn't mean that 50 years ago that channel had water in it; isn't that correct?

A The existence of a channel --

Q In a stream system like Rush Creek, the mere existence of a channel doesn't mean necessarily that, historically, 50 years ago, that channel had water in it?

A Correct. And there are a number of instances out there of streams that, I think, probably carried water about 300 years ago, and that probably haven't carried water since then.

MR. BIRMINGHAM: There's another photograph, I

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think from the slide presentation. I'll see if I can find it. I think this is going to conclude my examination.

Dr. Stine, maybe can you help me operate your slide projector, here. I'm not as mechanical as you are and I wouldn't want to --

DR. STINE: This is forward, and this is reverse. You want me to do it?

MR. BIRMINGHAM: I'm looking for an aerial photo that you had of Rush Creek.

DR. STINE: Taken oblique?

MR. BIRMINGHAM: No, actually it was one from your slide presentation.

DR. STINE: Let's go through it. I'm sorry. I don't know. All right. Yes.

Q BY MR. BIRMINGHAM: We're looking at a historical

photograph, Dr. Stine. Was this identified as an exhibit?
A BY DR. STINE: Yes, it was. It was Exhibit Number 183, NAS-MLC 183.
Q Now, you said that this was a -- was a fortuitous aerial photograph. Because of the angle of the light and the position of the camera, we were able to see light reflecting off of water; is that correct?
A Yes, this is a reflection off of water in through

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here. It's a combination of that and cloud. This may very well be a cloud reflection out here.
Q When was this photograph taken, do you know?
A It was taken on June 24th, 1940.
Q There appears to be some ponding of water in the area on the left-hand side of the Rush Creek bottom lands; is that correct, towards the County Road?
A That is correct, yes. Although I would point out that while it looks to be ponded here, we're now dealing, not with a December-January photograph, but with a June photograph.
And all of a sudden the vegetation in here has leafed out, and we're not getting a complete picture. We're looking at these ponds that are now partially canopied by vegetation, so --
Q Is it possible that the water which is depicted in the photograph that I'm pointing to now, this is the water that's along the left-hand side of the flood plain, would be water that is flowing across that land as irrigation water?
A No, because this was not irrigated down here. This was the way the stream flooded. There's no irrigation lands in through here. There's a little bit of irrigation land right over in through here, but not in through here.

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This basically, Mr. Birmingham, is the same area in here, where we showed those aerial photographs before the reoccupations of the before and after photograph. So it was just a big morass down in there and the crest beds and everything.
Q Now, where is the Dumbrowski (phonetic) Property that we've heard so much about in the historical evidence?
A I'm not sure where the Dumbrowski (phonetic) Property is. I'm not even certain that he had property. I know that he had something do with the Clover Ranch area out here. And I believe he ran a hunting club or something like that on land that may very well have been Clover Ranch land.
In any case, he was active out here on the delta. And then he had some hunting ponds and whatnot out here on both sides of Rush Creek but on the delta, below the County Road.
Q Thank you, Doctor. Dr. Stine, do you have an opinion concerning whether or not the water that's depicted in that photograph is water diverted from Rush Creek?
A No. I think that that's natural -- natural overflow of the system.

Q Then in response to my question, you do have an opinion?
A By golly I do, yes. Yes. Sorry.
Q You say this photograph was taken at a time when the riparian vegetation would have had foliage on it; is that correct?
A That's correct.
Q There are large portions of the -- of Rush Creek, long lengths of Rush Creek, as depicted in this photograph, where we can see water flowing through the channel; is that correct?
A Yes. Um-hum.
Q That would indicate that those portions of Rush Creek were not covered with a riparian canopy?
A Correct, not completely covered. That's right. But you can see a rather irregular line here where the canopies are protruding out and so somewhat sheltering it, and other places where the channel completely disappears and because of the density of the canopy.
Q Did you say earlier this morning that all of the Rush Creek bottom lands was a flood plain?
A Yeah. I think the great bulk of the Rush Creek bottom lands was a flood plain. And if, you know, the big flood certainly would have put it all underwater. That would be my feeling.
Q Now, is it your opinion that -- it was the 1967 flows that destroyed the riparian vegetation along Rush Creek?
A Yes. Along the Rush Creek bottom lands, yes. We have historical accounts including West Johnson as well as lots of aerial photographs from the 1960s that show that the vegetation in the bottom lands remained in place through the -- through the 1950s and 60s.
It's the incision of the bottom lands, and these huge unnatural flows coming down together with the clogging of the channels that cause the system to go array, there.
MR. HERRERA: Mr. Birmingham, that's 20 minutes.
MR. BIRMINGHAM: I don't have any further questions, Mr. Del Piero.
HEARING OFFICER DEL PIERO: Thank you very much, Mr. Birmingham.
Ladies and Gentlemen, we'll be back in about ten minutes.
(Whereupon a recess was taken at this time.)
HEARING OFFICER DEL PIERO: Ladies and Gentlemen, this hearing will again come to order.
Mr. Birmingham, you're concluded, right?
MR. BIRMINGHAM: Well, if that's an invitation for me to apply for an additional ten minutes, I certainly will, because during the recess there were a couple of questions I remembered I wanted to ask.
HEARING OFFICER DEL PIERO: Mr. Birmingham, I don't mean to sound overly generous, but I was deferential to the needs of opposing counsel during the course of your witness' presentation. And it seemed to me that you didn't finish.

So if you wish to ask for ten more minutes, I'll give you ten more minutes.
MR. BIRMINGHAM: I will make the application.
HEARING OFFICER DEL PIERO: Fine. It's granted, okay?
MR. BIRMINGHAM: Dr. Stine, I'll note has resumed his position across the room.
DR. STINE: No, no. That isn't it. I like to be close to Tom. I'm hyperkinetic.
Q BY MR. BIRMINGHAM: Dr. Stine, one of the exhibits that you drew for us this morning talked about the formation of the Rush Creek bottom lands. And it was your testimony, I believe, that the Rush Creek bottom lands originally -- well, let me restate the question.
Prior to the formation of the Rush Creek bottom lands, the area was a V-shape through which the stream flowed; is that correct?
A That's correct.
Q How deep is the deltaic deposit that comprises the

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Rush Creek bottom lands?
A I'll know more, Mr. Birmingham, when we get one radiocarbon date back that Jones and Stokes has a radiocarbon sample that they've given me. We have a sample from about eight feet down, and we know that it's far deeper than eight feet.
But that will give us a date eight feet down and we can extrapolate that down, then. But it could very well be -- it very well be 40 to 50 feet very easily. This could be calculated, though, by looking at the delta itself.
Q But -- so you don't know thousand deep that is?
A No. I don't.
Q But you would say that it's in excess of ten feet?
A Yes. I would definitely say in excess of ten feet.
MR. HERRERA: Mr. Birmingham, for the record, the chart you're referring to is --
MR. BIRMINGHAM: Department have Fish and Game 145.
MR. HERRERA: Thank you.
MR. BIRMINGHAM: Thank you for bringing that to my attention, Mr. Herrera.
Q BY MR. BIRMINGHAM: Now, there was testimony in response to questions by Mr. Roos-Collins concerning

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the degree to which you agree or disagree with the testimony of Dr. Beschta.
Do you recall those questions?
A BY DR. STINE: I recall the line of questioning. I don't necessarily recall the specifics, I'm sorry.
Q Well, let me ask you this: You've seen the recovery of riparian vegetation along Rush Creek?
A Yes, I have.
Q And you've seen it along Lee Vining Creek?
A Yes, I have.
Q How does the -- since the rewatering of these streams, pursuant to court order, how does the recovery of riparian vegetation along Lee Vining Creek compare with that of Rush Creek?

A I think it depends really on where we are. I mean, different systems, different types of sediments down on the delta, you've got those blast deposits out of the Mono craters.

You have islands of cobble in the middle of Rush Creek that are coming back very, very rapidly. You have stream side locales, where vegetation is coming back very rapidly.

In other cases, just a short distance from the stream, vegetation is coming back only much more slowly. And that varies from place to place.

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So if you could be more specific, I would be in a better shape to make a comparison.

Q Well, let's compare the bottom lands of Rush Creek with that area of Lee Vining Creek below the County Road.

Are they recovering at approximately the same rate?

A I would feel more comfortable, Mr. Birmingham, if we were comparing the Rush Creek bottom lands with the Lee Vining Creek bottom lands. And that way we're kind of holding some things more or less equivalent. And if that is indeed the comparison --

Q Well, if that's the question you'd like to answer, Dr. Stine, why don't you go ahead and answer that question. Compare the Rush Creek bottom lands to the Lee Vining Creek bottom lands.

A I would say that the Rush Creek bottom lands vegetation is coming back faster than what we see on Lee Vining Creek.

Q Now, what portion of Lee Vining Creek would you describe as the bottom lands?

A The bottom lands would be the area from approximately 500 feet, I'm guessing here, roughly 500 feet, maybe 800 feet below Highway 395 down to the County Road crossing.

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Q Would you agree with Dr. Beschta that the revegetation or the vegetation along Rush Creek is recovering at an explosive rate?

A Where it is recovering, it is recovering explosively, yes.

Q And that vegetation, revegetation will continue to recover, in your opinion, as long as the streams remain watered and there's no grazing?

A I think that the riparian vegetation will -- where it is now recovering, will continue to recover rapidly, and then slowly, but only slowly, migrate landward, that is a way from the stream, from where it is recovering today.

Q In your opinion, Dr. Stine, what is required for the recovery of the riparian vegetation along Rush Creek below the Narrows?

A I would say that water and lack of grazing. And on that point, Mr. Beschta and I would agree. If you want more of it to come back, you simply apply his prescription to other channels and the same thing will happen.

Q In order for revegetation to recover along

historic channels, it isn't necessary, is it, that those channels remain watered throughout the year?
A If your goal is simply to restore riparian

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vegetation along the streams, that is undoubtedly true. You could get some riparian vegetation coming back along those streams by only temporarily rewatering them.
Q Well, this morning you testified about the effects of the historic channels in the bottom lands. And you said one of the effects was it maintained a high water table?
A That's correct.
Q It's possible to maintain that high water table without having water in the channels; isn't that correct?
A I would say not with -- not with Rush Creek incised the way it is in the bottom half of the bottom lands there. I would say that you've stranded lands that used to have high water table that don't today because of the combination of the incision of Rush Creek and dewatering of those channels, dewatering of the multiple channels.
Q But it's your testimony, isn't it Dr. Stine, that you would not recommend rewatering those historic channels in the bottom half of the bottom lands?
A You got me on the God seat again here. I guess I would see better benefits, as I explained it earlier, taking the same amount of money or even maybe a little

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bit less money and putting it into other places where more good can be done dollar for dollar.
Q Now on the top half of the bottom lands, where there hasn't been incision that would prevent the recovery of riparian vegetation along historic channels, isn't it correct that it is not necessary to maintain water in those channels throughout the year in order to maintain a high water table?
A I believe that's the same question that I answered affirmatively a few minutes back, yes.
Q Mr. Del Piero, I believe that does conclude my questions of Dr. Stine.
HEARING OFFICER DEL PIERO: Thank you very much, Mr. Birmingham.
MR. BIRMINGHAM: Thank you.
HEARING OFFICER DEL PIERO: Miss Scoonover?
MS. SCOONOVER: I have a few questions. Good afternoon, Dr. Stine.
DR. STINE: Good afternoon, Miss Scoonover.
MS. SCOONOVER: I have a couple of questions. They're as much clarification from questions that were asked earlier as anything else.
CROSS EXAMINATION BY MS. SCOONOVER
Q Is it your testimony, then, that you would recommend rewatering the historic channels of the Rush

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Creek bottom lands?
A BY DR. STINE: Yes.
Q Would you also recommend if you were God or king or however you described it, manipulate --

HEARING OFFICER DEL PIERO: How about a member of the State Water Board.

MS. SCOONOVER: Even better, even better.

Q BY MS. SCOONOVER: Would you also recommend creating or manipulating trout habitat in these rewatered sections of the stream?

A BY DR. STINE: If I was God, no. I wouldn't. I would rewater the channels, but I wouldn't manipulate them. I wouldn't want to do anything more to the channels than nature would take care of on itself once you add the water.

Q It's been suggested that perhaps the way to rewater these channels would be to wait a period of years, and then rewater the bottom lands channels one at a time.

Do you agree or disagree with that proposition?

A I see no reason to do it that way. I see absolutely no reason not to go in there and rewater many of those channels at the same time. There's no good reason to not do that.

Q Okay. Are you familiar with the Department of

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Water and Power's management plan?

A Probably not as familiar as I should be, but I read it, more than skimmed it, less than perused it.

Q All right. I'll ask your opinion, and if it's something that you feel comfortable rendering an opinion on, fine, let me know. If not, we can move on.

Under this management plan, is it likely that new distributary channels are likely to form in the Rush Creek bottom lands?

A No. Because -- because Mono Lake needs to be higher in order to naturally get that stream to, itself, start to form distributary channels.

Q How about vegetation, except along the immediate stream channel? Under Department of Water and Power plan, is it likely that vegetation will reestablish or establish itself any beyond the immediate stream channel?

A No. The immediate stream channel -- by that I would include the flood plain, and the flood plain of the present day channel in Rush Creek is probably five percent, something like that, as wide as the flood main used to be.

So I think that it's fair to say that we would be establishing riparian vegetation rapidly along the stream and on the flood plain, as well as on any

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islands in the stream. But beyond that, distant from that, it would be tougher. And not so much tougher, it would be a much, much more slow process.

Q You discussed -- actually you showed a slide, a 1992 slide of Lee Vining Creek. And I believe it was evidenced in the slide that there was a large area that was boulders and rubble and not vegetated.

Do you believe that with continued flows in Lee Vining Creek that these areas will revegetate themselves naturally?

A No, not for a long, long time. And once again, if Mono Lake was to rise, if we got Mono Lake high enough

to where the stream could start prograding again, because then it would start to agrade, the channels would start to fill up with sediment.

And all of a sudden the water would be flowing, carrying sediment onto these areas to which the stream has no access today. And once that happened you'd start to get fine material there, such as was there prior to 1969 on Lee Vining Creek. And then you'd start to get a lot of -- a lot of riparian vegetation back.

But right now, once again, the stream, Lee Vining Creek is restricted to a big, wide channel, and the water can't get out of the channel on to the strip

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surfaces anymore.

So no, it's going to be a long, long time short of intervention and can you sort of kick start it by going in there and planting things and try your luck, do the experiment, see if it takes, see if the vegetation will take by planting.

Q Do you believe it's significant that these areas are not revegetating now?

A Significant and telling, sure. Sure, yes.

Q I'd like to move on. You had a brief discussion earlier about the cost estimates for removing debris and rewatering Rush Creek, I believe. And the estimate was 800,000 to a million?

A Yes, in round figures, yes.

Q Now, what exactly -- what I want to get to is what exactly this figure included. So I'll ask you a couple of specific questions.

First, it's my understanding and is it correct that this figure included removing debris from all of the channels, including those channels that you've referred to as stranded channels?

A Yes, and by debris there, we're talking about removing not only the woody debris or the sod or anything like that. We're talking about removing the gravel and cobble plugs that have come from the Marzano

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Quarry site.

And yes, that figure includes clearing all the channels, upper bottom lands and lower bottom lands of that debris.

Q So the figure included rewatering all of the channels?

A Yes.

Q Now, you've recently testified that perhaps, if you were in charge, not all of the Rush Creek channels, historic channels would be rewatered, particularly, you have concern about the stranded channels.

Could you explain for me in terms of your dollar figure, your 800,000 to a million dollars figure, the approximate difference in cost if you were to not fix the stranded channels, not rewater stranded channels?

A I can't give you a dollar cost. I could go back through our calculations and come up with, again, a round figure.

Let me just say that the lower ones were far, far, far more expensive than the higher ones, because it

involved manipulating the grade of the existing Rush Creek channel and trying to bring it up to the now stranded channels.

So if you cut out those lower ones, you're cutting out a big chunk of the money for sure. And I don't

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know if it's -- if it's half. Perhaps it -- perhaps it takes it down to 500 to $600,000, something like that.

Q Okay.

A And I -- and I should also say that, just for clarification here, that this involves not only clearing the plugs out of the heads of the abandoned channels, all of them, but it is also includes trucking out all of that debris, spoiling it off-site, rather than putting it somewhere on-site.

So that's sort of the upper -- that's the upper figure. That's -- that's the wish list for some people. That's what I suppose some people would want to do. That's the maximum.

Q Okay. Thank you.

A And can I say one thing? I don't get any of that money. I'm not trying to sell this. My work out there is basically done. I'm the historic conditions guy. And I don't think I can do the historic conditions in much more detail than I already have. So I'm not trying to drum up money here and -- okay.

HEARING OFFICER DEL PIERO: It was interesting. Nonresponsive, but interesting. Proceed please.

Q BY MS. SCOONOVER: My last question may appear a bit argumentative, and it's not supposed to be. I'm truly concerned with your answer.

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Are you concerned at all about criticism or potential criticism that what you're proposing for Rush Creek is in effect a "Disnification" of Rush Creek?

A No. I think that --

HEARING OFFICER DEL PIERO: Excuse me. That's a word?

MS. SCOONOVER: It's a technical word.

HEARING OFFICER DEL PIERO: It is?

MS. SCOONOVER: I think I just made it up. It comes from the proper noun Disney, to "Disnify".

HEARING OFFICER DEL PIERO: Yes. Yes. Do you understand the nature of the term, Doctor?

DR. STINE: Yes, I do. Fantasyland comes to mind. But, no, I'm not concerned with it. I think that the people who have suggested that perhaps see my wish list containing pools and meditation kneeling sites, and park benches, and picnic benches, and wish pools and wishing wells and things like this. And that's not it at all.

I feel very strongly and, in fact, I agree with Mr. Beschta, Dr. Beschta on this, that nature is the best healing agent out there. And that we shouldn't go in and manipulate those channels and try to make something out of them that nature wouldn't do on its own given some amount of time.

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I think Mr. Beschta and I agree that nature is the best healing source, the best healer. It's a matter of

where we want nature to work. I would like nature to be working on those channels.

That's why I'd like to get water there and get the process going. We're already 50 or 60 years behind nature, and the sooner we get it going the quicker we get it back.

Q So what you're proposing is to speed up the natural process?

A Apply the natural process. Let the natural processes work on these channels, these natural channels that need water. And as Mr. Beschta, Dr. Beschta has so elegantly put it, it is explosive growth. Let the explosive growth occur in these other channels.

Q And the potential impacts that might be associated with manipulating to allow the natural system to work doesn't concern you?

A It doesn't concern me because it's so miniscule compared to what has gone on out there now. We shouldn't look at what is there today as some natural system, and we're going to let nature bring back the natural system.

We're letting nature work on a completely

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artificial system. And what I would like to see is let nature work on the remnants of the natural -- the natural system out there. Was that responsive?

Q Close. I believe you described changes pre-1940 as short-term and changes post-1940 as long-term or permanent. Would you -- is that accurate?

A Semi-permanent, long-term for sure.

Q Long-term.

A Yes.

Q Would you describe then the potential impacts associated with speeding up the natural process or aiding the natural process as short-term impacts as opposed to long-term impacts?

A Yes. For the very reasons that, as Mr. Beschta -- Dr. Beschta, I'm sorry, has pointed out, vegetation very rapidly, under the right conditions, vegetation very, very rapidly comes back in the Rush Creek bottom lands.

And what vegetation was broken out there, and sure, there'd be broken plants. There's no question there'd be broken plants. But what vegetation was broken would very, very quickly come back in a matter of a few years, because of the same tendency toward explosive growth in the bottom land.

So when we look at what used to be out there, and

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the time involved in getting it back should we rewater channels, 40 years, 50 years to get back big lush tall closed, semi-closed, canopy woodland out there, the two or three or four years that it's going to require for the vegetation that's been run over by heavy equipment to come back, seems to me to be a very, very small amount of time. As I say, it sort falls through cracks of the amount of time on a time scale that we're looking at here.

Q Thank you Dr. Stine. That's all.

HEARING OFFICER DEL PIERO: Thank you very much. Did I see Ms. Niebauer here somewhere? Maybe not.
MR. CANADAY: Mr. Haselton's here.
HEARING OFFICER DEL PIERO: Mr. Haselton, how are you, sir?
MR. HASELTON: I'm still here.
HEARING OFFICER DEL PIERO: Do you have questions of this witness?
MR. HASELTON: Yes.
HEARING OFFICER DEL PIERO: Good.
MR. HASELTON: Hi, Dr. Stine.
DR. STINE: Hi, Mr. Haselton.

CROSS EXAMINATION BY MR. HASELTON

Q And my first one is: Are you familiar with the Upper Owens, and particularly the area known as the East Portal as it exits out on to the Arcularius Ranch?
A I am familiar with it from maps and aerial photographs and from having flown over it.
Q Okay. So out of the near 400 days, I guess, how many days did you spend on the Upper Owens?
A One-half a day, studying.
Q Studying.
A Those are field days. Those were study days.
Q Okay. Well, let's see, then. Let me ask you from a -- as a geomorphologist. Is it safe to say that the geomorphic and hydrologic contents of Rush Creek, just to pick, you know, one out of the four there, and the Upper Owens River, is it safe to say that those are different?
A They are different systems, yes.
Q Would one of the differences be that an eastern snow melt stream like Rush Creek would experience a great a difference between its annual highs and annual lows as opposed to a spring fed river?
A Yes, that's correct.
Q Would another difference be the daily rate of change? For example, could we expect to see a daily rate of change in flow exceeding ten percent --

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A On which system now?
Q On the Rush Creek system, excuse me.
A Yes. That's likely.
Q Likely. That would be a normal characteristic of that system?
A Sure.
Q One second here. I'll read my handwriting. On page nine, last page of your testimony, you speak to the Upper Owens River, and if I might, let me read the last -- the last two sentences.
"The amount of water that is required to maintain optimal conditions would be decreased" -- optimal conditions referring to fishery conditions, "would be decreased if the channel was restored to its former condition. I consider such restoration feasible."
Does this restoration or feasible restoration, would that include the physical manipulation of the Upper Owens, possibly with heavy equipment?

A That isn't what I had in mind when I said that, but let me make certain that we're talking about the same thing here.
I'm now referring to, when I say that, I'm talking about the Upper Owens River downstream of the Portal.
Q East Portal, right.
A Yes.

Q And I refer to the same.
A Okay.
Q Okay. I'd like to return to the theological question regarding playing God, just playing God. I'm concerned. Is that what we're trying to do with Rush Creek, beyond just rewatering, like the conversation you had with Miss Scoonover?
Are we, by controlling flows and -- or proposing to control flows and ramping and such, notwithstanding the physical manipulation of Rush Creek, but by imposing maintenance of flows and ramping conditions, are we running the risk of creating something that may not be within the geomorphic context of Rush Creek?
A I would like to think that the ramping and the manipulation, such as it is, would be done in a way that takes into consideration the natural processes.
And I'm not sure that I've heard anybody suggest that it be done otherwise. I think that we all agree that it should be done that way. We may disagree on what those conditions are, but I think everyone is out to use nature as the guide to the extent possible.
That's new thinking. Obviously, that wasn't the thinking until fairly recently on the streams of the Mono Basin. But I think there's a tendency to try to use nature to a large extent as a guide to what to do

to the streams.
Q And that would also go for the Upper Owens River?
A Yes, it would. That's certainly in my mind, yes.
Q Okay.
A And that would mean, in other words, letting the channel go back to the way it used to be and not having the large pulses of water from Mono Basin in the Upper Owens River channel.
And I think the way to do it would be to build a canal, build some means of transporting Mono Basin water. And it could be used for irrigation or whatever, but keep it out of the natural channel and allow the natural channel to go back to the way it used to be.
I'm not advocating -- this is not being used as a means of keeping water out of the Upper Owens River. It's keeping water out of the channel there, so that the channel can repair itself.
Q Then my last question is: Are you familiar with the history of how Rush Creek got its name?
A I'm not, and I'm embarrassed. Can you tell me?
Q I think it describes this condition. Thank you.
MR. BIRMINGHAM: Mr. Del Piero?
HEARING OFFICER DEL PIERO: Mr. Birmingham?
MR. BIRMINGHAM: May I take just a moment and

share with you a story that I heard recently from Professor Choeffer (phonetic) at Berkeley? This discussion of God reminded me of a story that Professor Choeffer told at a resent meeting of the Federal Bar Association.

I spent a lot of time before federal judges. And this was a meeting at which there were four District Court judges in attendance.

And Professor Choeffer started his speech by telling a story about a female psychiatrist who died and went to heaven and was met by Saint Peter at the gates.

And when Saint Peter discovered what she did for a living, he said, "Would you be interested doing some work up here?"

And she said, "Well, I would, but what would you possibly need up here?"

And Saint Peter said, "Well, God needs some help."

And she said, "How could God possibly need any help?"

And he said, "Well, he's been walking around here for the last six weeks, and he thinks he's a federal judge?"

HEARING OFFICER DEL PIERO: You've spent too much time in front of federal judges, Mr. Birmingham.

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MR. BIRMINGHAM: I agree with that.

HEARING OFFICER DEL PIERO: Okay. Ms. Cahill?

MS. CAHILL: Am I before staff?

HEARING OFFICER DEL PIERO: I'm sorry. Mr. Frink, you actually have a question or two?

MR. FRINK: I do have a few.

HEARING OFFICER DEL PIERO: Okay. Go ahead.

MR. FRINK: For Mr. Birmingham's sake, I hope that if there is any judicial review of this case, it's under the state courts.

Mr. Dodge, before I ask some questions of Dr. Stine, I wanted to clarify --

MR. BIRMINGHAM: Excuse me. Is that in reference to a recent ninth circuit opinion?

MR. FRINK: Take it as you wish.

Mr. Dodge, earlier on, there was a question regarding the status of National Audubon Society-Mono Lake Committee Exhibit 1-AB, which was the testimony of Elden Vestal on water fowl.

You stated that you believed that the exhibit had been admitted. I'm not sure if will their was a discussion of it on the record or not.

In any event, our records don't reflect it having been admitted. And in order that the record be clear, I wonder the you'd like to offer that again at this

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time.

MR. DODGE: I would. Thank you, Mr. Frink. I would like to offer into evidence National Audubon Society and Mono Lake Committee Exhibit 1-AB and the exhibits referenced therein.

HEARING OFFICER DEL PIERO: Any objections to that? We all racked our brains and all of us seemed to think that it was done, but we couldn't find a record

of it. So it will be so ordered. Okay. Proceed.
(NAS-MLC Exhibit 1-AB was admitted into evidence.)

MR. FRINK: Yes.

CROSS EXAMINATION BY THE STAFF

Q BY MR. FRINK: Dr. Stine, against my better judgment, I'm going to try and clarify some questions that I had regarding incision that were raised by your responses to questions from Mr. Birmingham.

As I understood your answer, it appears that the de -- excuse me. It appears that the incision in the Lower Rush Creek area could be divided into two categories.

That incision which occurs below the historical level, and that incision which could occur in recent sedimentary deposits, but which is not below historical levels --

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A BY DR. STINE: That's correct. Absolutely, yeah, sure.

Q Okay. Would it be accurate to say then that at any given time at the mouth of the stream in the delta system, the stream bed is either in the process of building up through sedimentation or incising down?

A That's correct. Absolutely. And for that reason, Mr. Frink, I have suggested to the planning team that we not try and do anything for the lower, say, 2,000 feet of Rush Creek, something like that.

It's an impossible situation, because any of these lake level scenarios that we end up with, every one of them's going to have a fluctuating lake. And things are just going to be too dynamic down there to do any kind of structural work at all, any kind of digging of holes, anything like that. It's going to be too chaotic too dynamic.

Q Okay. So when stream restoration experts speak of preventing incision in the future, are they primarily concerned with preventing any incision that might occur below the historic flow channel elevations?

A Certainly, that would be our primary concern, yes. Because if we -- if we cut below that, that same amount incision is going to work its way headward, and we're once again going to throw out of equilibrium everything

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that is now trying to readjust itself to the new equilibrium, there.

So as long as base level doesn't go below the lowest level that it has been now, we're not going to see further cutting all the way up through Rush or even partway up through Rush Creek system. It will only be that dynamic mouth area where this goes on.

Q Okay. If the water level of Mono Lake were to be raised up to 6,383, would that prevent future stream channel incision from going below the historic levels?

A It would as long as during a drought Mono Lake didn't drop below 6,372 feet. Mono Lake -- we've got to get the base level, which is the level to which the stream will cut. We've got to get base level, Mono lake this case, below 6,372 feet to be able to get Lee Vining Creek, Rush Creek, Mill Creek to cut down below

where it has cut so far.
Q So your primary overriding objective would be to insure that under no circumstances would the water elevation go below 6,372?
A In regard to the deltas, yes, because if the lake did go below 6,372, the streams would incise. I hesitate to bring this up, but my -- if I am passionate about one thing at Mono Lake is that the lake never under any circumstances go below 6,368 feet, because

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there is a nick point, like we find on the deltas going all the way around Mono Lake.
And the system comes unglued. It dewires, if the lake ever, even during a drought, goes below 6,368 feet even for a short period of time.
Q All right.
A So that would be a more critical concern in my mind.
Q You testified about the possibility of constructing check dams to hasten the restoration of -- I believe you said a new stream delta in the area upstream of the check dam; is that correct?
A Yes.
Q How large of a check dam did you have in mind?
A It would all depend on where it was built, and if I could illustrate that on the -- on the -- with a -- just a sketch, it would sure help me.
Q Okay. If could you do it briefly.
A I will do it briefly. It's a matter of the big cut, the incision of Rush Creek having created something that looks like -- looks like this.
So that Rush Creek, today, flows down here, and flows down through this massive cut. This is the massive cut right here, with as much as 25 feet of incision up to the delta plain which is over here and

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over here.
So Rush Creek is flowing down through this wedge-shaped canyon in a sense. If Mono Lake was to rise, Mono Lake today sits down here. If Mono Lake was to rises, it would embay this. Excuse me. It would embay this big cut and create sort of an elongated embayment.
You can see how much sediment would have to be deposited down in here to get the stream to build outward into Mono Lake, and therefore, to start to build upward and start doing its delta thing as I've described it.
It would obviously be far easier to build a check dam up here, in which case you would -- the stream itself would not have to fill up this entire surface here. It would fill up only a little bit here, before it started to agrade.
So my sense is that the farther you go upstream, up toward the Ford there, the farther you get up there, the smaller would the check dam have to be, and the more immediate would be the response in the bottom lands.
Q Is this on Rush Creek, then, that you're suggesting the check dam?

A This is Rush Creek, yes.

Q Approximately how far from the present shore line, how far upstream from that would you anticipate would be a good location?
A It would be the present shore line, approximately -- approximately -- a little bit less than one mile above the present shore of Mono Lake, up toward the Ford.
Q Okay. And again, then, how large of a check dam would it be if it were constructed at the location that you're suggesting?
A It would be perhaps, again, give me some latitude here. Probably, if it's built in the right place, perhaps 40 feet across, something like that. Depending upon how much aggravation you wanted, perhaps three to four feet high, something like that.
And of course it would have to be built with fish passage, and probably with esthetics, and things like this in mind. But it would just push the process.
It would be the equivalent of immediately raising Mono Lake up to that spot. Rush Creek would start to behave as if Mono Lake was up there.
Q What would be the condition of the stream below the check dam?
A Below the check dam, it would continue to be basically as it is today. It would get shorter and

shorter as Mono Lake was rising, if Mono Lake did continue to rise.
The reason that this is such a problem right here is that we're dealing with these blast deposits. And the reason that the Rush Creek embayment, in a sense, this Rush Creek canyon near the mouth is so very, very wide, is a combination of the high flows, the drop in lake level, and the fact that this stuff here is so easily erodible.
So you've got to get -- you've got to get up above this. You've got to get higher upstream, so that you don't have to end up, basically, filling this entire canyon here with approximately 400 to 500,000 cubic meters of material that was excavated when -- in 1967 and 1980.
Q What would you anticipate that a check dam would be constructed of?
A Presumably, it would be constructed of local materials, though, I haven't really thought about it. It could be probably done with -- with gravel. Obviously, you would want to make it safe. It would probably have to go through a division of dam safety standards.
It would not, though, have to be impermeable. The idea would not be to completely hold water back. It

would be to create a pond where water would flow through this thing. It wouldn't matter, just pond up some water, get Rush Creek to start depositing its load into this little pond.
Then you would have a flat plain which would be a meadow. Rush Creek would be graded to that, and it

would start building itself up up through the bottom lands.
Q How high would you anticipate such a dam would be?
A You would can a make it any height that you wanted depending on how much aggravation you wanted to achieve, four to five feet is sort of what I dream about.
Again, this hasn't been studied. This is conceptual idea. And we certainly haven't come up with any design or design criteria or anything else. It's one of the possible solutions that could shorten the amount of time involved in getting Rush Creek to operate as it used to.
Q Have you consulted with the U.S. Forest Service or the Department of Fish and Game regarding this idea?
A No. No.
Q Do you have any concerns that if you were to build such a check dam it could wash out?
A Yeah, you would not want it to wash out, though,

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presumably if it did wash out, you would pretty easily be able to repair any gash in it.
You probably wouldn't lose the whole thing, if it was built correctly. It's something that would have to be taken into consideration. You don't want the thing to -- to wash out. But I guess -- I guess -- I think of it as being built in such a way that it wouldn't wash out.
Q If it did wash out, wouldn't you risk losing this new delta area that you're attempting to create upstream of the check dam?
A You would once again, lose it, yes. So you would be back to square one, again. As opposed to not doing anything and staying at square one.
Q If you did nothing wouldn't you gradually result in building up a delta area at the mouth of the stream?
A Only insofar as Mono Lake moves up in this direction. What I'm trying to do here is sort of decrease the amount of time that would be required to get Mono Lake up there.
In other words, we'll build this up here and that will put us through the 50 years that it takes to get Mono Lake up to that level, or up to some other level in through here. It accomplishes the same thing as bringing Mono Lake up. It establishes a base level at

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this elevation right here.
Q All right. So where you would construct the check dam, if one were to be constructed, would be at what you anticipate being the eventual upstream -- eventual water elevation of Mono Lake?
A I'd want to take that into consideration. But if that eventual lake level is 6,380, 6,380 is sort of where I've drawn this line right here.
6,390 is a little bit farther up in through here. 6,400 is almost to that red line right there. And 6,405, something like that, would be at the red line, something like that.
Q Okay.
A Approximate figures.

Q Thank you.
A I'm not advocating it. I'm saying it's one way of decreasing the amount of time between getting Mono Lake to start to rise, and getting the bottom lands to respond to that rise in lake level.
Q Are you aware of the status of the Mono Basin as a national scenic area?
A Yes.
Q Do you foresee that that would cause any problems with regard to construction of a check dam?
A It very well -- it very well may. I've had

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conversations just in passing with people. And they say, you know, that it would be something that we should look into.
So there's no plan afoot, as I want to make clear here. This is a concept that we're tossing around as one possible solution a to what has been designated in some minds as a problem.
Q All right. I understand. You spoke of rewatering historic side channels in the upper one-half of the bottom lands of Rush Creek. But you mentioned that some of those channels are one to two feet higher than the present channel.
What is the approximate slope of land in the upper one-half of the bottom lands of Rush Creek? I can give you some figures, here, if you care to wait.
Q A ballpark figure is enough.
A I would feel better if I was quoting from my work here. Channel gradient immediately below the Narrows is approximately 20 per thousand. And it gets considerably lower as we go down toward the lower end, reaching less than six per thousand down by -- down by the Ford.
Q Okay.
A And it's a more or less constant decrease as we go down from the upper -- just below the Narrows down to,

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say, the Ford.
Q So six per thousand works out to be roughly 333 feet for every foot gain in elevation?
A Okay. Sure.
Q Would you foresee any problems in opening up a channel that is two feet higher than the existing channel when you have that kind of a slope?
A No, I wouldn't, not if it was done correctly. And two feet is sort of the maximum offset in the upper part of the bottom lands here.
It would be a matter of taking the material out of the channel, and putting it into the existing channel to rebuild the left bank, if the stream, looking down stream now, if the abandoned channel is off here to our right. It's abandoned because the present day stream has cut a new channel off in this direction.
So what we need to do, then, is to rebuild the -- what used to be the left bank of the stream. And we simply do that by taking debris out of the channel, placing it in the existing channel, so as to rebuild the bank that used to be there.
And as soon as we do that, then, that channel very

quickly, the channel that we've just now put this new left bank in, that channel very quickly fills up with sediment and the problem is gone.

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It works very nicely with one to two feet. It is real problematical when we start talking about five feet of offset, six feet of offset, eight feet of offset.

Q You mentioned placing the water that you excavate from the side channel into the main channel?

A The cobbles.

Q The cobbles, I'm sorry.

A Yeah, and that would be a small portion of what comes out of the channels.

Q Have you done any studies to determine approximately how large of an area of the main existing channel would be affected by the fill?

A I'm not sure exactly what you mean by affected.

Q How large of an area would you place the fill in on the main channel?

A And I wouldn't been the one to make that calculation. In other words, how wide, how thick would this new left bank in a sense have to be?

Q What I guess I was more interested in is the linear distance of the main channel which you would be proposing to place fill?

A It would be a small amount of the linear distance of the existing channel. In other words, this -- this new left bank might be -- I don't know.

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I'm guessing here. Please don't hold me to this, because we haven't really talked about it to the design stage, but it would probably be ten-feet wide, something like that, if that, maybe not even ten-feet wide, would be sufficient to turn that water and put it into the -- the new channel.

Q Maybe we're not -- I'm not being clear. I was wondering how long a portion of the new channel running -- excuse me. Of the existing channel, running down stream from the new channel would you envision placing fill material in?

MR. SMITH: I'm curious about this too. How far across the stream? Say the stream is 20 feet across.

MR. FRINK: That isn't what I'm asking.

MR. SMITH: Okay. I'm sorry.

Q BY MR. FRINK: I'm interested in the length downstream from where the new channel takes off.

A BY DR. STINE: Can I draw what I think you mean, and what I think I mean here?

Q Yes.

A We have a channel that is the present day channel goes off like this, in this direction, flowing in that direction.

Q Fine.

A We have a channel that takes off over here, which

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used to carry the water.

Q Correct.

A That is today plugged with material in through here. And so the stream no longer has access to this

channel.
Q Correct.
A And what has been discussed as a possible solution, is to take a part of the fill that is presently in this channel right here, and build it out here into this channel. So that now the water comes down and it does that. Rewaters -- rewaters the channel.

In other words, what you're lacking here today is not only access to this channel, but you're also lacking the old left bank of this channel. And you would by building this material in here simply be rebuilding the new -- what used to be the left bank of the channel.
Q Have you done that --
A I would say that this could be probably again don't hold me to design criteria, because we've never discussed this, in terms of design, but we're probably talking about ten feet or something like that. This width right here would be about ten feet perhaps.

MR. BIRMINGHAM: Excuse me, Mr. Del Piero

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MS. CAHILL: Mr. Stine, to keep the record clear why don't you mark that DFG 151 and the page before that DFG 150.

(DFG Exhibits Numbered 150 and 151 were marked for identification.)

Q BY MR. FRINK: Have you been involved, Dr. Stine, in reopening stream channels such as you're proposing now previously?
A BY DR. STINE: No. I have not. And I don't know of too many situations -- in fact, I know of very few situations where what we saw happen on Rush Creek has happened someplace else. I'm not aware.

Certainly, we would be taking into consideration things like that in coming up with a design. But please understand, we have no budget. We have no direction or anything else to even be -- to even be contemplating this.

So we contemplate in it our spare time. Maybe we could do this. Maybe we could do that. It has not been studied however.
Q Okay. I understand. Would you be concerned about the erosion potential of the fill that you're placing in the main channel as a part of this channel reopening process?
A Absolutely. Sure. Sure.

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Q How would you control that?
A Once again, with a sufficient design, which has not yet been even contemplated.
Q I would assume from your testimony that would you agree there has been a dramatic change in the stream channels of Rush and Lee Vining Creek between 1941 and the present?
A Yes.
Q In your opinion, do you believe those streams can ever be put back close to the way that they were before diversions by the City of Los Angeles began?
A Certainly, yes. Close to what they -- and maybe

we're disagreeing on close. I believe you said close to what they were. Sure.

I think that if the right moves are made, that 100 years from now, our great-great grandchildren can see the Mono Basin bottom lands, the Rush Creek bottom lands, pretty much as they existed.

And we would simply be accelerating it back to that condition by removing these gravel plugs and allowing Mono Lake to come back up again.

Q I think you mentioned earlier -- you described yourself as the historic conditions guy who probably would not be extensively involved in stream restoration.

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Aside from the work which you've done in the Mono Basin, have you participated in any stream restoration projects elsewhere?

A Not in the restoration part of it, but in projects where stream restoration was being contemplated. So I was involved in it. But I have never been involved in the design of something like this. And I wouldn't be the person to be designing it. I would be in on the brainstorming sessions. But there would be engineers out there doing the designing of these things. I would not trust myself to.

Q At this stage, though, you would describe the proposal as being a preliminary suggestion that should be investigated further; is that accurate?

A Pre-preliminary, I would say. It's something that has been talked about, but there has been no decision made to look into any kind of design criteria or anything else.

Now, Scott English, I should say, Scott English is a person who does do work like this. And he's been involved if stream restoration projects all over, all over the Western United States.

And I think he's a pretty sound guy. He and I have worked together on this. We've spent time out in the field together. And he's the one who -- who

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does -- is more apt to do the actual designing, itself.

Q All right. Thank you. Most of the your testimony appeared to focus on Rush Creek. I wonder if you could briefly summarize the way in which your recommendations for stream restoration in Lee Vining Creek might differ from your recommendations for restoration in Rush Creek.

A Well, again, these are not specific recommendations that I would be able to spell out. First, we would move X cubic yards of material to hear, et cetera, et cetera. It's the way I would like to see the plan move. It's what I would like to see ultimately come of the streams.

So I'm -- I feel much more comfortable talking in general terms, rather than in the specifics. But what I would hope would be done on Lee Vining Creek would be for us to make those moves to allow the system to get back to function the way it used to.

Not exactly the way it used to, but the same kinds

of channel shapes, multiple channels, very, very strong channel walls, deep systems, slow moving systems, a bottom lands environment such as used to exist there previously.
Q All right. In response to a question from
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Miss Scoonover, you stated something to the effect that you would not recommend manipulating reopen stream channels to improve fish habitat; is that correct?
A That is correct. And what I had in mind there was that I wouldn't recommend going in and digging holes and scraping sod and doing all that.
I would recommend opening them up, putting the water there, keeping the grazing animals off and let nature do its trick on those newly open channels that it is starting to do on the big modified channel out there, the present day channel.
Q I realize that you're not a fisheries biologist, but speaking as a geomorphologist, what would be the problem or problems with manipulating channels as you've described for purposes of improving fish habitat.
A I just -- I'm not sure that we could do it as well -- in fact, I know darn well we could not do it as well as nature would do it.
And my sense is that in terms of the Rush Creek bottom land channels, we've got 30 or 40 or 50 years before we start getting back some of those conditions such as used to exist. For instance, the tall trees, the closed canopy, all of these things.
So what's the hurry, right now, in creating fish
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habitat in those particular channels? I think we'd be much better off allowing the stream to work those channels while the -- while the vegetation is coming back. And they could sort of co-evolve again together.
I don't think that's the case, however, on the existing channel because the existing channel is -- is so modified beyond anything natural, that if people want fish habitat out there, I have no objection whatsoever to going in what I call a sloshway and trying to create some pools and what not, in this highly, highly manipulated and modified system.
But I would rather not see that go on in these channels that are still basically natural.
Q All right.
A I would rather preserve the naturalness of those channels, because I don't think we can do as good a job as nature does.
Q As a geomorphologist, would you have a concern about the stability of some of these manipulation steps that might be proposed for the main existing channels?
A No, I don't. I think that there have been such huge perturbations in the system down there because of the incision of the stream, the widening of the channel, doing away with the vegetation that used to
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hold the banks so solidly, there's been such major changes down there, that anything that would happen as

a result of digging holes in the channel or anything would be minor compared to the initial perturbation.
Q Do you believe that the deepened holes would last for a significant period of time? A period of years?
A That depends a great deal on what goes on upstream. If for instance all of a sudden a huge lug of sediment artificially produced upstream comes down, it may very well partially to wholly fill up the holes -- artificially dug holes in the stream.
Q Now, you just mentioned a minute ago about the wide nature of the present main channels.
Is that the case both in Rush and Lee Vining Creek?
A Yes, it is, widened by 200 to 300 percent along most of the course. By the time we get down to the mouth, it's widened by a factor of 30 or 40, I would think, something like that.
Q All right. Earlier in the hearing we heard testimony that one problem in reopening the historic channels is that by doing so you would split the flow among additional channels, and that the water level in those channels, as well as the present channel, would be more shallow than was historically the case.

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Do you agree that that would be a problem?
A No. I don't agree at all. In fact, I -- I very much disagree with that. Let's say you start with 100 cfs in the -- in the existing channel. I pick that only because it's a round number, and we can deal with percents.
If we were to leave that hundred cfs in the existing channel for ten years, what we're going to end up with ten years from now or 15 years from now, is a channel suited to 100 cfs. And the pool riffle ratio and the placement of the meanders and all of that will be keyed into one hundred cfs.
If we then at that time take out 50 percent of that, and put the -- put ten cfs in that channel and ten cfs if that channel and ten cfs over there, et cetera.
What we've done is to take this channel that's keyed into in equilibrium with more or less or trying to get in equilibrium with 100 cfs, and we've now decreased the flow to the point where now the stream is out of equilibrium.
Now this stream, which is down to 50 cfs, is going to try to make a 50 cfs channel out of its hundred cfs channel. So we've really accomplished nothing by keeping the water in the existing channel.

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We would be much better off in terms of deep water, to get to your point, we'd be much better off taking out the ten or the 15, or whatever is designated to be the right amount, from the main channel today, put it in that channel, put it in that channel, take advantage of the deep water that's now in those channels, because there are nice holes.
There are big deep holes three four up to even five feet deep in these alternate channels that are -- pardon me, in the distributary channels that would

be -- that would immediately be there for fish or for swimming or for bugs or for all creatures great and small, I suppose.

So I think what we would -- what we would be best off doing is taking advantage of the conditions that today exist in the multiple channels, rewater those, and get the present day channel back, or get it working toward equilibrium with that diminished amount of water.

And that's the way to best expedite it. That's way to best get the greatest amount of deep water if that's your concern.

Q If that were done, would you foresee some adverse short-term effects on fish habitat?

A When you ask that all of a sudden --

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MR. BIRMINGHAM: Object --

MR. FRINK: I with withdraw the question as soon as I asked it. I believe that's all the questions I have.

HEARING OFFICER DEL PIERO: We're going to take -- I, unfortunately, have to make two phone calls right now. We're going take a ten-minute break, and we'll be back.

(Whereupon a recess was taken at this time.)

HEARING OFFICER DEL PIERO: This hearing's back in order.

Mr. Herrera?

MR. HERRERA: Thank you, Mr. Del Piero. I do have a few questions for Dr. Stine.

Q BY MR. HERRERA: And I did hear it correctly that earlier someone asked you whether you were a fisheries biologist or not, and your answer was that you were not; is that correct?

A BY DR. STINE: That's correct.

Q Early in your testimony today, you indicated that you were looking at historic Grant Lake --

A Historic -- excuse me.

Q Historic Grant Lake.

A Yes.

Q And you made a comment that -- that it appeared

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that it was a barrier to upstream migration of fisheries, as well as it was not a barrier to downstream fisheries.

Could you elaborate as to the foundation for your response, sir?

A Yes. I believe that my response, certainly if it wasn't, it was intended to be, and I think it was, that I considered it to be a barrier to upstream migration of fish, and that it may or may not have been a barrier to downstream migration of fish.

And I base that on having talked -- excuse me, talked to a number of different individuals. If this thing is ten feet high, if there's no fish passage ladder through it, or something like that, can fish pass it?

And universally, people said no, that they could not get up the dam if it was ten feet high. Now, I used ten feet there -- it's at least ten feet high.

This 1925 dam may be 15 to 20 feet, something like that. In which case, I would have assumed the fish passage problem would be more severe.

So I -- it's a judgment that I express having conferred with people that I work with on stream restoration issues, historical conditions issues in the Mono Basin.

Q Okay. Thank you. When we're talking about the rewatering of the lower bottom lands in Rush Creek, and you indicated that the lake -- as the lake rose that it would inundate certain amounts of those lands.

As it exists today, we talked about the Dumbrowski (phonetic) Properties, and those sort of things. Would -- as the lake level, would that inundate part of those lands or part of Clover Ranch, I believe it is that you discussed?

A Well, that obviously depends on what you folks decide, because you will be presumably setting the level of the lake. The Clover Ranch property sits at about 6,435 feet. And so to expect the Clover Ranch buildings there, what buildings remain after the floods of 1967, '69, and '80, to expect those buildings to be inundated, I think, is very, very unlikely that the lake would get up that high.

The -- the lands that people were hunting ducks on, that Dumbrowski (phonetic) was hunting ducks on, those types of lands, in other words, high water table marshland, exist all the way down to 6,400 feet as long as the lake is high. As long as the lake is at about 6,400 feet.

With the lake where it is today, those marshlands are gone, because the high water table that used to exist to either side of Rush Creek before it incised, that high water table has been drained down due to the incision of Rush Creek. So those --

Q So you're essentially saying that at 6,400 lake levels or above, it's still not going to get to the Clover Ranch area or the Dumbrowski (phonetic) Properties; is that correct?

A Again, I'm not sure where exactly sure where the Dumbrowski (phonetic) Property was.

Q If you don't know, that's fine.

A If the level of the lake comes up to 6,400 feet, it would be well short of Clover Ranch, as I picture it. And it would once again then cause marshes to reform on the Rush Creek delta if we had it up at 6,400 feet.

Q That's fine. Thank you. Let's back up a little bit. Back again, to Grant Lake.

Do you know what the distance is from Grant Lake to the return ditch? From the present day Grant Lake to the return ditch now?

A What part of the return ditch? The return ditch itself is quite long, so --

Q As the return ditch enters back into the Rush Creek stream channel?

A I can tell you a general sense off of this.

Here's the brand new -- brand new. Brand new Grant Dam right here, the DWP Grant Dam. Here's where the return ditch enters Rush Creek. And here's a half a mile right here. So I would say that they're very close to the --

Q So you're saying a half a mile?

A Half a mile.

Q Half a stream mile.

A Based on this. And it's a round number.

Q Do you have any recommendations or have any suggestions of a feasible way to recover the stream segment?

A By the stream segment, you're not talking about the 1,600 feet that was lost when we moved Grant Dam in 1940? You're talking about the segment that exists today between new Grant Dam --

Q The segment we just discussed.

A Once again, it's been -- the idea has been, in a sense, thrown around. There are a number of different ideas out there, one of which --

Q You haven't developed any yourself?

A I have been part of brainstorming groups that came up with some things to look into.

Q But you formally have not developed any feasible or any particular studies that discussed the recovery

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of that section of stream channel?

A No individual has. We've done it as a group.

Q Thank you. Now, based on your direct testimony, do you support the rewatering of Indian Ditch to rewater the west side wetlands?

A I've never thought about rewatering Indian Ditch. I guess I would say no. The water is probably better used elsewhere.

Q Okay.

A The Indian Ditch wetlands being that wet meadow?

Q That's correct.

A Okay. Yeah.

Q Isn't it true that you prepared quite a few documents for Jones and Stokes to use in support of the draft EIR?

A That's correct. Five.

Q Five? Are you aware that auxiliary report number one was used by Jones and Stokes to formulate their recommendations for rewatering many of the historic channels on not only Rush and Lee Vining, but Parker and Walker Creek as well?

A Yes, they relied to some extent on those historical conditions, correct.

Q Okay. Doctor Hanson -- actually, in the E.A. reports of 1989, typified Rush Creek as shallow and

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fast running with very few pools.

Based upon your review of historic photos, do you come to the same conclusion?

MR. BIRMINGHAM: Objection. The question is vague as to at what time, 1989 or historical?

HEARING OFFICER DEL PIERO: Sustained.

MR. HERRERA: I was looking for the -- 1989 indicated that prior to L.A.'s diversions that Rush

Creek was typified as shallow and fast running.
Now, in your historic review, do you support the same conclusion as to prior to L.A.'s diversions were the streams -- was Rush Creek a shallow -- fast running with very few pools?
MR. DODGE: Same objection. I don't know what the record for 1989 is.
MR. HERRERA: The 1989 report indicated that Rush was a shallow and fast running river with very few pools --
HEARING OFFICER DEL PIERO: Excuse me, Mr. Herrera. I'm going the overrule the objection.
Dr. Stine, do you understand the question?
DR. STINE: I think I do, yes.
HEARING OFFICER DEL PIERO: Why don't you answer it, then?
DR. STINE: My answer is that I would disagree

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with that, but I would not base it simply, as your question implied, on review of the aerial photographs. I would -- I base that on having walked thousands of feet of channel that existed during this particular time that this person is talking about.
And there are pools all over the place. There are big, deep-water areas up to five feet deep, very common. We find pools that are three-feet deep and four-feet deep. And we've measured a lot these, and we've photographed a lot of them. So they're there.
Q BY MR. HERRERA: There today, is that correct?
A BY DR. STINE: They're there today, that's correct.
Q Are those the pools that have been artificially constructed, or are those existing pools -- naturally existing pools.
A Naturally existing pools. None of them have been manipulated.
Q Let's talk a little bit about some of the testimony that Dr. Beschta made earlier in this proceeding.
He provided some conclusions, in which I'm going to read a couple of them. They're from section two, page 22 of L.A. DWP's direct -- I'm looking to see which number that is. I believe it's LA DWP number nine. And I'm going read these to you. From the

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perspective of restoring acquatic and riparian ecosystems, the instream treatments imposed on Rush and Lee Vining Creeks in 1991 were largely unnecessary, and often counter productive. Do you agree with that?
A No, because I think that Dr. Beschta's goals are different. The charge of our team, the so-called planning team, has been to accelerate recovery of a fishery of the streams. And while we're doing things out there that I would hate to see done to natural channels, it is, I think, successfully helping to reestablish fish habitat out there.
And so if the goal was what Mr. Beschta wants it to be or assumes it to be, I think, it would have been the wrong thing to do. If it is to accelerate fish habitat, I think it was the right thing to do.
Q So it's your response, then, that in terms of

restoring the riparian vegetation and riparian channel, I assume, that the instream treatments were largely unnecessary?
A Yes. I don't think that -- if I understand your question correctly, I don't think that any of that work was done to accelerate riparian growth or anything. This is the in channel work, now. I don't think it was intended to do that, and I don't think it helped it. Now, out of the channel, there were some riparian

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plantings to be done, that were done out there. And I'm not sure if were you including that or not.
Q Yes, I was. Now, in terms of the outer channel improvements or activities, did that surveying function for channel maintenance or channel restoration?
A Channel maintenance or channel restoration, perhaps not. System restoration, yes. And it was a worthy attempt, I think, that still may prove to have been a success at getting the system, not the channel itself, but the system back out there.
Q On the following page 23 under recommended interim measures, Dr. Beschta stated that he recommended to quote eliminate the current program of structurally modifying channels and adding gravels. Do you agree with that?
A I guess I don't agree with it if what we're trying to do out there is produce fish habitat within a channel that has been modified in a wholesale way by events associated with DWP diversions.
Q What effect do you think these programs have had on the restoration of the channel, itself, or of the original channels?
A This is on Lee Vining Creek now or --
Q Or Rush Creek.
A I think that it has had a negligible effect on

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getting things back to the way they used to be. It has had a somewhat better impact, I'm told, on creating fish habitat.
Q One other question regarding Dr. Beschta's testimony. He stated that within five to ten years, as a recommendation regarding riparian vegetation and channel morphology, that quote within five to ten years, seasonal rewatering of side channels should be allowed to occur without additional human intervention. Now, in your testimony, you suggested the same sort of thing with mechanical intervention. Is that true?
A Yes. Mr. Beschta, I think, is -- respectfully I say this, is incorrect in thinking that five to ten years from now, these channels will rewater themselves. They won't. There's no way in the world they're going to in five to ten years. There's no reason they should.
Q He also states a sediment bypass system should be considered at the Lee Vining Creek diversion. Do you agree with that statement?
A I do agree with that statement.
Q Let's move back over to Rush Creek a little bit. Are you familiar with the quarry site below the

confluence of Parker and Rush Creek?

A Yes, I am.
Q Do you consider that a significant problem?
A It has in the past been a significant problem, but also -- well, it's been both a -- a bane and a blessing in a sense. It is the source of the materials that today clog the channels, but it's probably the reason that those channels exist in a more or less unaltered state throughout their, at least the channel morphology, throughout most of their length. But today, I don't think it remains a problem. It's not a problem today.
Q Is that source of material from the operations or just the existence of the quarry where it's at?
A Oh, it's the operations. It pushed a huge amount of debris out into the stream. So it was the actual operations itself that caused the problem.
Q By chance do you know who owns that land?
A Los Angeles Department of Water and Power, I'm told.
Q I believe that concludes my questions. I do have one other final comment. Mr. Canaday's had to leave early this evening for a similar reason that you have to be back tomorrow, and that is he's giving his final exams this evening, so he shares your concern for getting back to work. And that concludes my questions.

MR. HERRERA: Thank you, Mr. Del Piero.
HEARING OFFICER DEL PIERO: Thank you very much, Mr. Herrera. Mr. Satkowski, you've joined us. Do you have questions?
MR. SATKOWSKI: No, I don't.
HEARING OFFICER DEL PIERO: Mr. Smith?
MR. SMITH: Thank you, Mr. Del Piero. Just a couple of questions. Just a couple of questions for you, Dr. Stine. Frankly, I'm confused. Some people might even say I have a high degree in perpetual confusion.
Q BY MR. SMITH: On this figure 151, can we go back to that and just go one step at a time as to your earlier testimony and then this figure. You earlier testified that if we, in a situation where we had similar altitude, but we had a blockage, a plug in one of these historic channels, that if we simply took it out and rewatered the channel, we would probably have some very quick and beneficial results. That was your earlier testimony, was it not?
A Yes.
Q Now, in terms of this, we were talking about the possibility of rewatering a higher banked stream, this one over here; is that correct?
A Yes. And I don't think it was too far offset. I

believe we were talking about one to two feet.
Q One to two feet.
A Yes.
Q Okay, good. Thank you. Now, what are you exactly proposing here? Are you taking a lot or as much as needed material from that side historic channel and

putting it into the mainstream, approximately ten feet in-depth or in length there, are you blocking the main stem off completely?
A Not completely, if the intention is to keep water in this artificial channel right here. Now, as I've drawn it, as I've thought about -- as I was thinking about this as I was drawing it, I suppose I was making certain assumptions. My assumption is that this is an unnatural channel right here. It's the present day channel of Rush Creek.
Q Okay.
A And we have two choices here, in a sense, once it's decided that this channel here should be rewatered.
Q Okay.
A If indeed that's the decision. The choice is do we put all of the water back into this channel over here, or do we allow some of the flow to go off into this channel and leave some of the flow in this channel

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here, so that indeed we can rewater another plugged channel that's over here. Okay?
In which case we would then have to take material out of this one, and put it in through here to rebuild this time the right bank. And then what we would have done then would be to go from a single channeled system like this, to a system that has one channel, two channels and three channels, all three of them.
If it was decided that you have some blockages down here that are worthy of correcting, like that, and you have an opportunity to put water here and here, it may be advantageous after studying it, after getting lots of input on it, to completely block this off right here. To have all of the water go down this channel, part of it go out here, and part of it go up here.
So these are the kinds of decisions that would have to be made. What is it we're trying to do. I can tell you this, that if this is the Narrows right here, and the stream is coming through the Narrows like that. This channel here is very wide, very deep. The water flows through it in a most shallow way. And there are actually two possible channels, both of which held water, historically were in fact the two main channels off here to the right of this artificial cut.
So one of the ways to get away from the fact that

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this is a -- a habitat is coming back in through here, only very, very slowly. One way around that would be to sacrifice this thing. And you wouldn't completely sacrifice it. Put all the water into these two natural channels over here, and what would happen then is that this thing would become an elongate pond, probably with a lot of emergent vegetation in it.
But again, no decisions like this have been made. What we're trying to do is decide, you know, what best to do down there. And we've started with a figure that's sort of an opening round to try and determine what the possibilities are for rewatering down there. This thing, by the way, I should point out, is called a feasibility report, but we don't consider it, we the

planning team, don't consider it our job to deem it feasible. We consider our job to come up with a plan -- with a price tag, give it to the R.T.C. and let them and the courts decide whether or not that price tag represents feasibility.
Q Will you be presenting that feasibility study to the Board as part of these hearings?
A I can say this, that it is not done yet, but I'm sure there -- well, I can't talk for the R.T.C., in a sense it's there -- the restoration technical division, in a sense it's their report we're doing for them. You

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should probably ask them, but I would certainly have no qualms with that.
Q Okay. Thank you. One last question. You've been sitting in the God seat a lot today, so if you were sitting in the God seat one more time, what kind of an elevation would you personally want?
A For Mono Lake?
Q For Mono Lake.
MR. BIRMINGHAM: Excuse me, Mr. Del Piero. This question -- Dr. Smith, I think, is entitled to ask it. Dr. Stine is going to be back, I think, many times talking about other subjects, and I wonder if Dr. Smith could ask Dr. Stine this question, when Dr. Stine appears to testify about --
MR. SMITH: I withdraw my question.
HEARING OFFICER DEL PIERO: Okay.
MR. BIRMINGHAM: Thank you.
MR. SMITH: Thank you.
DR. STINE: Thank you.
HEARING OFFICER DEL PIERO: Ms. Cahill.
MS. CAHILL: Just really two matters, just to make sure that we're clear.
REDIRECT EXAMINATION BY MS. CAHILL
Q Dr. Stine, did I understand you to recommend that on Rush Creek, you would, were you God, recommend

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reopening some of the historical channels, and then letting nature take its course? Is that what you testified?
A BY DR. STINE: Yes.
Q And so that would mean you wouldn't recommend planting on Rush Creek?
A No. I don't think there would be any need to plant on Rush Creek.
Q And what was your recommendation on Lee Vining?
A Well, Lee Vining's a little bit different in that the fines -- the fine material, the fine sediment and the soils that used to occupy this wide bottom lands area, the soils and the sediments have been stripped. And what we see today is that vegetation is coming back only where we do have fines collecting right along the stream.
If we want to expedite the recolonization of vegetation over that wide bottom land surface out there, we can try to do it through plantings. And certainly, if the planting works, we will be years, undoubtedly decades, ahead of the game, if indeed this works. I think it's worth a try.

Q One last point. Mr. Herrera asked you about the quote about Rush Creek having been shallow and fast running, and asked you if, in fact, there were pools.

Were you talking about all stretches of the creek when you answered that question, or were you talking about a particular stretch?

A Well, I was talking about the bottom lands. I assumed that Mr. Herrera was referring to the bottom lands. And that's what I had in mind, was, in general, the bottom lands.

Were there riffles in the bottom lands? Absolutely. Was it all deep pool? Absolutely not. But there were deep pools amongst the riffles and the faster water that was an alternation between riffles and runs and some sizeable and deep pools.

MS. CAHILL: Thank you. That's all I have.

HEARING OFFICER DEL PIERO: Thank you very much, Mr. Dodge.

MR. DODGE: Dr. Stine, I just have a few questions.

HEARING OFFICER DEL PIERO: Mr. Dodge, if you'd like to sit, you can.

MR. DODGE: Pardon me?

HEARING OFFICER DEL PIERO: If you'd like to sit, you can.

MR. DODGE: No.

Q BY MR. DODGE: Mr. Birmingham asked you about the natural springs, and they're being supplemented by Parker and Walker irrigation, asked you whether you quantified that, and you said it couldn't be done.

And then he asked you to compare, as I understood it, today's springs versus the historical natural springs. And you said you had a basis for a reasonable judgment on that.

Could you expand on that?

A Sure. We know fairly well what the history of flows from the springs has been. We know fairly well how flows on Parker and Walker Creek have been manipulated, both between natural distributary channels and between irrigation canals.

My sense, after studying the history there -- and this is really an historical problem that will lead to a plan that we simply try over some period of time. My sense is that what we need to do is to get water back into the natural distributary channels high up on the -- high up on the alluvial fans.

And when we do, my suspicion is that, and my expectation is that we'll be losing an awful lot more water to the ground by rewatering those distributary channels than we lost to the ground through the irrigation canals.

And the reason I say that is that most of those irrigation canals are fairly low on the alluvial fans, and they overlie lake sediments, because Mono Lake was -- was very high, about 700 or so feet higher than it is today just 12,000 years ago, just a short time ago.

If you get up on to the apices of the fan -- to

the apexes of the fan, you're all of a sudden on very, very course material, and that stuff is much more permeable than what lies down at the fan toes.

So I think what we're going to find is that as we spread water out on the apexes of the fans, that we're going to be losing more water to the ground, as was the case under natural conditions, and that this will help resurrect the springs back to some semblance of natural flow levels.

Q So is it your opinion that today the volume of the springs is less than those natural flow levels?

A Yes. I believe that it is. Yes.

Q And I understand your testimony to be that you have not been able to quantify that; is that correct?

A I have not tried to quantify it. We haven't really considered it important to quantify it. The quantification is very, very important, but I think that this is the kind of problem that's better dealt with trial and error.

We look at the conditions that used to exist when the springs existed, and we try to mimic those

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conditions and assume that the springs will come back. If they don't, then we have to try something else.

Q Let me change subjects. You were talking about rewatering the historic channels in the bottom lands. And when we got to the question of rewatering historic channels in the bottom half of the bottom lands, you opined that perhaps the money would be better spent elsewhere, and I believe you mentioned Mill Creek.

Do you recall that testimony?

A I do.

Q And you made some reference to playing God. Let me ask you to not compare the values of spending money elsewhere, but ask you, specifically in terms of restoring conditions that historically existed pre-diversion.

Would rewatering the historic streams in the bottom half of the bottom lands, in fact, do that, restore historic conditions?

A Yes. It would. It would -- yes.

Q And it would restore historic conditions that affected the fishery, correct?

A Yes.

Q And as to the precise effect on the fishery, you've told us you're not a fisheries biologist?

A Correct.

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Q But you've learned a lot in the last three years, haven't you?

A Yes.

Q Now, let me ask you --

A And I'm also finding that working together is really the only way to do these things. Nobody knows how to restore this -- nobody knows enough about everything out there. You work in a group. It's multi-disciplinary, inherently. So that's how you go forward.

Q Now, I want to follow up on the plantings that have occurred on Lee Vining Creek. You've told us that

you did not recommend additional plantings on Rush Creek, correct?
A If plantings were to occur, it would be locally and for very specific reasons. But in general, in a general sense, no.
Q Okay. But now let's turn to Lee Vining Creek and you -- you're familiar with the plantings that the planting team has caused to be made in the spring of 1993, correct?
A Yes, although I'm not awfully familiar with that, and I haven't followed the success, so you might want to ask somebody else about it.
Q I'm trying to understand what you perceive the

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problem with the return of the riparian vegetation on Lee Vining Creek is. Now, let me ask you, specifically. Are you concerned about the return of riparian vegetation along the water's edge, or are you concerned about the riparian vegetation basically in the flood planes?
A I'm concerned with both, but I'm concerned that the flood plain vegetation is not going to come back on its own, except given an awfully long period of time, decades. The vegetation along the channel itself, where fine material is collecting, the vegetation is coming back rapidly there.
Q Along the channel, itself?
A Along the channel margins.
Q So in terms of your plantings recommendation, it relates more to the flood plains than to the channel margins?
A Yes, to those areas that have been stripped of soil distant from the channel.
Q Now, Mr. Haselton asked you whether you'd spent any time physically in the Upper Owens River. Do you recall that?
A Yes.
Q And you -- I think you told him you hadn't been down to his client's property, the Arcularius Ranch; is

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that right?
A That's correct.
Q Did you and I make an effort to see the Arcularius Ranch this summer?
A Yes, we did.
Q What were we told?
A No. We were told that we couldn't go on to the property. And we were persona non grata down there, so we didn't go.
Q Move to a new subject, Dr. Stine. Mr. Frink asked you some questions about the 6,383 foot alternative, and would it prevent future incision. And you talked about assurances that Mono Lake not go below 6,372 in a drought.
Do you recall that testimony?
A Yes.
Q Do you also --
A And 6,368.
Q Yes. Do you also recall that in the draft EIR that Jones and Stokes used an eight-year drought?

A I do remember that, yes.
Q Now, have you had occasion to study the historical drought situation in the Mono Basin?
A Yes, historical and pre-historical. In fact, it's my main interest as a scientist.

Q Let me ask you to elaborate on -- historical, in this room at least, has been defined as 1904 forward. Do you recall that?
A I don't recall that. I would put it at 1850. But --
Q All right. Well, let me ask you to comment on pre-1904 droughts in the Mono Basin.
A Including centuries back, then?
Q Yes.
A Okay. Okay. I will let you ask me about droughts pre-1904.
Q Tell me about them.
A There have been a number of droughts going back through the 16th, 15th and 16th centuries that we can pick up from tree ring records.
First of all, we can go back through an actual instrumental record to 1849, '50, in California, early gold rush. And what we see are periods of three to four to five years where we had significantly below normal precipitation.
If we go to a proxy record of climate change, for instance, what we find in the tree ring record, we can go back a number of centuries, and we see somewhat longer drought. So we start to see eight-year droughts, ten-year droughts, twelve-year droughts.

If we go to slightly longer records, the type that I've been working on, lake level fluctuations, routed stumps in lakes and in streams, and things like that, we start to see some horrific droughts. And I just --
I'm not sure that you know this. I just published a paper in "Nature". It's a science journal on droughts in California during medieval time. And what I found there was that -- and there's a lot of evidence for this in many areas of California that I'm finding now, that there were droughts that lasted centuries, virtually every year of which were more severe than the worst year of the dust bowl, or the worst year of the past six years.
So my sense is that if what we're -- if what we're looking at is the long-term stability of Mono Lake to our grandchildren and our great-grandchildren, we've got to buffer it against more than the drought that we've seen since 1909 or 1850 or something like that.
We're subject to much more severe droughts, and I would hate, hate, hate to see Mono Lake go below 6,368 feet, because it would mean the unraveling of the system.
Q Let me ask you to move to a different subject, which is this check dam. And I just have, I think, one question on it. You mentioned that Scott English could

design it.
Could you tell Mr. Del Piero who Scott English is?

A Scott English is one of the members of the planning team. He's the person who does a lot of the -- not so much engineering, but the -- what do I want to say? The site-specific plans for moving water around. He does it not on his own, but in association with -- with engineers.

He then takes the lead in the field in executing the plans that have been drawn up by this range of people who have hydrological, vegetative, historical experience, et cetera.

Q Turning to Lee Vining Creek and, specifically, the restoration program on Lee Vining Creek.

Can you tell us whether, absent human intervention, pools will form naturally in Lee Vining Creek?

A There will probably, over a fairly long period of time -- now we're talking decades. There will probably be pools forming on the Rush Creek delta. That is --

Q I'm talking about Lee Vining --

A Lee Vining Creek delta below the County Road. Above the County Road on Lee Vining Creek, on the other hand, what has happened is that we've stripped off the material that was easily manipulated by the stream

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flows. And we've stripped down to a cobble and boulder bed. And that stuff is just not being moved easily by the stream.

So I think it's quite unlikely that we will be seeing considerable pools forming above the road on Lee Vining Creek, short of going in and actually manipulating it with some equipment.

Q And there was, in fact, a program in 1992, whereby the planning team created some pools on Lee Vining Creek, correct?

A That's correct.

Q Now, you mentioned that, turning over to Rush Creek, you mentioned that in terms of the now dry historical channels, that you would want them rewatered and not -- as I understood your testimony, not have pools put in there, just to rewater them.

A Just rewater them.

Q But as to the existing channel of Rush Creek, you had no objection to the creation of some pool habitat, correct?

A Yes. One qualifier there. The existing channel of Rush Creek in some places is where the stream used to be. I would just as soon see us stay out of those areas, but I would like to see -- or I would not object. I'm indifferent in some ways.

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I would not object to going into those areas of the present day Rush Creek channel that are unnatural that have been widened tremendously and making some fish habitat, if indeed that's the goal.

Q And that gets me to my final question on this subject. If one were going to do that, create fish habitat in the existing channel of Rush Creek, would you recommend a plan that was similar to the 1992 plan on Lee Vining Creek, or in concept?

MR. BIRMINGHAM: Objection. I think this goes

well beyond the scope of Dr. Stine's expertise.
MR. DODGE: It's the sort of question he's been answering for ten hours now.
HEARING OFFICER DEL PIERO: I think I'm going to overrule the objection. Go ahead and answer.
DR. STINE: I think that the plan on Lee Vining Creek was a good plan. I think it was largely successful. I think that the planning team, like all human beings, are learning as we go out there. And I think that particularly if we have a little bit better control over the people who are working the heavy equipment, then we'll be able to dictate more to our liking, and thus to everybody's liking, where those spoils end up.
MR. BIRMINGHAM: Could I ask the reporter to mark

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the answer to this question, please?
Q BY MR. DODGE: Last series of questions, Dr. Stine. In response to, I believe questions by Mr. Herrera, there was talk about Dr. Beschta's recommendations with respect to gravel placement; do you recall that?
A BY DR. STINE: Yes.
Q Do Rush Creek and Lee Vining Creek, as they exist today, have natural recruitment of fresh gravel?
A Yes, although I would rather defer to Matt Candofle (phonetic) on that. Dr. Candofle has actually studied that to a greater extent than I have. He and I were involved in a study. We spent some time together in the field, but he then went on and took that study farther. And I think he would have more to say about it than I would.
In a qualitative sense, however, let me just say that there is some gravel coming into the stream, but not nearly as much as would have been the case under natural conditions.
Q And just -- just generally, why is that?
A Several reasons. The biggest one, of course, is that the natural conditions didn't have dams. The second reason, and it's a little bit more subtle, is that, for instance on Rush Creek, here, right here, the stream used to abut the alluvium that was coming off

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the channel wall right here. And the stream had access to a lot of material that was constantly sloughing off the canyon wall.
Today the channel goes out here, and it is -- by moving the channel out here, we've essentially deprived it of that kind of prime source of gravel that used to exist along this canyon wall right here.
MR. DODGE: No further questions, thank you.
HEARING OFFICER DEL PIERO: Thank you very much, Mr. Dodge. Mr. Roos-Collins? Oh, Ms. Koehler, good afternoon.
MS. KOEHLER: Good evening, Mr. Del Piero.
HEARING OFFICER DEL PIERO: Almost.
MS. KOEHLER: Dr. Stine?
MR. BIRMINGHAM: You've been double teamed, Dr. Stine.
MS. KOEHLER: I'm Cynthia Koehler representing California Trout this evening. I have just a couple of

questions to clarify your testimony.
RECROSS EXAMINATION BY MS. KOEHLER
Q It's my understanding that you would not dig pools or channels where a channel today is as it was pre-1940; is that correct?
A BY DR. STINE: That is correct, because I feel strongly that our task out there should be to restore
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the conditions and the functioning that existed prior to 1940, if that
already exists in a channel, I would rather just put the water into it, and that's as close as we're ever going to come to the pre-40 condition.
Q Thank you. But where historic channels have been lost, is it correct that you would support measures to modify that channel in order to restore fisheries?
A To the extent that I'm working under a mandate to restore a place where fish can live and people can fish, yes. I have no objection to going into those existing channels, the highly modified ones, and manipulating them so as to create fish habitat.
Q Thank you. In response to Miss Cahill's redirect questions, you were discussing plantings on Rush Creek.
Isn't it correct, Dr. Stine, that the R.T.C. planning team has recommended, for consultation to the R.T.C., certain plantings on Rush Creek for cottonwood and Jeffrey Pine?
A That may be the case, yes. I don't remember the specifics, but there may have been some instances. I don't think that any of those, though, I don't believe they were in the bottom lands. They were, I believe, farther upstream, rather than in the bottom lands. And
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I can think of one example that we talked about, and I don't know the status of it.
The road down by the Ford is about to wash out, because Rush Creek is taking out the road there by the old fish counting site. And there was some talk of actually getting vegetation in there to stabilize that bank, so we wouldn't lose the County Road.
Q Okay. So it is not your testimony that you're opposed to all plantings on Rush Creek, to the extent --
A No.
Q So to the extent that the R.T.C. planning team has recommended plantings of certain species, such as cottonwood and Jeffrey Pine, those are recommendations that have your support; is that correct?
A I don't --
MR. BIRMINGHAM: I'm going to object to the question on the grounds that it assumes facts not in evidence. We don't know what the recommendations of the planning team are.
Dr. Stine has testified as to one recommendation. There aren't any others that are in evidence at this point, and I would object.
HEARING OFFICER DEL PIERO: Ms. Anglin, could you read that back, please?
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(Whereupon the record was read as requested.)
HEARING OFFICER DEL PIERO: And the nature of your objection was that it assumes facts not in evidence?
MR. BIRMINGHAM: He's testified -- she asked him a few moments ago, Mr. Del Piero, about recommendations, and he said he was aware of one recommendation.
HEARING OFFICER DEL PIERO: And the nature of her next question was then to that extent.
MR. BIRMINGHAM: If that's the extent of the question, then I have no objection.
HEARING OFFICER DEL PIERO: Overruled on the question. Do you want the question read back?
MR. BIRMINGHAM: I would like it reread, please.
(Whereupon the record was read as requested.)
DR. STINE: Well, not to open a can of worms, but not necessarily. We kind of go with a sort of a majority opinion in the planning team, as we should, but not everybody agrees on everything.
I would want to look at the specifics again to see if what was finally decided upon has my -- has my support in every case.
Q BY MS. KOEHLER: All right. Venturing to Rush Creek, you were discussing -- I'm sorry to Lee Vining Creek. You were just discussing that with Mr. Dodge.
Is it correct that there are some places along the

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margin of Lee Vining Creek where vegetation is not coming back?
A BY DR. STINE: Certainly. There are some places, yes.
Q And in those places would you agree that some planting is required?
A I guess I would not agree with that. I think that my sense is that along the stream margin if vegetation isn't back yet, it's a matter of a very short amount of time before it is back.
I have no problem with what's going on anywhere along the margin of the stream, but of course that's a tiny, tiny amount of the land that we're talking about down there.
MS. KOEHLER: Thank you very much, Dr. Stine.
HEARING OFFICER DEL PIERO: Thank you very much. Mr. Birmingham?
MR. BIRMINGHAM: Mr. Del Piero, I know that --
HEARING OFFICER DEL PIERO: It's six o'clock, Mr. Birmingham. I was hoping that you wouldn't take more than two or three minutes, Mr. Birmingham. Is that an inappropriate expectation? How about we break for dinner?
MR. DODGE: I would suggest we finish, Dr. Stine.
HEARING OFFICER DEL PIERO: I understand what your

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suggestion is, Mr. Dodge. I suggest you go to dinner, too.
(Whereupon the dinner recess was taken at this time.)
HEARING OFFICER DEL PIERO: The hearing is again in session. Mr. Birmingham?
MR. BIRMINGHAM: Thank you very much, Mr. Del Piero.
RECROSS EXAMINATION BY MR. BIRMINGHAM

Q Dr. Stine, let me assure you that I'm not going to ask you any questions that didn't come up on -- in Miss Scoonover's cross-examination of you, or on redirect. I left all my questions or my notes from this morning on the table.

And while we're on the subject of Miss Scoonover's cross-examination of you, where did the term "Disnification" come from? Do you know where that came from?

A Two different sources. It's like agriculture. It has multiple origins. She coined it, but I had coined it as a complaint against the Mono Lake committee in about 1983, because I thought they were building too many parking lots out there. So it's just one of those terms that's come up.

Q So her use of that term was based on your use of that term?

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A No, absolutely not. Absolutely not. She coined it herself.

HEARING OFFICER DEL PIERO: But you were using it.

DR. STINE: I hadn't used it for ten years.

HEARING OFFICER DEL PIERO: This is an example of great minds moving in the same direction at once.

DR. STINE: I'd like to think so.

HEARING OFFICER DEL PIERO: Can we move on, Mr. Birmingham?

Q BY MR. BIRMINGHAM: Miss Scoonover asked you some questions about revegetation or the recovery of riparian vegetation along Lee Vining Creek. And I believe it was your testimony that the recovery of riparian vegetation along the flood plain of Lee Vining Creek would be accelerated through replanting; is that correct?

A BY DR. STINE: Yes. I'm not sure, Mr. Birmingham, that I'm talking -- in fact, I know darn well I'm not talking about the flood plain. I'm talking about the surfaces that lie adjacent to the stream and its flood plain, the surfaces that extend way out in the stream, the surfaces which have been stripped of their soils and their sediments.

Q How far from the stream are you talking about?

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A Oh, it could be -- it could be 300 feet in cases, in some cases. 100 feet away from the stream. It's -- those surfaces that I showed a slide of this morning in one of my exhibits.

Q It was a surface that was characterized by cobble material; is that correct?

A Yes, with no fine material in it.

Q And the opinion that you expressed was that the riparian vegetation would not recover on those portions of the stream without planting?

A I put a time qualifier in there. I think I said that it would -- it would be a very long time before vegetation would come back on those surfaces without some assistance.

Q Are you familiar with the work that has been done by Duncan Pattenson, or Duncan Patten (phonetic)?

A Duncan Patten, yes.
Q Duncan Patten on Rush Creek?
A Yes.
Q He has studied the recovery of riparian vegetation along Rush Creek; is that correct?
A Yes.
Q I know that my question a few moments ago related to --
A Lee Vining Creek.

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Q Lee Vining Creek. And I'll show you the report that I'm referring to, and ask you if you have ever seen it. This is a report -- I don't believe it's in evidence, but it's a report called "Inventory Mapping and Evaluation of the Riparian Vegetation along Rush Creek, Mono County, California, Fall 1987."
Have you ever seen that report?
A Can I look at it a second?
Q Certainly, please do.
A I think I have seen it, but I haven't seen it in a while. I think that this is the work that Duncan Patten initiated when he was head of the National Academy of Sciences -- National Academy of Sciences Committee on Mono Lake. And he became involved in Mono Lake immediately before that or during that time, and subsequently received some grants to do this kind of work.
Q And have you reviewed this report, "Inventory Mapping and Evaluation of Riparian Vegetation along Rush Creek, Mono County, California, Fall 1987"?
A I haven't in a long time, but I'm quite certain I did at one time. And I believe that Dr. Patten and I then talked about it on the phone on several occasions.
I think I looked at that, Mr. Birmingham, when I

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was putting together one of my early reports on the historical conditions along the streams.
Q Was that a report that you prepared for Trihey and Associates?
A I think that was a report that I prepared for the DEIR.
Q Thank you. Now, on page 16 of this report prepared by Dr. Patten it states, and I'll ask you to read along with me, so we can establish that I read it correctly.
"Coyote Willow overall demonstrates no preference for soil texture occurring with nearly equal abundance on substrates, ranging from fine texture to large boulders, Figure 2. However, regeneration was observed preferentially on course substrates."
Did I read that correctly?
A Yes, you did.
Q Is that an opinion with which you would disagree?
A Yes, based on observations that I've made on Rush Creek during the past -- during the past ten years. In fact, during the past 13 years, I've been able to watch the Coyote Willow, as well as several other species of willows come back in some areas and not in others.
And these surfaces that I'm talking about have had

ample opportunity for -- to be recolonized by riparian vegetation for the last 13 years, and yet little, if any, vegetation has come back.

So that's what I'm basing it on. It has, however, come back in other areas.

Q Now, on page 18 of this report, Dr. Patten says, "Cottonwood abundance is positively associated with proximity to the stream and with stream channel gradient. Conditions along the edges of high gradient streams provide plants with abundant moisture, but also with sufficient aeration of the rhizosphere, factors important to cottonwood survival the greater abundance of cottonwood on course substrates such as large cobble or boulders, Figure 2, may also be related to increased soil aeration. Association with course substrates has also been observed for Fremont Cottonwood," and then there's the scientific name, "and other cottonwoods," citing Mcbride and Strayham (phonetic), 1984. Is that an opinion with which you would disagree?

A I disagree with it as it pertains to Lee Vining Creek, again, because of the observations. It's hard to argue with what you're seeing going on in the field. We do see vegetation coming in, cottonwoods and willows right along the stream, and in fact that was well illustrated in Mr. Tilliman's video, that they are coming in in both case right along the stream. On the areas distant from the channel, however, they're not coming back. And that's why I think we can accelerate that vegetation coming back by doing some plantings on there.

And perhaps, if I may say so, perhaps the difference here is that we're talking about whether or not these trees can live on these substrates, versus the amount of time that it takes these plants to become established on these substrates.

And obviously, they believe that the plants can live there. Obviously I do too, or else I wouldn't be advocating planting on there. I just think we can get more plants going if we plant.

Q In fact, doesn't Dr. Patten say in this report, and again I'll read it to you. He states that cottonwood species in general --

A Where are we here? Excuse me.

Q I'll ask you to read this portion where I'm starting, right here.

A Okay. "Cottonwood species, in general, are phenologically cued to spring flooding with seed maturation, dispersal and germination --

DR. STINE: Oh, I'm sorry. All right.

"Cottonwood --

MR. DODGE: Your Honor, Dr. Patten or Mr. Patten or whoever he is, is not here. I don't think this cross-examination should be a way to get his opinions into evidence.

HEARING OFFICER DEL PIERO: Mr. Birmingham?

MR. BIRMINGHAM: Ms. Scoonover asked this witness questions about his opinion concerning the recovery of

riparian vegetation. I'm certainly free to cross-examine him based upon the opinion of other experts, and in fact, opinions that he has testified he has reviewed.

HEARING OFFICER DEL PIERO: Yes. And I'm going to overrule the objection. In fact, inasmuch as he reviewed the document as part of the preparation of one of the reports. Please proceed slowly.

DR. STINE: I'll start again. "Cottonwood species in general are phenologically cued to spring flooding, with seed maturation, dispersal and germination occurring immediately after subsidence of spring floods, Feter (phonetic) et al, 1985.

Subsidence of flood waters, rather than sustained high water, is important for survival of seedlings. Seedlings do not tolerate prolonged flooding, and the declining water table encourages development of deep roots, important for survival of subsequent low flows."

Q BY MR. BIRMINGHAM: Thank you. Is that an opinion

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with which you would agree or disagree?

A BY DR. STINE: I think that that's -- that's accurate. Those areas that the flood waters do reach are going to be the areas for -- where we establish the vegetation. And that's one of the real problems here, is that we are no longer flooding these lands distant from the stream, because the stream is now wide. It doesn't overflow anymore. It stays within the channel.

Q Now, you've stated that you disagree with the opinions expressed in here by Dr. Patten about the recovery of willows and cottonwoods, based upon what you've seen in the field. You've heard Dr. Beschta talk about his observation of the recovery of willows and cottonwoods in these sections of the stream. Do you recall that testimony?

A Yes.

Q And you would disagree with Dr. Beschta as well?

A I don't think I would. I don't think that I'm disagreeing with these people. I think I may be disagreeing, philosophically, with whether or not planting should go on, but I don't think you could get Dr. Beschta to say that this explosive growth, that I think he's correctly using to describe the growth along the margins of the stream, is applicable to those areas of Lee Vining Creek distant from the stream, and if I

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-- if you don't mind, I wouldn't mind showing that slide again, so that we make darn sure we're talking about the same thing here.

Q That's all right. I think we are, Dr. Stine. In response to a question by Miss Scoonover concerning the explosive growth, you said that in the restoration process, you would -- and I wrote these words down carefully, you would apply the "natural process."

Do you recall using those terms?

A Not exactly those terms, but the concept is correct.

Q And I think later you said that this is the new thinking, new thinking. What did you mean by new thinking?

A I meant that it was thinking that the City of Los Angeles had not applied to their management of the Mono Basin system between about 1940 and the time Mr. Beschta came on board.
Q And isn't it correct that this is also new thinking in terms of the approach to restoration by the restoration technical committee?
A Absolutely not. No. We -- when we listened to Mr. Beschta the first time, it was material that all of us had discussed previously.
Q Now, when you talk about applying the natural

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process, digging the pool with a backhoe is not the natural process, is it?
A It is not, but if it requires a backhoe to get water into a channel so that nature can then start to act, I would be for that.
Q I'm not sure that that was responsive to my question. I said digging a pool with a backhoe is not part of the natural process, and you responded by talking about rewatering a channel.
MR. DODGE: I object to that. He did respond to the question, and if we want to reread it we can, but he answered that question.
MR. BIRMINGHAM: Then I would move to strike that portion of the answer that relates to rewatering the channel.
HEARING OFFICER DEL PIERO: Dr. Stine -- I'm going to overrule the request to strike. Dr. Stine, in terms of answering the questions if you can -- if can you attempt to respond without editorializing, it will make us all --
DR. STINE: Okay. I will try. Yes.
HEARING OFFICER DEL PIERO: Okay.
Q BY MR. BIRMINGHAM: Now, are you familiar with the term "Woodies frog pond"?
A BY DR. STINE: No. I'm not.

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Q Is it correct that in 1990 --
HEARING OFFICER DEL PIERO: Does that have anything to do with "Disnification"?
DR. STINE: I think it's a song.
Q BY MR. BIRMINGHAM: Is it correct, Dr. Stine, that as part of the restoration work that was done on these streams in 1991, and I'm talking about Rush and Lee Vining Creek, there was a large pool that was dug in a portion of Lee Vining Creek above Highway 395?
A BY DR. STINE: Yes. That is the case.
Q And there was a great deal of controversy about the construction of that pool because it was -- it involved dredging a wet land. Do you recall that?
A I guess --
Q Excuse me.
A Very vaguely, I think I recall some wet land being part of that.
Q I think I misspoke, and you may have misunderstood my question. I'm talking about the construction of a large pool on the Rush Creek above 395.
A Yes. And I do remember that, and I now do remember the wet land there. Yes.

Q And there was a lot controversy because the construction of that pool involved the excavation of a wet land that was immediately adjacent to Rush Creek.

Isn't that correct?
A I believe that is the case. Yes. It is the case. Yes.
Q And there was a lot of controversy because spoils that were removed from that wet land were then placed upon another portion of that wet land. Do you recall that?
A Yes, I do. Very well, actually.
Q And the construction of that pool in the wet land did not involve a natural process, did it?
A No. It did not.
Q And then you heard testimony, you heard opinions, about how long it would take the spoils pile to revegetate. Do you recall hearing opinions on that subject?
A Yes. And in fact, one person bet me a paycheck that it would not be revegetated within their lifetime, and now we have four or five people who once a year or so send me photographs of the site showing the vegetation coming back, so I'm just wondering when I should turn these in for a free paycheck.
Q Now, the vegetation that you see coming back is not the recovery of riparian vegetation, is it?
A In this one site that we were talking about, it wasn't riparian vegetation that was -- or wet land

vegetation that was covered up. It was up land vegetation that was covered up.
Q And you referred earlier to testimony by Dr. Beschta that he thought that in these areas -- these disturbed areas, you understood him to believe that the riparian vegetation would recover quite quickly. Is that your understanding of Dr. Beschta's positions?
A In which disturbed areas are we talking about, specifically, now?
Q In the disturbed areas that have been disturbed as a result of the construction along Rush and Lee Vining Creek.
MR. DODGE: Objection over broad. Assumes facts not in evidence as to disturbed areas in Lee Vining Creek.
HEARING OFFICER DEL PIERO: I'm going to sustain the objection. You need to set a foundation.
Q BY MR. BIRMINGHAM: You testified earlier that you understood that it was -- you said you were agreeing with Dr. Beschta that the -- that vegetation along these streams would recover very quickly. Do you recall saying that about Dr. Beschta's position?
A BY DR. STINE: Yes. Right along the stream margin. Yes. Um-hum.

Q You don't understand that that's his position with respect to the placement of spoil piles along the stream margin, is it?
MR. DODGE: Objection. Unintelligible.

HEARING OFFICER DEL PIERO: Mr. Birmingham, I'm going to sustain the objection, because I didn't understand the question either.

MR. BIRMINGHAM: May I ask that the question be reread, Mr. Del Piero? And I'll rephrase it. I just want to make sure I ask the same question.

(Whereupon the record was read as requested.)

MR. DEL PIERO: You don't understand the question?

MR. BIRMINGHAM: No, no. I wanted to make sure I asked the same question. I agree it's an unintelligible question.

MR. DEL PIERO: Okay. Please proceed, Mr. Birmingham.

Q BY MR. BIRMINGHAM: Now it's your understanding of Dr. Beschta's position, isn't it, Dr. Stine, that he is adamantly opposed to the placement of spoils along the sides of streams as part of a restoration construction project?

A BY DR. STINE: I understand that to be his position, and you should understand that that's my position as well, unless some of those spoils are used to rewater

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channels.

Q And the basis of that position -- and is this the basis of your position, that the placement of those spoils along the stream bank breaks the link between the stream and the riparian zone?

A Question mark?

Q Question mark.

A Okay. Yes. That would be part of it. I can't speak for him. That may very well be part of it. Maybe a big part of it in his mind. It's a part of it for me, although topography comes in as well. I tend to think of a spoils pile next to a stream as altering the stream site topography in a way that then changes the way the stream will flow around this feature. It changes the floodability of the site. It changes the stream flow. So for both of those reasons, I would rather not see spoils put right next to the stream.

Q Mr. Frink asked you some questions about the construction of a check dam, and you drew a diagram which has been marked as DFG Exhibit 150, showing what you had conceptualized in terms of a check dam. Is that correct?

A Yes. In a schematic sense, yes.

Q Now, I understand that there is a concrete culvert at the County Road crossing on Rush Creek.

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Is my understanding correct?

A That is correct.

Q Does that concrete culvert have an effect that is similar to the check dam that you've described in response to Mr. Frink's questions?

A If it were raised, if -- in other words, this concrete culvert is a culvert. It has a big hole through it that's made of concrete, and the water passes through there. If you were to seal off the hole through there, you would then have a dam, and water would collect behind this feature, and sediment would start to collect in the pond, and Rush Creek would

start to agrade in response to its progradation into that pond. Right now, it's not functioning as a check dam, but it does function as a temporary base level.
In other words, as long as that culvert is in place, Mono Lake can drop another ten or 15 feet below where it is today, and as long as the culvert stays in place, Rush Creek above the culvert can't cut down below the level of the culvert, because the culvert acts as a base level.
Q It acts as a nick point; is that correct?
A No. It acts as a base level.
Q A base level.
A And I would simply point out, however, that they

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had some very healthy culverts in there in 1967, 69, 80, 82, 83 and 86. And when water starts coming down Rush Creek, it moves. And I don't -- I would not want to call the culvert at the road crossing there permanent.
MR. HERRERA: Excuse me, Mr. Birmingham, that's 20 minutes.
MR. BIRMINGHAM; I would apply for an additional ten minutes.
HEARING OFFICER DEL PIERO: Very well.
Q BY MR. BIRMINGHAM: Dr. Stine, does the water back up behind the concrete culvert at the County Road crossing?
A BY DR. STINE: Very little. Very, very little.
Q Is sediment deposited along the stream banks immediately above the concrete crossing at the County Road crossing?
A It is at some flows. That very material would be washed out at somewhat higher flows. But the stream is not building up its base in a way that is then going to ramify upstream and cause agradation upstream.
Q Improvement of sediments is not a problem in Rush Creek, is it?
A It's not a problem. It depends on -- it depends on what we want to have happen on Rush Creek. There is

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probably not as much sediment coming down Rush Creek today as there was under, say, natural conditions, or under pre-DWP conditions, because the stream is configured differently.
And it used to have access to a rather constant supply of sediment gravels and what not coming off the slopes. It doesn't have access to those to the same extent anymore. The stream is not in contact with the walls of the channel to the extent that it used to be, and so you're not producing as much sediment in the system. Whether or not that's a problem is, I suppose, depends on your point of view.
Q You wouldn't characterize Rush Creek as a sediment starved stream would you?
A It's less sediment starved than some other eastern Sierra streams, but I would say that relative to lots of streams, most of the rivers on the eastern Sierra are sediment starved. They're coming off, for the most part, glaciated bedrock. And only in the lower portions of the drainage do they encounter alluvium and

sediment that they can pick up, so --
Q Throughout your testimony, after my examination of you, you referred to "we" a number of times in response to questions about -- about restoration planning activities. Who is the "we" that you kept referring

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to?
A Can you give me an example?
Q Sure. For instance, once in response to a question about rewatering historic channels you said, "We have no budget. We have no direction." Who -- which "we" were you referring to?
A This is this interdisciplinary group that I was talking about. The planning team which consists of fishery biologists and hydrologists and people from a number of different backgrounds who are trying to come up with plans that satisfy what the court and what the R.T.C. have suggested should be our tack on Rush and Lee Vining Creeks.
Q Now, that's Mr. Trihey's restoration team; is that correct?
A That's correct.
Q Now, Ms. Scoonover asked you questions about the depth of Rush Creek, and then Mr. Herrera asked you a question about a 1989 report by E.A. Do you recall those questions?
A Vaguely.
Q And do you know, Dr. Stine, the depth of Rush Creek now? Generally, how deep is Rush Creek? I know it's a very broad question, but what are the depths of Rush Creek?

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MR. DODGE: Objection. Ambiguous as to flow.
HEARING OFFICER DEL PIERO: I'm inclined to sustain the objection. If you can specify at least a reach, then I won't have any problem.
Q BY MR. BIRMINGHAM: Let's talk about the historic bottom lands, the bottom lands below the Narrows. Generally, let me -- so we're talking about the same stream. The channel as it exists today at flows that are currently in the stream, do you know what the current flows in the stream are?
A BY DR. STINE: I don't know what the current flow is.
Q Flows of 60 or 80 cfs. The existing channel in the portion below the Narrows, what is the -- what's generally the depth of the water?
A Generally the depth of the water, I would say that over large areas of the stream, the flow is approximately six to eight inches.
Q The depth?
A Pardon me. Pardon me. The depth is approximately six to eight inches. You can find pools today that are two feet deep fairly commonly. Far less commonly are pools that are three feet deep. I know of one pool immediately below the Ford, and I would venture that it's probably six feet deep if not more. One swimming hole there.

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Q Those are holes or pools that have formed naturally; is that correct?

A Well, the one below -- the deep one that I just mentioned there is because we have concentrated the flow through a culvert, and it comes through a culvert and then plunges, and so it has been able to do quite a bit of scouring. But some of the holes that I talk about out there, yes, have formed -- have formed under the present day flow regime without the aid of equipment.
Q You saw Mr. Tilliman's video?
A Yes, I did.
Q And you saw him wade into a portion of Rush Creek that appeared to be up to his chest; is that correct?
A Yes. I don't remember chest, but yeah. He got wet fairly deep. Yes.
Q How significant or how -- how frequent are pools of that depth in Rush Creek and its existing channel below the Narrows?
A Infrequent. Infrequent. That isn't to say that the one he was standing in is the only one, but they are certainly infrequent.
Q Now, the 1989 E.A. report was a report in which E.A. was describing the historical conditions as being shallow, fast running with few pools. And you

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understood that to be a description of the conditions as they existed in 1940, 41; is that correct?
A I believe there was some discussion of that, and that's what we decided we were talking about.
Q And that is a description that you disagreed with?
A Yes. I certainly wouldn't characterize it that way. And once again, I mean, that's a matter of seeing the pictures, talking to the people, and going into these channels which still exist today.
Q You've read Mr. Vestal's 1954 report. Is that correct? It's been submitted as part of Cal Trout Exhibit 5?
A Yes.
Q And you understand that the test section that's described in that report is the portion of Rush Creek below the Narrows?
A Yes.
Q That's what we established Mr. Vestal refers to as the gorge?
A Sure. Sure. Yeah.
Q Now, in his 1954 report he describes the test stream as follows: "The gradient of" -- and here, for the record, I'm referring to page 92. "The gradient of the test section is moderate with an average fall of 52 feet per mile, riffles containing excellent spawning

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gravels make up the bulk of the test stream. Pools are comparatively scarce."
Did you consider that statement that pools are comparatively scarce when you were forming the opinion that you expressed about the E.A. description of the historical conditions?
A Not about the E.A. description, but I asked Mr. Vestal what he meant by that "comparatively scarce." Was he referring to other streams in the Mono Basin, was he referring to excellent trout streams, or

was he referring to pools being less abundant than the riffles that separate the pools. And it was the latter. So the pools were less abundant than the fast water that separated them. But that is not to say, and he would not say that deep water was rare in the Rush Creek bottom lands. I asked him that, specifically. It was obviously an important point.
Q When did you ask Mr. Vestal that question?
A We had a number of conversations about this, sometimes in the field, sometimes over the phone. But I talked to him extensively on the phone when I was putting together the DEIR auxiliary report number one. This "Extent of Riparian Vegetation on Streams Tributary to Mono Lake 1930 to 1940", and I think that Mr. Vestal and I probably talked on the phone for maybe

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as much as five or six hours. He was one of many people that I spent a lot of time talking to, interviewing, trying to ferret out certain pieces of information, trying to get interpretations on things that I had heard them say, or they had written at one time or another.
Q Now, in preparing those reports, you relied to a large degree on anecdotal information; is that correct?
A To a large degree. It was -- no. It was -- one of many sources of information that I took into consideration.
Q Mr. Dodge asked you some questions about the natural conditions of Walker and Parker Creek. Do you recall those questions?
A Vaguely. Yes.
Q It's getting late.
A I've had four hours of sleep in about three days here, so things are clicking.
Q I know that it's getting late, Dr. Stine, and I'm almost through, but you said that you were describing -- in response to his questions you were describing Walker and Parker as they existed in a state of nature as having distributary channels.
A Yes. A state of nature and pre-1941 as well, which was certainly not a natural condition by that

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time.
Q Now, in 1941 it was your testimony earlier that during portions of the year, Walker and Parker Creeks were dry, because the water in those streams was diverted for irrigation?
A Prior to '41 you're asking?
Q Yes.
A Yes. That's the case.
Q So -- and in 1941, water was diverted through historic irrigation channels; is that correct?
A I'm sorry. In 1941?
Q In 1941, water was diverted out of Walker and Parker Creek through irrigation channels.
A Yes, that is the case. And, indeed, had been the case for some time prior to that as well. In 1941, however, it was one distributary channel that the water was being diverted out of. Prior to 1941, it was as many as three distributary channels that water was

being diverted out of for irrigation.
Q Now, this is my final question, or series of questions, Dr. Stine. In response to a question by Ms. Koehler, you said that you might support the construction of pools in the existing channel of Rush Creek to create fish habitat. Do you recall saying that in response to a question by Miss Koehler?

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A I do, though I confined that to those portions of the existing Rush Creek channel which did not coincide with the old Rush Creek channel. In other words, those areas that have been modified by these wholly artificial and catastrophic conditions.
Q Now, just a few minutes before you said that you supported -- you might support that. You didn't say you did support it. You said you might support it. You said that you were indifferent about digging pools in that portion of Rush Creek. Now, is indifferent the same as supporting?
A What I think you might be leaving out here, no criticism intended, is the fact that we were talking about whether this should be done, or whether it should be done as part of a fish restoration, fish enhancement program. If what -- I'll say again what I said then. If what your goal is -- that's not a good way of saying it, too many prepositions.
If your goal is to enhance a fishery, to give a place for fish to live and for people to fish, then one way of achieving that is to put artificial holes into the modified channel. And if that's what your goal is, then I would support it.
Q Now, that brings me to what is really my final question, or actually there are probably going to be

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two questions related to the same subject. Now, you testified that you really didn't disagree with some of the remarks made by Dr. Beschta, because you understood that his goal was different from the goal that you were trying to achieve through the restoration process. Is that correct?
A Yes. That we have been charged with in the restoration project, yes.
Q Now, you are not sure what Dr. Beschta's goal was; is that correct?
A No. I'm fairly certain based on conversations that I've had with Mr. Beschta, based on things that I've heard him say on field trips in the field, and based on what I've heard him -- or based on his writings.
Q Now -- his goal has been with respect to the recovery of riparian vegetation?
A No, his goal has been to reestablish a stream system in which the stream morphology, the flows and the vegetation are linked and in equilibrium. And I don't think -- those are not his exact words, but that's what he wants to say.
He has gone so far as to say that it may not be like what it used to be, but that if we leave the system alone out there, it will, on its own, move

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toward equilibrium under the new conditions that exist.

Our goal and my goal has been to try to get back the conditions that existed prior to 1941. And the reason for that, as you know, is the now hackneyed language that appears in the November 1990 agreement that says that the goal of the restoration committee, words to such effect, shall be to restore, help restore the conditions that benefited the fishery prior to 1941. It then goes on to list what those conditions are. That's been our goal.

Q Isn't it correct, Dr. Stine, that the natural recovery process that Dr. Beschta described, ultimately will have an effect on conditions which benefit fish?

MR. DODGE: Objection. Ambiguous.

HEARING OFFICER DEL PIERO: Ms. Anglin, would you read that back?

(Whereupon the record was read as requested.)

HEARING OFFICER DEL PIERO: I'm not inclined to sustain his objection. The problem, however, Mr. Birmingham, is you've established that he's not an expert on fish.

MR. BIRMINGHAM: I thought that objection was overruled, Mr. Del Piero.

HEARING OFFICER DEL PIERO: I don't think it was.

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MR. BIRMINGHAM: May I ask Mr. Dodge, wasn't that objection overruled?

HEARING OFFICER DEL PIERO: Wasn't it overruled?

MR. DODGE: My job is to ask the questions.

MR. BIRMINGHAM: In other words --

HEARING OFFICER DEL PIERO: I'm going overrule the objection. Go ahead and answer the question.

MR. DODGE: You can't overrule the question.

HEARING OFFICER DEL PIERO: Go ahead and answer the question.

DR. STINE: Can I hear the question again?

MR. BIRMINGHAM: I'll restate it. The natural recovery process that Dr. Beschta --

HEARING OFFICER DEL PIERO: Mr. Birmingham, I'm having real difficulty keeping track of the score up here if you keep restating questions after I've overruled them.

Q BY MR. BIRMINGHAM: The natural recovery process that Dr. Beschta has described, ultimately is going to have an effect on conditions that benefit fish; isn't that right, Dr. Stine?

A BY DR. STINE: Well, it will undoubtedly have an effect on conditions that benefit fish. Whether it will be beneficial or detrimental, whether it will be in a hundred years, because you're saying ultimately

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versus five years, tough one for me to answer, Mr. Birmingham.

Q Well, let me go back to some testimony you provided to the Court. And again, this was -- on October 2, 1990. And the hearing officer will have to forgive me, but Dr. Stine's responses to questions in court are no shorter than they are here. So this may take a few moments.

HEARING OFFICER DEL PIERO: Mr. Dodge?
MR. DODGE: I would note that this is well beyond the cross-examination of any of the people who have talked to Dr. Stine since Mr. Birmingham last talked to him. And I would object to the whole line of questions.
HEARING OFFICER DEL PIERO: I'm going allow the questioning to take place with the understanding, Mr. Birmingham, that this is the fourth last set of three that you've identified in the last 20 minutes or so.
MR. BIRMINGHAM: This will be the last.
MR. HERRERA: Mr. Birmingham, your ten minutes is up.
HEARING OFFICER DEL PIERO: Mr. Birmingham, I'm advised -- Mr. Birmingham? I'm advised by Mr. Herrera that your time is up.

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How about -- why don't you take five minutes and finish.
MR. BIRMINGHAM: Thank you. I will.
HEARING OFFICER DEL PIERO: Okay. Five minutes, Mr. Birmingham.
Q BY MR. BIRMINGHAM: Dr. Stine, in response to a question a few moments ago, you said that your goal is to establish conditions that benefited the fishery; is that right? That was --
A BY DR. STINE: I didn't say that. I said that we have been charged, we, the planning team has been charged -- have been charged with restoring the conditions that benefited the fishery prior to 1941 with the list of what those conditions included.
Q And Dr. Beschta's goal was to establish a system that was in equilibrium?
A Yes.
Q Now, isn't it correct that equilibrium isn't achieved in the restoration process? The stream, itself, will simply undo the restoration work that's been performed?
A That is correct. However, you can have equilibrium out there involving multiple channels, or you can have equilibrium involving one channel. In either case, you will have equilibrium. The choice is

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which one you want. We're charged with pre-41 conditions. It makes all the sense in the world to have the equilibrium with the multiple channels, rather than the single channel.
Q I have no further questions.
HEARING OFFICER DEL PIERO: Thank you very much, Mr. Birmingham. Pardon me. Yes. Miss Scoonover.
MS. SCOONOVER: Yes, I have a few.
HEARING OFFICER DEL PIERO: Okay.
MS. SCOONOVER: An hour and a half or so, Dr. Stine, and you should be out of here.
DR. STINE: That means home in bed in four. Oh boy.
MS. SCOONOVER: No, not that many. I just have a few cleanup questions.
HEARING OFFICER DEL PIERO: Do you need some

water, Doctor?
DR. STINE: No. Rest, but thanks.
RECROSS EXAMINATION BY MS. SCOONOVER
Q The restoration work on the streams that you talked about with Mr. Birmingham, am I correct that that restoration work was conducted by or at the direction of Mr. Trihey?
A BY DR. STINE: Yes.
Q And if we accept Mr. Birmingham's assertion that

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Mr. Trihey is the Restoration Technical Committee's agent, just for purposes of this question, so that that's not the issue, my question to you is: Do you know what parties make up the Restoration Technical Committee?
A I do.
Q And can you give me a run down of who those parties are?
A Yes. And let me retract the I do to I did. My understanding now is that the composition of the R.T.C. has changed somewhat since I've been actively involved in attending R.T.C. meetings. It used to be the Mono Lake Committee, National Audubon Society, Los Angeles Department of Water and Power, Cal Trout, Department of Fish and Game as voting members, and additionally two non-voting members, the State Water Resources Control Board and the United States Forest Service.
Q If the members of the R.T.C. disagree, what is your understanding of the process to resolve that disagreement, just briefly?
A I believe that the vote had to be unanimous. I believe it was unanimous, in which case it went before Judge Finney for resolution.
Q It went before Judge Finney for resolution if it was not unanimous?

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A Correct. And I'm not sure that it still works that way. I think it's -- maybe it's changed a little bit.
Q For the restoration work that you discussed with Mr. Birmingham, is that the process that you understood was in effect?
A Yes.
Q I'd actually like to see the slide, the 1992 slide of Lee Vining Creek, to make sure we are talking about the same thing.
A Sorry about this Ladies and Gentlemen. There we go.
Q Can you describe what we're seeing in the foreground there?
A Yes. In the immediate foreground, what we're seeing is a cobble gravel, as we call it. It's the material that has been stripped down to, in a sense, and probably moved itself. This is -- the area right here used to be covered with a thick blanket of fine soils which had been deposited in various over bank events over a long period of time, sandy silts and salty sands, primarily. There was through here riparian vegetation, wall-to-wall riparian vegetation, closed canopy to moderately closed canopy. And that's

now all stripped off, so what we're seeing here is the
remnant of what used to be a closed canopy riparian woodland.
Q Excuse me, Dr. Stine. At what point in time was this area covered with riparian vegetation?
A This would have been covered with riparian vegetation up to the time flows were turned off in 1947. By 1953 there was a fire. And you can still see stumps out there, charred stumps all over the place, such as we find here, here, here, charred stumps that are remnants of that fire.
Q And I believe you said this picture was taken in 1992?
A This is an Eilene Mendenbaum (phonetic) photograph, 1992.
Q And there are flows then in the stream?
A Yes, there are.
Q How long have there been flows in this portion of the stream, do you know?
A There have been continuous flows since, I believe since 1987, plus or minus a year, I guess. And there had been times prior to this, since 1980, when there were flows for certain lengths of time in Lee Vining Creek.
Q I believe you testified earlier that you were here to see Mr. Tilliman's video?
A Yes, I was.
Q And did Mr. Tilliman's video show similar patterns of revegetation?
A Or non-revegetation, you mean?
Q Or non-revegetation, as the case may be.
A Well, not really. Obviously, they were trying to show the explosive growth, and that's understandable. They tended to concentrate to the stream margin, and occasionally I found myself saying, "Oh, hold it. Hold it. Hold it." Because they had just panned on to an area where the vegetation was all stripped, but quickly there was a change of scene.
So we didn't hold the camera on lots of these scenes. There was a place right down here by the County Road crossing where the vegetation -- pardon me. Where they showed a couple areas that looked far more like this than like what they were emphasizing in the video.
Q Now --
MR. BIRMINGHAM: Mr. Del Piero. Excuse me. We're going to get a copy of these photographs; is that correct?
DR. STINE: Yes. Certainly. And I'm sorry I don't have copies of this, but certainly.
MS. SCOONOVER: Now, this area up until about 1947 had -- can you give me an idea of some of the types of vegetation that would have been appearing? You said riparian vegetation. Would you have seen cottonwoods, willows?
A Sure, you would have seen cottonwoods, Fremont or -- I'm not sure if it's Populess tricocarpa or

Frencotii in here, one of the cottonwoods or both of the cottonwoods, probably several different species of willow.

There would have been Jeffrey Pine, Pinus Jeffrei; probably some lodge pole pine in here as well; some Shepherdia; and a number of other wetland riparian species.

Q Thank you. That's all for --

A And that's what we're seeing here in remnant form, these big tree stumps that are on their sides there in the stream.

Q One last question for you. Mr. Birmingham asked you about your preparation of historic reports, and asked you whether or not you used anecdotal material in preparation of those reports. You said you did use anecdotal material and that was one of the sources.

What other sources did you use in preparation?

A I used any maps I could get my hands on. I used lots of aerial photographs. I have -- I don't know,

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probably 12 to 15 sets of aerial photographs now taken between 1980 and -- pardon me 1930 and 1993. I used photographs, ground photographs. I talked to people to the extent that I could. I read the literature to try and get accounts. I just -- I tried to get all of the information I could from any of the various sources. I treated each one critically to try to decide whether or not this thing would stand on its own from the standpoint of veracity.

Q Did you verify these reports by your fieldwork?

A Yes. In fact it was certainly one way of verifying things. There are some instances where the conditions being discussed is verifiable. For instance, Mr. Vestal talked about these wonderful gravels in the channels on the Rush Creek bottom lands. We can go back into those channels today and scratch around the wind blown material that's ended up in those channels and indeed, there are the very gravels that he talked about just as he described them.

In other cases, things can't be -- can't be verified from physical evidence as readily. And then it's a matter of trying to weigh the plausibility of what the person is saying, the veracity of the person involved. I don't want to mention any names, but there

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are some people in the Mono Basin who I've relied upon for information. Half the time they say, "I don't know." The other half they say things that are verifiable.

There are other people in the Mono Basin who have never told me, "I don't know." And I've asked them questions purposefully that don't have an answer, and yet they still give me one.

So it's a matter of trying to ferret out the truth and weigh critically all of the information that you can bring to bear on a particular question.

Q Thank you. That's all.

HEARING OFFICER DEL PIERO: Thank you very much. Mr. Haselton, can someone give us some light. Thank

you.
MR. HASELTON: Your endurance is to be commended. I just want to -- a couple points of clarification relating to Mr. Dodge's question about -- or statement, actually, about being denied access to the Arcularius Ranch.
Q BY MR. HASELTON: My first question is: How long, Dr. Stine, have you been involved in this project?
A BY DR. STINE: I'm not sure what project we're talking about now.
Q Let's say Mono Lake.

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A My first publication on Mono Lake was in 1980. And so I guess I've been working out there since 1979.
Q When did you and Mr. Dodge request to get access to the Arcularius Ranch?
A Actually, Mr. Dodge did that.
Q Well, then I'll answer that question. It was near the end of August of this year.
A It could very well have been. It was this past summer.
Q Right. It was actually at the end of August, because Mr. Dodge contacted you.
A I see. Okay.
Q And up to that time, how many of your nearly 400 hours had you already spent?
A 400 days?
Q 400 days. Excuse me. 400 days on this project.
A Oh, the vast majority.
Q So then it's safe to say that the majority of your research and publication -- work, the five studies, had been completed by this time?
A Yes. I've had two publications on the Mono Basin come out since that time. One is on precipitation of ikaite, which is a form of cold temperature calcium carbonate, and its precipitation in the Mono Basin, and the other one is on this drought, in Padagonia in

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California that's based in a large part on the Mono Basin. So -- but most -- you know, I --
Q Most of your work had been completed and done by that time. Did you receive the public notice through any of your past or present clients about the tour, the site visit, this -- I think it was the 22nd and 23rd of November, the 22nd at the Mono Lake -- at Mono Lake and the 23rd at the Arcularius Ranch?
A I'm sorry. I'm getting deaf as well as tired. Did I receive a potent notice?
Q Did your present or current -- did your present or current client, did they inform you of the site visit that was publicly notified, that was notified of the members or participants of these proceedings.
MS. CAHILL: Objection. Assumes facts not in evidence. I'm not sure the public notice did mention the Arcularius Ranch.
HEARING OFFICER DEL PIERO: I'm going sustain the objection. You need to lay a foundation if you're going to ask about the field trip. Until the third time you asked the question I didn't know which field trip you were talking about, and I think I know about

all the field trips, so --
MR. HASELTON: Can I try and re-ask it, then?
HEARING OFFICER DEL PIERO: You can try and re-ask it.
MR. HASELTON: I'll try. I'll give it a shot.
Q BY MR. HASELTON: A notice went forth describing a -- describing a site visit to Mono Lake, November 22nd, and I believe on the notice it mentioned also November 23rd. Did you receive any information about that notice?
A No. I did not receive the notice, nor did I receive any information about the notice.
Q Well, I guess, you know to, kind of get --
A I don't think so.
Q Okay. Well then in view of the fact that this project's been under way for several years, you've certainly been a long participant, and the analysis of the Upper Owens River was part of the scope for the EIR and other studies relating to what I'm calling this project, do you have any reason to believe that prior to the last week of August of this year that you would have been denied access to the Arcularius Ranch?
MR. DODGE: Objection. Calls for speculation.
HEARING OFFICER DEL PIERO: I'm going sustain that objection. It does call for speculation. He has no way of knowing, since he had no contact with them in the first place. I'm sustaining the objection. He has no way of knowing the answer to that question.
MR. HASELTON: Okay. I think that about finishes my questions.
HEARING OFFICER DEL PIERO: Thank you very much, Mr. Haselton. Mr. Frink?
MR. FRINK: No questions.
HEARING OFFICER DEL PIERO: Mr. Satkowski?
MR. SATKOWSKI: No questions.
HEARING OFFICER DEL PIERO: Mr. Smith.
Mr. Herrera.
MR. HERRERA: Yes, I do, Mr. Del Piero.
HEARING OFFICER DEL PIERO: How did I know that, Mr. Herrera?
MR. HERRERA: I'm never short for questions.
HEARING OFFICER DEL PIERO: And now Canaday's back, too, so I expect he'll have questions, right?
MR. HERRERA: Actually, I only have one question, or a series of questions.
MR. BIRMINGHAM: Are you taking lessons?
MR. HERRERA: I'm taking lessons, yes.
HEARING OFFICER DEL PIERO: That's right.
MR. HERRERA: But I didn't take the exam on Saturday, so I'll have to practice up for that.

RECROSS EXAMINATION BY THE STAFF

Q BY MR. HERRERA: Dr. Stine, in all of these discussions we've had here talking about restoration activities, various things to return the stream back to its historic condition of some sort, and you've talked about various things that flows would do, have you examined or done an analysis of any of the flows that

have been recommended for a variety of things here in relationship to how they would perform the restoration activities that you've discussed here today?
A BY DR. STINE: Again, we as the planning team have had various discussions through time, particularly as to the potential deleterious effects of what have been called by way of a qualitative descriptor high flows. And the feeling that all of us had when we were discussing this, and it was a prolonged discussion of various sites on the stream, on both streams et cetera.
The feeling we had is that the highest flows that were being discussed, and I don't remember exactly what those were, but the highest flows that were being discussed could probably be handled by the streams today without deleterious effects, but if not today, then two years from now, or one year from now, because as time goes on, the riparian vegetation is going to toughen the banks to a greater and greater degree.
Now, all of that assumed that the water would stay put where it is today. To the extent that we start taking water out of one channel and putting it

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into other channels, then obviously those peak flows in any one channel go down.
Q Let's be a little more specific. We've had the discussion from Dr. Beschta about the flows that were presented in the L.A. DWP management plan. Have you looked at those flows in comparison to what they would do for restoration?
A I don't believe, when we as a planning team talked about this, I don't believe we entertained the DWP flows, specifically.
Q On the same note, have you examined the flows that were presented in the draft EIR, and compared them to what they would do for your restoration?
A I certainly read carefully the DEIR, and what they talked about, what Timothy Messic (phonetic) talked about going on as to riparian regeneration.
Q More specifically the instream flow recommendations for the fishery?
A Yes, I believe it was in the fishery section. Yes.
Q And did you do any comparison of that with what it would mean as far as your restoration recommendations?
A Well, no, because my -- again, my recommendations are -- I'm pontificating here. I'm making no real recommendations. It was sort of this hypothetical,

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what would you do if you were king kind of question.
Q But you don't have any specific flows associated with those recommendations, or if you want to call them something else, your suggestions, maybe? You don't have any specific flows to apply to those suggestions?
A Well, no, but obviously, if you want to have sufficient flow in five channels abreast through the bottom lands, you're going to need more water than if you want sufficient flow in three channels abreast through the bottom lands.
Q Your answer is you have no specific flows to suggest or recommend for your various restoration

activities here?
A My point, I think, is that I have no specific restoration objectives to put with a flow. Once we know what a flow is, it would be far easier for me to then make a judgment as to what channels can and cannot be rewatered. If we're going to be dealing with a tiny amount of water down there, that obviously cuts back on the number of channels that we can rewater. If there are lots of -- if there's going to be lots of water in the stream, that perhaps opens up some possibilities for channel rewatering.
MR. HERRERA: Thank you. I think that concludes my questions.

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HEARING OFFICER DEL PIERO: Mr. Canaday?
MR. CANADA: No questions.
HEARING OFFICER DEL PIERO: Dr. Stine, I've got some questions. Okay?
DR. STINE: Okay.
RECROSS EXAMINATION BY THE BOARD
Q BY HEARING OFFICER DEL PIERO: Now, if you'll forgive me, because I'm not a soil scient ist. And if I ask something that sounds remarkably incorrect, if you just tell me, I'll try and move on, so we don't waist anybody's time. Your expertise is in geomorphology; is that correct?
A BY DR. STINE: Yes. Geomorphology and paleo-climatology and constructing past climatic records from things like streams and lakes and glaciers.
Q Okay. As part of that expertise, is the analysis of soils one of the disciplines that you're obliged to understand in order to do that projection?
A Yes. And probably not to the same extent as a soil scientist would get into soils, but yes. I need to know something about soils.
Q Okay. I want to talk about the bottom lands, and I want to talk about the representations you've made about multiple stream channels and about wetlands.

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A Um-hum.
Q That exist below the -- that existed historically below the Narrows pursuant to what you've talked about. Can you -- do you know what hydric soils are?
A Certainly.
Q Can you tell me what hydric soils are?
A Well, hydric soil would be one with a -- with evidence of saturation over long periods of time. And this could take the -- the form of a high pH, or a glaid horizon, as we say, a gray coloration, in other words, an anoxic condition, as opposed to an oxidizing environment.
Q Okay. During the course of your analysis of Rush Creek, and I want to talk about both Rush Creek and then about Lee Vining, but Rush Creek first. During the course of your analysis of the history and metamorphosis, if you will, of Rush Creek during both pre-historic times and post historic times, and we'll use your 1850 time line. Have you calculated -- have you taken samplings of soils and determined whether or

not they were hydric soils?
A No. And that is because -- well, no, that's not true. I have found one soil in the -- actually the Lee Vining Creek bottom lands that I considered to be a hydric soil. It clearly had a clay like glaid horizon.

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It was very, very gray. I was real interested in it, because it had a bunch of charcoal in it that turned out dating at 3,800 years ago, which was the time, as it turns out, that Mono Lake reached its highest stand during the last 10,000 years. So it was a place that I really bore down on --

Most of the soils, however, that we see around the Rush Creek and the Lee Vining Creek bottom lands are not -- at least the ones I've studied in the stream walls, where we actually have some stratigraphy, are less apt to be hydric soils.

They're soils that -- that have a -- a mullock horizon. I don't know what I can get away with here. They have a very dark, organic rich horizon. They're not wet often enough to truly be a -- to truly be a -- a hydric soil.

And the reason for this, if I might state it here, is that we're dealing for the most part with soils out there and with surfaces out there that, yes, do get flooded often. But these are very, very permeable sediments. And the water just doesn't stay in here for a long enough period of time. It's just moving down through these very permeable, glacially derived sands, and a little bit of silt, but mainly sands and gravels, cobbles, course material.

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Q In two of the photographs that you showed in the slides, you indicated a very large spring area.
A Yes.
Q That you indicated ultimately drained down into Rush Creek. Have you analyzed that in terms of the content of the soil?
A My analysis of that really has been limited to -- on that site, going out with an auger. And the reason that I was interested, which may interest the Board, is that I wanted to see -- I wanted to try and get some basis for making a judgment as to how long that area had been saturated. How long it had been a marshland. And what I was looking for there was an ash, a tephra, T-E-P-H-R-A, from the Mono craters. And I found either the 600 year old Mono craters tephra, or the 1,200 year old Mono craters tephra. And I don't know which it is. But the point is that it was highly, highly organic rich all the way down to that -- that ash layer, and then below the ash layer as well, which led me to believe that this had been a marsh area for a long time. A time that goes beyond manipulation of the Parker and Walker Creek fans. So that's been the extent of my analysis there.
Q Was that area dry when you did that auger?
A No. It was -- it was moist.

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Q Okay. What was the extent of that area. Were you able to determine whether or not the entirety of the

area that had that -- those idiosyncrasies about the soil, was the entirety of the area dry at that point, or pardon me, moist at that point. Did you establish the limits of the area where that soil type was found?
A No. I did not.
Q You did not.
A I simply went out into an area that seemed representative of this more or less marshland area, and I took a boring. I took one boring.
Q Okay. In terms of your review of the various stream channels that you've indicated were present in the past, have you analyzed any of those channels, particularly the banks, in order to determine the history of how wet they were and for how long, from soil analysis?
A No. I have not.
Q You have not. Okay. Different issue. I want to talk about the check dam. Tell me what you mean when you talk about a check dam.
A Something -- by check dam, I mean something that would cause the stream, in this case we're talking about Rush Creek, to pond. And if I could -- can I draw in it cross-section?

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Q Sure. Maybe that's the best way here.
A Don't lose that one page that you just threw back, because I want to get back to that.
Q Okay.
MS. CAHILL: This new one can be one, too?
HEARING OFFICER DEL PIERO: It depends on whether his artwork is very good.
DR. STINE: Presently the stream is flowing down like this to Mono Lake, and Mono Lake is here. And the sediment that's moving down the stream is going, then, off into -- into deep water someplace. The idea I had would be to then build a -- a dam right here, like this, and I'm going to exaggerate it as to scale --
Q BY HEARING OFFICER DEL PIERO: Okay. First of all. I want to go slow, so I understand what your idea is. Tell me the width across the bottom lands of that facility.
A This -- this would not be across the bottom lands. This would actually be down -- way down at the --
Q In the delta area.
A Well, right between the delta and the bottom lands in a sense.
Q Tell me how long a facility you're talking about.
A Well, as I envision it --

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Q A bank?
A Oh, it would be bank to bank. And it would be not all the way across the bottom lands, however, because remember the bottom lands used to look like this, and today the bottom lands are up here, and the stream is flowing down through here at you.
Q I understand. That's why I'm trying to understand what you're talking about. So describe this in detail, so I understand what it is that you're talking about in terms of this check dam.

A Okay. What I would propose would be to put a -- put a -- and it's a proposal.
Q I understand that, too. You've clarified that. I just want to try to understand what your initial conceptualization is.
A The initial conceptualization involves putting a dam across here to block the flow and make the stream, now, come over this thing, cascade down in a way that cause this agradation to start to occur. The only