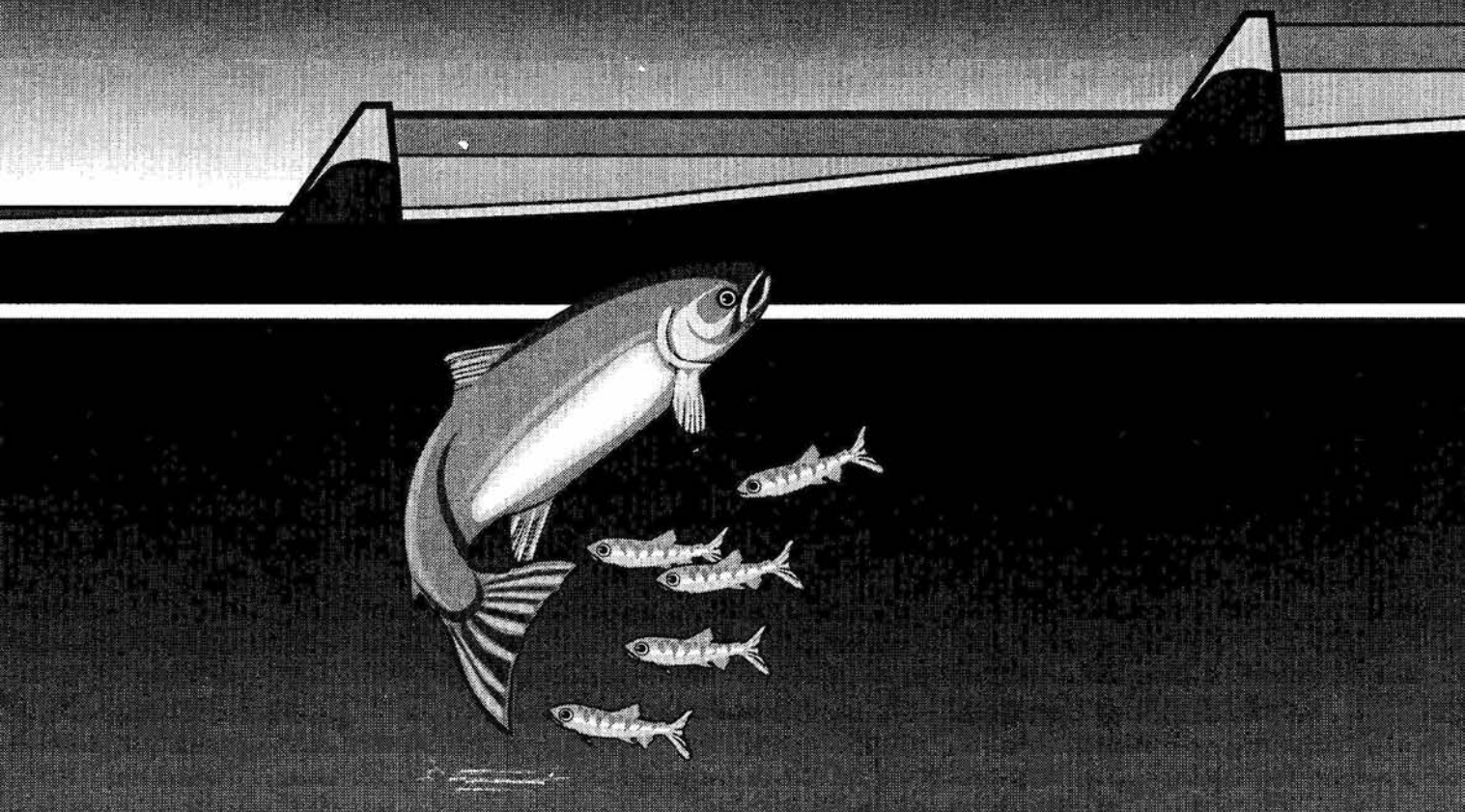
US Army Corps
of Engineers
Walla Walla District

1992 Reservoir Drawdown Test

Lower Granite and Little Goose Dams

Appendix U

Reservoir Drawdown Test Design Team Meeting Minutes Volume 1 of 2



December 1993

APPENDIX U-1

Minutes from the April 5, 1991 Meeting

of the

Reservoir Drawdown Test Design Team

COPY

1992 RESERVOIR DRAWDOWN
TEST PROTOCOL DEVELOPMENT MEETING

Taken at the Quality Inn Confluence Room
Clarkston, Washington
Friday, April 5, 1991 - 9:40 a.m.

CLEAR WATER REPORTING

LEWISTON, IDAHO 83501
Post Office Box 696
(208) 743-2748

Serving Northern Idaho and Eastern Washington
(800) 247-2748

est Protocol- Drawdown Concept 5 April 1991

Name	Agency	Address & Phone #
* David Bennett	Univ. of ID	Dept F&W Moscow, ID. 208/885-633[illegible] 208-885-7617
Ted Bjornn ✓	ID Coop Fish + Wildlife Res Unit	Univ of ID, Moscow
Brian Kinnear ✓	US Fish & Wildlife Service	9317 Highway 99, Suite I Vancouver, Wa 98665 # 206 696-76[illegible] FTS 8-422-76[illegible]
Fred Crase ✓	U.S. Bureau of Reclamation	Box 043, 550 W. Fort St. Boise, 8372[illegible] (208) 334-1[illegible]
Dave Meyers ✓	Idaho Power	Box 70, Boise ID. 83707 208 383 27[illegible]
Chris Randolph ✓	Idaho Power	PO Box 70 Boise ID 83707 (208) 383-29[illegible]
Wayne Haas ✓	Id. Dept. Water Res.	Statehouse, Boise, Id. FAX 208-327-786[illegible] 208-327-79[illegible]
Mike Satterwhite ✓	Trout Unlimited	327 Skyline Dr. Lewiston, Id 83501 208-746-72[illegible]
Bob Gilchrist	Red Wolf marina	1550 Port Dr Clarkston, WA 509-758-6[illegible]
Steve Pettit ✓	IDFG / Lewiston	1540 Warner Ave, Lewiston 83501 208-743-650[illegible]
Bert Bowler ✓	IDFG / Boise	P.O. Box 25 Boise, ID 334-2646
Mike Passmore ✓	COE / Walla²	Bldg 602, Walla Walla, WA 99362 509-522-6624
Witt Anderson ✓	CoE / Portland - NPD	P.O. Box 2870, Portland OR 97208 503 326-5789
Jim Athearn ✓	"	" 503/326-283[illegible]
Greg Graham ✓	COE / Walla Walla	Bldg 602; Walla Walla, WA 99362 509-522-6596
Pete Poolman ✓	" "	Bldg 603 " " 509-522-6619
Steve Hopkins ✓	Brix Maritime Co	P.O. Box 1393 Lewiston, Idaho 83501 208-746-7[illegible]
Pat Jensen ✓	Tidewater Barge Lines	P.O. Box 662 Lewiston Idaho
* James R Lucas	Idaho House Rep.	4231 HWY 95 Moscow Idaho 83843
* Tom Welsh		419 East Highland View Dr. Boise 83702
Tim Cochnauer ✓	IDFG 1540 Warner	Lewiston, ID 83501 208 743 6502
Bill Loftus ✓	Lewiston Tribune	Box 957 Lewiston, ID 83501 208 743 9411
[illegible] Lothan ✓	Nez Perce Tribe Water Resources [illegible]	Box 365 Lapwai Id 843-[illegible]
Kristy Stedman ✓	Senator Larry Craig	633 Main, Suite 103, Lewiston 83501 743-0792
Phil Jackson ✓	Mid Columbia PUDs	101 Main S.W. Suite 1485, Portland OR 972[illegible]
Darrell Black ✓	Resident	[illegible] Ave Clarkston, WA [illegible]
Loren A. Kronemann ✓	Nez Perce Tribe	P.O. Box 365, Lapwai, ID 83540 843-2253
Marty Montgomery ✓	NPPC - Idaho	Statehouse Mail Boise, ID 83720 208 334-2843

Jonathan Schlueter Pacific NW Grain & Feed Ass Portland 503 22[illegible]

Bruce Lovelin Northwest Irrigation Utilities Portland

Fax up

208-885-6226

Kinnear- will call

FAX (208) 334-1341

> 208-383-2208

Satterwhite 208-335-7643 ? see at

208-743-4314 Pelt

Rick Davis 849 portway
port of clarkston 758-5272
FAX. 509. 758-1746.

BRIX 208-746-1837 (FAX)

Jonathan Schlueter
PNW Grain + Feed Assn
(503) 227-0234

JEFF OSBORN
BPA
(206) 690-2920 FAX
690-2161

Clip McConnaha - Yes but I don't remember our FAX #

I N D E X

PAGE:

CORPS OF ENGINEERS PERSONNEL PRESENT

Witt Anderson
Michael Passmore
Sarah Wik
James B. Athean
Greg Graham
Pete Poolman

Reported by Gloria J. McDougall, CP, RPR, CSR, Freelance Court Reporter and Notary Public, States of Idaho and Washington, residing in Lewiston, Idaho.

STIPULATIONS

It was stipulated by and between counsel for the respective parties that the meeting may be taken by Gloria J. McDougall, CP, RPR, CSR, Freelance Court Reporter and Notary Public for the States of Idaho and Washington, residing in Lewiston, Idaho.

FRIDAY, APRIL 5, 1991

MR. ANDERSON: Let me first say, we have a court reporter, Gloria, here today with us to take notes on what's discussed so we can go home and come back to the next meeting with some good information that comes out of today's meeting. For her to be able to do her job well, it will help if everyone states their name when they are talking; and, also, we have name tags for those of you sitting around the table if you would put your name on it and/or organization, that will be very helpful for her. And, in that light, I think the first thing we need to do is go around and introduce ourselves and who we are with.

My name is Witt Anderson. I am with the North Pacific Division of the Corps in Portland.

MR. PASSMORE: I am Mike Passmore. I am Chief of Environmental Resources Branch in the Walla Walla District.

MR. BOWLER: Bert Bowler. I am currently Columbia River Policy Coordinator out of Boise for Idaho Fish and Game.

MR. PETTIT: Steve Pettit. I am a fish pass specialist with Idaho Fish and Game.

MR. GILCHRIST: Bob Gilchrist, Red Wolf Marina.

MR. SATTERWHITE: Mike Satterwhite, Trout Unlimited.

MR. HAAS: Wayne Haas, Idaho Department of Water Resources.

MR. RANDOLPH: My name is Chris Randolph. I am with Idaho Power.

MR. MEYERS: Dave Meyers, Idaho Power from Boise.

MR. CRASE: Fred Crase with the Pacific Northwest Region, Bureau of Reclamation.

MR. KINNEAR: Brian Kinnear, Fish and Wildlife Service out of Vancouver, Washington.

MR. BJORNN: Ted Bjornn, Idaho Cooperative Fish and Wildlife Research Unit.

MR. BENNETT: David Bennett, University of Idaho.

MS. WIK: Sarah Wik, Corps of Engineers, Walla Walla.

MR. ATHEARN: James Athearn, Corps of Engineers, North Pacific Division in Portland.

MR. ANDERSON: Go ahead.

MR. GRAHAM: Oh, you want us too?

Greg Graham, Corps of Engineers, Walla Walla.

MR. POOLMAN: Pete Poolman, Corps of Engineers, Walla Walla.

MR. HOPKINS: Steve Hopkins, Brix Maritime Company.

MR. JENSEN: Pat Jensen, Tidewater Barge Lines.

MR. HAYES: Charles Hayes, Nez Perce Tribe.

MR. COCHNANER: Tim Cochnaner, Idaho Fish and Game.

MR. WELSH: Tom Welsh, Boise.

MR. JACKSON: Phil Jackson, Mid Columbia PUDs.

MR. ANDERSON: Anyone else? You don't have to.

MR. MONTGOMERY: Marty Montgomery, Northwest Power Planning Council, Idaho.

MR. KRONEMANN: Loren Kronemann, Nez Perce Tribe.

MS. STEDMAN: Kristy Stedman, Senator Larry Craig.

MR. FLACK: Carroll Flack, Clarkston, Washington, resident.

MR. ANDERSON: Okay. We also will have a sign-up sheet going around, if it isn't already, again so we can get names for Gloria's assistance here.

I know there are some folks coming from Portland, Northwest Irrigating Utilities at least,

perhaps PNWA as well. I'm not sure of the others coming. So, they should join us shortly.

First of all, I want to talk about the process and -- did the agendas go out to everyone?

MS. WIK: Yes.

MR. ANDERSON: Everybody has got an agenda and just quickly go through the agenda and talk about what we view our purpose for being here today is. But, before I do that, let me just mention the Corps staff that is here and our roles, if we can clarify that.

My role is to try to facilitate this discussion and the next two meetings for developing the test in the 1992 drawdown proposal. Jim Athearn, also from the division office, is a fishery biologist and is overseeing the technical side. In Walla Walla, Mike Passmore's staff is going to be responsible for the biological aspects as well as the NEPA process, National Environmental Policy Act. And we have Greg Graham here with us who is an engineer in the District responsible for the engineering aspects. Sarah Wik is the, I guess, study manager for this test. Sarah has got the responsibility to pull this thing off, so I want to point that out. So, when we have discussions continuing over the next couple of weeks, Walla Walla District has got the lead on this job; and it is their

show. The Division is involved because of our involvement in the Salmon Summit.

The agenda that you have is pretty brief. The meat of this meeting, as we see it, is down in the fourth bullet item, as the test development.

UNIDENTIFIED PERSON: We didn't get one.

MR. ANDERSON: Oh, I'm sorry. I thought you guys --

MS. WIK: They were going around.

MR. ANDERSON: I'm sorry. I stopped them.

MS. WIK: Oh.

MR. ANDERSON: And before we get to that, I just want to talk about those top terms: expectations/ requirements, a little bit on the schedule and also the purpose.

A little bit more on the process. This is an informal meeting. It is a discussion, if you want to have a good discussion. It's not a formal public meeting. It's not a hearing. This is a work session such that we can develop a test plan. Jim and/or Sarah or myself will take some notes during the meeting on some plastic so we can capture the essential points and issues in these discussion items for everyone to see, and we will show those up on the screen as we get into the meat of the agenda.

The last thing, I've been asked to get people to put your names on both sides of name tags.

MS. WIK: So Gloria can read --

MR. ANDERSON: Yeah. So Gloria can read them. Yeah, put big letters.

I don't have an expectation on how long this meeting is going to go today. I would expect we are going to have a lot of discussion on the test development; and, perhaps, we will go until mid afternoon. We will just have to see how that goes.

Does anyone have any travel plans?

Mike?

MR. SATTERWHITE: I just have a question.

MR. ANDERSON: Okay.

MR. SATTERWHITE: Could you send around a sign-up list so that you can publish names, addresses and phone numbers?

MR. ANDERSON: Yeah. We --

MS. WIK: It's coming. It's coming, Mike.

MR. ANDERSON: Okay.

MS. WIK: It's on its way.

MR. ANDERSON: Fred has it over there.

MR. SATTERWHITE: And could you see that that will be sent back to us so we will know who to get a hold of?

MR. ANDERSON: Sure, you bet.

MS. WIK: Sure.

MR. SATTERWHITE: One of the big problems in the whole process is communications. The details of communication is very important.

MR. ANDERSON: Yeah. We might be able to get that to you today if we can get to a Xerox machine.

Yeah, a good point. This is a discussion. Feel free to enter into the discussion and ask questions. We want this to be a cooperative discussion here today.

I guess it begs that we discuss briefly the background of why we're here today. I don't want to carry a lot of baggage from the Salmon Summit process. I want to start this off on a positive note. That we are moving ahead in a positive fashion.

But, just briefly, the concept of a drawdown of the Snake River projects or a project emanated from the Salmon Summit. And I think it first started getting some serious discussion about two months ago, and there were various proposals put on the table and various concepts. One of which was a proposal to draw Lower Granite Reservoir down to elevation seven twenty-one during the juvenile anadromous fish migration period each spring. The reason Granite was

chosen at elevation seven twenty-one, which is twelve feet below the normal minimum pool, the reason that was proposed is because Lower Granite project is designed to have the adult fishway to operate with the forebay drawn down to that range, around seven twenty-one. The reason, because Lower Granite is designed to operate on a swing basis with a forecasted flood such that the forebay can be drawn down and the backwater slack would not over top the Lewiston levees. We have not operated that way. We have never operated the adult fishway in that condition. But, in theory, it would operate in the forebay. Now, I'm not talking about the tailrace or Little Goose elevation. So, that was a proposal.

We had a lot of discussion in the Salmon Summit; and, of course, there was a lot of concern by various user groups that they would be impacted by such an operation. So, what happened -- I guess the next major thing that occurred was that there was a meeting at the Power Planning Council on the first of March to discuss the biological aspects as well as experimental design and implications of that kind of a test. I was not at that meeting, but I think it might be fair to say that there certainly wasn't any consensus about that test proposal. Shortly thereafter there was the final Salmon Summit meeting on the fourth of March at

which the concept of a test drawdown -- and the concept, of course, is increased velocities improve or decrease juvenile fish travel time and improve survival. That was, again, discussed on the fourth; and it was left that there would be a follow-up on the seventh of March hosted by the state of Washington and and that occurred up in Spokane.

In that meeting, the test was redefined as -- for 1991 as a plan to bring Lower Granite pool down to elevation seven thirty, three feet below minimum, during the two-week scheduled lock maintenance period, which was March 24th to April 6th of this year. There was a lot of discussion by interested parties and discussion about what could be learned from such an operation.

The Corps committed to taking that proposal back with us to look at it for two purposes. One, to see what kind of information could be gained by that kind of an operation this year and, also, to consider what kind of implications it meant. And we also indicated we would take input from interested parties. We did get input. We did take a very hard look at the what use that test would be this year, and concluded that we wouldn't get any biological benefits because we didn't have fish in the river at that period of time. Nor did

we conclude that that kind of a test this year would really produce any significant information regarding the potential biological benefits, nor would it help us design an experiment for 1992. And the rest is kind of history.

And there's been a lot of press about the Corps -- Corps being negative and dragging its feet because we didn't see a value of a test in 1991. We did commit in all sincerity. We fully intend to proceed with a development of a test in 1992. So, with that background, we are here today with the purpose of developing a test to be implemented in 1992.

We have three meetings scheduled: today, next Friday and then on the eighteenth of April; and our perspective on those meetings is, these first two meetings we would like to get to the heart of the science here, the biological aspects of the proposal of this test and hope to come to closure in a reasonable degree of definition on a test plan for 1992 such that we can take this to the policymakers on the eighteenth of April in Portland and get their -- their endorsement on this operation for 1992.

So, this meeting we view as framing up the test plan, lining it out from the experimental design aspect, anticipating that we are going to have some

information needs based on today's discussion and perhaps a need to have some work groups go back and look at some issues. Perhaps get some additional information such that we can meet again next Friday and further define this test plan. Again, going to the eighteenth to the policymakers for their support on this proposal.

That gets us to this area of what we called expectations and requirements. Our expectation is to develop a test plan. I want to say at the outset here, we're not here today to debate the policy issues or the merits of the test or developing a hypothesis about drawdown and its benefits and an experimental design to test that versus the policy issue of, Do we need a test at all, do we just go out there and start modifying these projects. That's a policy debate, not that we can't touch on that today; but that's not our purpose. We want to develop a test plan if we -- should such a plan be actually definable.

There's a couple of issues that have come up. One a National Environmental Policy Act process. We have concluded -- we have determined that we will have to do an environmental impact statement for a test implementation. That is a legal requirement. We certainly don't want people to believe that is a foot

dragging measure on the Corps' part, but we will follow the NEPA requirements and look at the implications and trade-offs on whatever test is developed, and the impacts to other users. We have not issued a Notice of Intent at this point in time on the basis that we believe we need to define the test proposal to the extent that we can go out with a reasonable proposal in our Notice of Intent in the Federal Register, such that we have an action that we can actually begin to evaluate and coordinate the scope of in a public process. Which leads me to say that these meetings are not scoping meetings, per se, under the National Environmental Policy Act that will follow the developing of the test plan. But, these meetings certainly are open to the public and anyone that has input.

Another issue that's been with us is the consensus question.

(Unidentified individuals enter room.)

MR. ANDERSON: There you are. I'm just talking about consensus. One consensus we have already reached is the last guys in have to buy coffee at 10:00 o'clock.

MR. LOVELIN: Good. I'm the last in.

MR. ANDERSON: We took the liberty -- we were

aware that you guys were coming up. We took the liberty to start, but you haven't missed much.

MR. LOVELIN: We have got consensus already on that.

MR. ANDERSON: The consensus question, I guess, was my next point. There's been a lot of debate about that. We have indicated that we would like to have consensus for whatever test is developed for implementation for 1992. Of course, at issue particularly following on the heels of the Salmon Summit, what does consensus mean. What is required. We would like to have it. We fully are aware that there may be controversy about a test plan, and we may not have unaminous consent. And, quite frankly, that's a decision point that the Corps will have to grapple with; and I suspect it will be after the eighteenth of March meeting when we take a plan to the policymakers, should we be sucessful in developing a plan.

So, that's something we are going to have to deal with. It's our intent to proceed with a test implementation in 1992.

MR. BOWLER: So, what you're saying, then, is consensus isn't important in terms of what we're dealing with. That's more of a policy issue.

MR. ANDERSON: It's a policy issue when we

get down to the implementation and proceed further in the process that the Walla Walla District is going to have to follow. Now, I guess, to say on an experimental design that we have to have consensus on that either, I guess, is probably too strong a statement. I don't know where we are going to end up after today and next Friday. Again, it's our full intent as to the Corps of Engineers to facilitate the discussion to come up with a test plan.

That's why we are here today. We did not reach that in the March 1st meeting at the Power Planning Council, and we are really following up on that discussion. So, I guess, I would urge everyone to participate in a cooperative fashion, in a good faith fashion, because we certainly want to proceed ahead and get beyond these issues that have come out of the Salmon Summit.

Good point. Those of you who have come in late, we have some name tags we would like you to put your name on. We have a court reporter -- excuse me, Okay. We have a court reporter here taking notes; and, as I said earlier, this is not a formal hearing; but we want to get the information down in the meeting today. So, that would help facilitate that.

MR. KINNEAR: Brian Kinnear, Fish and

Wildlife Service. If the Corps sees a need for an unified decision on a test for some segment of the operation within the Snake River system, what's the policy or procedure or the Corps' status relative to a document for operations of the entire Snake River system?

MR. ANDERSON: Well, in fact, is that for other aspects, other proposals like Dworshak or the Lower Columbia pool lowering; or is that what you're referring to?

MR. KINNEAR: I'm interested in knowing how the environmental impact, the operation of the project on the Snake River is going to impact the salmon runs that we are particularly concerned about here.

MR. ANDERSON: Well, I'm not sure I understand the question, but let me try.

We have environmental impact statements on our projects. We call them O and M. Operation and Maintenance, EISs, on our daily operations covering a wide range of what I'll say are normal operational activity. We can debate normal. For example, we have concluded on the Snake projects to operate them at near minimum pool this year. We feel that is adequately addressed in our existing project EISs. Not the case on the Columbia River, per se, particularly the John

Day proposal because John Day is a different kind of project and is actually a mainstem project that has a flood control component and has a greater fluctuation range. And we get to operate John Day at near minimum. I say that with an emphasis because that is a term that's come out of the Salmon Summit.

In terms of the overall measures that are being packaged that follow on to the Salmon Summit and will probably occur during the Endangered Species Act process, we are going to have to deal with those types of measures and their requirements underneath that on a case-by-case basis. And I'll just tell you, quite frankly, we are looking at overall environmental documentation requirements, procedural requirements for different packages of measures for '92 and beyond just to address our operations as best we possibly can to meet the needs of the fish. And I can't tell you today what that's going to look like; but clearly, clearly we have a mission here to pursue a test; and we clearly have identified that as requiring an EIS. And that's something that we need to proceed with. Conceivably, this could get -- get grouped into a larger problamatic statement, but I think that's probably not going to happen, Brian.

Does that answer your question?

MR. KINNEAR: I think your last statement very clearly answered it.

MR. ANDERSON: Okay. The third area -- I mentioned NEPA process, the consensus issue. But, the third area is modifications to the projects as they exist today. This is certainly an issue, and I'm aware there's a letter coming from the Walla Walla District from an Idaho group of the conservation community on that very, very question. Whether we should be dealing with a test or should we just kind of go step up to the plate and change the project's operation.

We are talking about a test in 1992, and we need to recognize that major facility modifications for those projects are not not within the realm of possibility. I emphasize major.

Now, minor things that can be done in the near term are certainly on the plate to be considered; and the Corps will do everything it can to accomplish those such that we can have a valid test developed and implemented. We certainly want to have a sound test here. And if we need to do some things in the projects that are minor, I just want to be real about this. That people understand we can't go out in the next twelve months, cut a slot through the spillway so we can have a free flowing river. We can debate that a

lot, but we have to understand the requirements there. And there are studies underway in Idaho; and Idaho Power has indicated looking at modifications, interim modifications; and the Corps will be looking at some things, and we hope we will have a cooperative effort with MK on some of those. But we are going to need to grapple with that question as to the type of modifications that may be necessary in the near term.

I think what we want to do today is let's talk about the hypothesis and the objective of the test and the experimental design and see where that takes us. If we have to regroup, we find that when we are talking about removing Lower Granite Dam by March of 1992, we are going to have to do that. But, we think we want to proceed in this discussion with developing the experimental design and develop a sound one and see what that's going to require in terms of the environmental conditions that will be necessary.

MR. KINNEAR: Is the test going to be viewed as a change of operation of proceedures not covered by such things or paralleled to such things as are covered by the EIS process or programmatic by EISs.

MR. ANDERSON: The existing EISs?

MR. KINNEAR: Yes.

MR. ANDERSON: Yes.

We see the test as going beyond the assessment contained in the existing projects' EISs. And maybe I need to back up here and just briefly say for everyone that these projects were designed, authorized and constructed to operate within certain limitations. For example, Lower Granite has a five foot fluctuation range with the exception, as I mentioned, that it was designed to operate forebay down to elevation seven twenty-one. Obviously, all the facilities up and down the river and other aspects are geared to that design and that constructive format. And, if you get outside that range, we are beyond what was ever intended back when they were constructed and when the environmental evaluations were done. So, it's clear when we get below normal minimum for any length of time, that we're into a review under the National Environmental Policy Act procedures. And that's really a public process and a disclosure of the impacts. And it's intended to be a process which affects our decision making. So, that's why we have concluded that we will -- we will have to follow that process for a test.

Now, it could be -- now, I don't want to say it's out of the possibility that some test could occur that would not require additional environmental work,

but the type of test that we talked about at the Salmon Summit certainly would.

MR. KINNEAR: So, the test will be confined to a single reservoir?

MR. ANDERSON: No, no. Not necessarily, no. We are going to have to deal with the kinds of physical constraints that may lead us that way; but no, we are talking about a test -- I would say we are talking about the Snake River certainly. But, for various reasons, we have -- we have in the Salmon Summit focused on a project. And, as we discussed the history there, we have narrowed in on the Lower Granite; and it was redefined as we went in the last few weeks. But, today it's a Lower Snake River test; and we will see where the experimental design takes us.

Okay. I want to move on so we can get into the meat of the meeting. Obviously -- obviously, anything we develop here is not going to be able to be determined a taking under the Endangered Species Act or counted as a listed species that we have them at that point.

As I said earlier, we view this as a cooperative effort. We are here to facilitate it. The Corps of Engineers certainly want to get on with this, and we are positive and forward thinking about it and

expect everyone else to be, to help in a cooperative fashion. I also mentioned earlier we expect that we are going to need to have some work groups come out of this process in the next few weeks, but we'll see where we go on that today and wrap those tests up, I guess, at the close of today or as we talk about the test developing.

The schedule, as I said, there's another meeting next Friday. Further refinement of the technical sides of the test, and then the meeting on the eighteenth in Portland at the policy level and such that we can move on from there.

I guess at this point, if anyone else has any comments they want to make? And Jim and Sarah, anything else we want to say now to set the tone here and the framework before we get into the test itself?

MR. HAAS: If I understand you correctly, then, you're on the matter of consensus. You're saying that although you would like to see -- obviously would like to see consensus reached, you're not necessarily saying that we have to have regional consensus before we proceed with outlining and scoping and designing a test program.

MR. ANDERSON: That's correct.

MR. HAAS: The second point, I guess the

Corps -- you say that you have made a determination that there is a legal requirement that you proceed with an EIS. We have some real questions as to the need for a full EIS. Particularly trying to get it done and proceed with the test objectives in '92. I wonder if that's even practical. But I'm not sure that we can gain that much by trying to face that here today. I would like to get a copy of the Corps' paper where you have made that legal determination that an EIS is required.

MR. ANDERSON: Okay. I would be glad to talk with you. I guess I agree, we don't want to necessarily debate that today, but just a couple of points.

Let me re-emphasize here that we said an EIS would be required for the type of tests that were discussed in the Salmon Summit. Now, certainly, if we were to end up with a design that didn't trigger an EIS, didn't have the potential for significant environmental effects on the human environment, in other words, then we wouldn't have to do that necessarily.

The other point to make is maybe some of you aren't aware that there is a bill right now -- I don't think it's been signed into law because the President

has been down fishing, but we expect it to be signed very soon as I understand it -- and it's a supplemental appropriations bill for this fiscal year, and there's report language in there that request the federal agencies to report back to Congress on the steps they are taking to deal with both the Endangered Species Act process and management actions for the benefit of fish. In that language, it mentions the -- it states that the agencies should consult with the Council on Environmental Quality, if necessary, to talk about ways of expediting any environmental reviews that might be required.

Now, I'm not saying that that's a requirement. If necessary and if we have this, this bill signed into law, certainly the federal agencies will be responding to that. So, there are ways to seek help in the environmental reviews; and we will just have to see where that takes us, Wayne. I don't think that today we can see far enough ahead. And our mission is to develop a test plan and see what that consists of and look at the environmental requirements at that time. But, if we are talking about a test to drawdown below minimum, we will be preparing an EIS; and we will publish a Notice of Intent; and we will go through a public scoping process. And you're right, it

will be very difficult to get it done by next spring. But, if we have a cooperative effort here and we have input early on and a lot of understanding about what it means, it could be done. It could be done, and we intend to get it done.

Anything else?

MR. LOVELIN: Back to the word "consensus," I'm not sure, maybe you discussed it long enough. I want to expand on it a little bit further. But to the extent we can reach the other objective in coming to a cooperative discussion here with this group, development of the experimental plan, I think that's going to go a long ways, of course, of bringing consensus.

I think the other point you said, which I would like to echo, to the extent we can develop an experiment which is biologically credible, does help the fish and does take into account the concerns of the river users, you know, hopefully mitigates the impacts for those folks, that's going to help the process all along from this point on. And I think that's what you are talking about that if an Environmental Impact Statement is necessary, it may not take a year. We can reach some consensus in the early stages of it, you're not going to see people potentially larger groups

raising major concerns of possibly legal concerns or something like, you know, legislative purpose for the facilities and that sort of thing. Authorization.

So, I would -- maybe the only point I would make is that consensus is in my mind very important through this early stage. So, I hope we can, as a group, work towards -- work towards -- you know, coming to that agreement and also just the significance of the various river users too, the importance of how this test could impact those folks. Like I say, that's why I'm here and others are here too.

MR. ANDERSON: Okay. Anyone else? Any comments before we get into it.

(No discernible or visible response was made.)

MR. ANDERSON: Ted?

MR. BJORNN: Well, what your real plan is today -- I got in kind of late -- you're really not going to come up with an experimental design today, presumably. Are we just trying to scope out the size of the channel we're going --

MR. ANDERSON: Yes. Let me back up.

I mentioned that. Let me try it again.

We have three meetings set up in the next couple of weeks. Today and next week we want to focus

on the experimental design and the biological aspects and, as Bruce said, recognizing the impacts to others and keeping that in mind. But, today's purpose is to frame up the test. Let's put the objectives out on the table here. We need to set some objectives and hypotheses for that matter that we are testing it and get some of the researchers that are here, and the good minds that can help define what a valid test would be in a framework fashion. Then to refine that by next Friday, such that we -- we have a reasonably defined test plan in mind. Now, I'm not going to insist that we have -- we have the scope of the test down to all the Ts crossed and Is dotted by next Friday. I don't think that's possible. But, certainly such that we can take our test plan to the policymakers on the eighteenth of April. And when I say "policymakers," it's the level of the coordinating committee of the Salmon Summit and see where we get.

MR. McCONNAHA: That's right. I don't see us walking out of here today with a finished project on a test design.

MR. ANDERSON: Does anyone have any questions or thoughts about that because, again, we want this to be a cooperative effort?

(No discernible response was made.)

MR. ANDERSON: You know, we are trying to facilitate this. It's clearly something that's been put on the table, and there's high -- high interest in this test, and I understand Rolly Schmitten talked about it in his news conference. And you all know, as well as I do, that in the political arena it's very important. So, we want to have a cooperative process that we are facilitating and hope we can come closer; but we have to really get at the biological aspects. At least, that's our thinking initially.

MR. KINNEAR: Is it the eighteenth we need to have the things in the Federal Register in order to make --

MR. ANDERSON: Yeah.

And I should have mentioned that, under the NEPA process, the kind of a schedule for this next year is we need to get that Notice of Intent out and published in the Federal Register by the end of the month, such that we can have a draft impact statement late summer or early fall time frame. The final, winter -- late winter probably. The record of decision one March, mid-March time frame, so, we have some time to do some logistics of actually getting the test implemented on the ground. That's the general schedule we are working from. So, that's why we are trying to

expedite this.

And, of course, there's been a lot of people asking us to get moving on this and publish a Notice of Intent; and we are trying to do that.

MR. HAAS: Again, you don't really need to have all the details in that Notice of Intent, do you?

MR. ANDERSON: That's right.

MR. HAAS: We can just agree on the six elements that you outline in the list; that is, without going into specifics. I'm not sure that you need to have all of the specifics of the design of the test in a Notice of Intent.

MR. ANDERSON: I would agree, Wayne. We do want to bring this to the eighteenth at least to that policy level. That's why we have compressed the schedule here. We don't have to have the final test defined in this Notice of Intent. We will be looking at alternatives in the NEPA process. It's one of the requirements under the process. So, it can be continued to be refined over the next several months and over the next year, for that matter, before we implement. But, we have to have enough definition that we have a proposal; and we can articulate that proposal to the public and other interested agencies; and that's our goal. That's our goal.

But, I agree with you we don't have to have a final defined design for that Notice of Intent.

Anyone else?

MR. HAAS: From my understanding, what you would hope through this meeting today and the meeting next week is to get into the various specifics of the design of the test itself; is that your intent to do it through this type of forum? I had in mind that what you were intending was that this forum would agree on, you might say, the framework for the six elements that you identified in your letter. More of a framework type thing. And, then, we would get together with a smaller team of experts, fisheries, et cetera, to have them sit down and hammer out some of the various specific confines of the test parameters.

MR. ANDERSON: We certianly want to have the framework today, and we want to have as much of the specifics as we can next week that we can take to the meeting on the eighteenth. Granting, acknowledging -- at least I do -- and, Sarah, cut me off here if I'm causing you trouble -- acknowledging that there's going to be continued work by the researchers that are going to do this thing, should we come up with a plan over the next eight, ten, twelve months, for that matter. I don't see that we are going to have it on paper next

Friday and ready to go next year. There's going to be a lot of continued work and probably smaller work groups that would be fine.

Sarah?

MS. WIK: We have to get fairly specific. I'm not sure where you're drawing the line between essentially the framework and the specifics of the test. But, we do need to have a fair amount of specifics to go forward with the NEPA process. And I think we are ahead in the long run and, as Witt says, there's alternatives to look at within that. But, I think, as we start throwing out some of these questions, we can begin to see where some of these fall out under is this a framework question or is this a specific, but....

MR. ANDERSON: Well, I certainly would like in the next two meetings to get what we have scoped here, the number of reservoirs, the degree of drawdown, the duration and those kinds of questions. But, to get to that, we felt that we really need to talk about the experimental side here. The objectives and how you achieve those objectives. How you meet your test objectives.

Well, if there's anyone else here who has any comments, feel free to join in as we go; but I guess at

this point maybe we can get right into that area on the test development; and I'll look to Sarah and Jim here to try to lead that technical discussion and try and make sure we stay on track as to what our purpose today is; and we don't get too far off.

MS. WIK: Okay.

As Witt has said, we are here to facilitate. Someone asked me before the meeting if we had a specific proposal to lay out. We do not. We want to make this a cooperative and interactive effort, so we are looking to you folks for participation on this.

I would like to apologize. I'm on the tail end of a cold. So, if I sound a bit stuffy and do a lot of sniffing, you'll have to forgive me. And, again, some of this is just reiteration from what Witt has said; but we want to develop a means to evaluate the concept of a drawdown in a means that is scientifically sound. We need to look at that.

Jim will be helping out here, writing things down that we can look up at on the overhead at a point.

As Witt has mentioned, on the agenda under test development, those aren't necessarily in the correct order. Although, we would like to start looking particularly at the objectives; and then, as we go forward from there, we will get into the

experimental design and scope and some of the questions that need to be discussed. We want to share the information that we have in hopes that you folks will do the same and look at the things that we need to go forward with from here to gather more information on.

So, with those words of introduction, I guess, starting with objectives, what do we want to establish as objectives -- as an objective or objectives for a test of the drawdown concept? What should these be?

I guess as a starter, we will just throw out, do we want to measure a change in the migration rate of the juvenile fish that would occur with reservoir drawdown?

Mike?

MR. SATTERWHITE: I think what we need first is a clear statement of the ultimate goal of the whole concept. And the ultimate goal of the whole concept is to shorten the residency time of those juvenile fish in the Snake River system. And by so doing, enhance and optimize their survival to the ocean to the greatest extent possible. The whole issue is ultimate smolt survival to the ocean

MS. WIK: That's true.

MR. SATTERWHITE: We need to keep that in

mind. We have to improve on our track record if we are going to get the fish back and protect those endangered species.

MS. WIK: I think we agree.

MR. SATTERWHITE: Yeah.

MS. WIK: We are all here because we want to do what's best for the fish, and how to establish that. And, like Mike says is correct, the ultimate goal is increased survival; but, in terms of the reservoir drawdown, establishing objectives for that.

Wayne?

MR. HAAS: I want to follow-up a little bit on what Mike said, that the ultimate goal of what we are trying to achieve. It would seem to me from a standpoint of the Corps' objective and the test objective would be to determine the relationship between the decreasing reservoir levels on the Lower Snake Reservoir and an increase of survival of the smolt.

MS. WIK: Okay.

MR. HAAS: Mike says the over -- what we're trying to do is trying to measure that and trying to determine that relationship.

MS. WIK: Okay.

Any thoughts on that?

Chip?

MR. McCONNAHA: Sarah, a couple of thoughts.

One of the purposes in lowering the reservoir is to increase velocity. That's what we're trying to do. So, we might say we are trying to clarify the relationship between the water velocity and fish survival. And because of how we have to measure these things, I think it would be useful to include their travel time in addition to the velocity as we initially laid out. That, while survival is what we obviously want to measure, you know the difficulty in doing that and tracking that travel time is more likely what we are going to measure.

MS. WIK: Correct. So, in essence, clarifying the relationship with the water velocity and a means to look at fish survival, looking at the travel time because of the difficulty of establishing --

MR. McCONNAHA: Maybe we should throw out survival as one of the objectives and whether or not we can come up with an experimental design to measure survival. Most likely, that's what we are trying to do. I suggest we have two objectives.

MR. HAAS: I don't really think that -- we're talking about the same thing. Velocity has really been used as an index. An index for talking about survival.

Biologist say that travel time and velocity is crucial to a fish getting through the reservoir. But, we're -- I think the overall relationship would be to measure the relationship of the reservoir drawdown and survival. We are going to use velocity, travel time and different things as parameters of those index measures to try to get at that.

MS. WIK: Steve?

MR. PETTIT: If the goal is to measure survival, I think we need to get this right up front right off the bat so we don't waste our time. It's going to probably require a test, as I see it, for the entire duration of the fish migration for a number reasons. You're not going to be able to get enough fish marked to evaluate until you do it through the bulk of the run. If you do it too early, you're not going to have enough fish in the system to even come close to making any statistical inference. If you don't do a series of replications, it requires an increased amount of time to lower throughout the migrating season, you're not going to compare anything. If you don't do it through a long enough time during the test period, you won't have anything with any previous work that's been done with travel time in which to compare.

So, I think we need to let the people here know right off the bat that if you're going to test survival with said drawdown test, you're talking about an eight- to ten-week test.

MS. WIK: And I guess we need to get back to the issue of whether or not we can or want to attempt to measure survival, or do we want to use that as an index of travel time?

Go ahead, Jim.

MR. ATHEANR: Sarah and I ask, as I'm putting this information down on plastic, it would help me if we can kind of rehash -- and I tried to capture briefly what the goal statement was and then if we can get that pinned down. So, if you don't mind, let me flash that up and let people --

MS. WIK: Okay.

MR. ATHEARN: -- add to it or change it, however you like.

MR. SATTERWHITE: Mike Satterwhite. (Speaker inaudible.)

THE REPORTER: Excuse me, I need you to speak up.

MR. SATTERWHITE: I'm sorry.

My name is Mike Satterwhite. Let me clarify what I was trying to say. I would like to clarify what

I said earlier about the overall objectives of this kind of an experiment.

The overall objective is in the context of getting more fish to the ocean alive. I did not mean to imply that the objective of our experiment today or this year is to measure in an absolute sense survival. But, we just need to know where we are going with the progrss. And that is the ultimate goal.

There are two aspects, the engineering aspects of the problem and the biological aspects of the problem. And survival is one aspect of the biological problem.

MR. BOWLER: Whatever test we do, I think we have to be sure we get as reasonable data as we can so we don't end up with inconclusive results; or to the best of our ability, that we don't do something that's going to be somewhat inconclusive.

MS. WIK: Right.

MR. BOWLER: We'll have to look at it and hope that in the long run we accomplish something that is somewhat conclusive to the best of our technical ability. So, whether it's the duration, the size of the drawdown or whatever, we have to be careful how we couch it so we get reasonable results.

MS. WIK: I think that's back to the position

of whether or not we want to establish as an objective of the test and not look -- keeping in mind what you're saying, Mike, about the long term, but whether or not we want to establish as an objective or one of the tests to look at survival, or do we want to look at that in terms of travel time and an index of increased survival.

Chip?

MR. McCONNAHA: Sarah, do we want to maybe just list the things that -- like, we are going to determine and design what we call a hypothesis of what we want to test, and then leave it to some technical groups to see whether we can or cannot do it? I mean, obviously, survival is what we would all like to be able to measure because that's the bottom line. But, we're not going to decide today here and start going through all that again on whether you can or cannot accomplish survival. Maybe that ought to be left to someone else. Just put down the objective of why we want to do the test in the first place. Why would anyone be interested in lowering the reservoir and see the kind of response we get and then see if we can go back and come up with an experimental design and decide as many of them as possible because we probably won't be able to test every one of them.

MS. WIK: And that's what we have talked about before, that we need to define the issues before we can go forward from here to work between now and next week.

MR. McCONNAHA: We are going to have to decide today whether we chose survival or --

MS. WIK: Okay. Can we agree to put down both the objectives of potentially looking at travel time and survival, and then leaving that as an issue that needs to be further resolved?

MR. BOWLER: The question before the Corps within the Salmon Summit and all the modeling that was done with particle travel time and drawdown, et cetera, are those theoretical models that need to be tested in terms of we know with a drawdown we are going to get an increased particle travel time based on some computer model; but you're actually going to have to test whether fish move through that under those types of scenarios to make it legitimate? Is that something that --

MR. ANDERSON: We didn't do any sophisticated modeling for the Salmon Summit, but those simple calculations on average water particle travel time. But we emphasize what we said that, number one, this is average water particle time through the cross section,

not indicative of where the fish may or may not be moving in the water. And not indicative of the water particle travel time in relationship to the smolt travel time. Nor the next one of travel time of survival, the smolt fish travel time of survival. So, I guess, all we said is, if you lower the pools, you're going to get on the average basis across the cross section increased velocities. We know that, but --

MR. BOWLER: The response of the fish to that is an unknown?

MS. WIK: Unknown.

MR. ANDERSON: Is an unknown.

MR. BOWLER: There isn't any previous data to cross check, correlate or lend any credence to that at this point. That needs to be evaluated.

MR. KINNEAR: (Speaker inaudible.)

THE REPORTER: Excuse me, I can't hear you.

MR. KINNEAR: I believe the Fish Passage Center does have data that indicates there is a relationship between an increase in velocity and a decrease in travel time and those correlations are --

MR. BOWLER: Right. In the sense of the measured flows that we have. But, the theoretical model and relating it back to the reservoir is simply an unknown. I think there's indications that is there,

but --

MR. KINNEAR: You're asking for a validation of the --

MR. BOWLER: Right. As a means of testing the drafting principle of the test, whether that actually holds up with the existing data that we have. Is this something we need to evaluate based on the test? I'm just throwing that out.

MR. ANDERSON: The physical relationship --

MR. BOWLER: Right. The physical model, is that a reasonable thing?

MR. McCONNAHA: That was one of the objectives that we originally had when we talked about this a couple of months ago. That was one of them. Because the water travel time calculations we used, as Witt says, they are real simple. I mean, it's the same knowledge of a bathtub. You pull the plug, how long does it take a bathtub to drain out. Of course, the reservoirs aren't -- one of the things I would hope to get is, I think, a validation of if we predict that water travel time by, say, Lower Granite Reservoir, is so many days, we ought to be able to confirm that; and test theoretical water particle travel time on it. As well as on the second one, the fish travel time. And thirdly, maybe the survival.

MR. ATHEARN: Chip, I wish -- maybe I'll do this thing. I have tried to jot down --

MR. ANDERSON: Can everybody read that, or do we need to write smaller?

MR. ATHEARN: Hopefully, just to capture what you're talking about, which is a change of water velocity or particle time, however you want to define it, as an objective with some relationship to migration travel time; and then some relationship of survival to a presumed decreased travel time. Does that more or less capture what you're saying?

MR. SATTERWHITE: I agree with the comments that were made earlier about the relationship. It's going to be difficult to come up with meaningful conclusions about survival unless we do long range, long term types of experiments. There are, however, things that are correlated to the survival which are fairly -- which can be done in a shorter time frame.

We talked about -- we have talked in the past briefly about spillway survival or mortality rates probably can be measured in a relatively short time. We may have -- many of those experiments have already been done in other areas. If you could draw a pool to what has been called the run of the river condition, you might be able to measure turbine mortality

have, obviously, the extreme and wherever you start from. But one advantage of that is obviously if that's the only thing we are interested in, then we can do that anytime. We could -- we could draw it down in the middle of winter and get the same information. So, yeah, to answer your question, yes, you would have a range of level of velocities that you could look at.

MR. ANDERSON: But, Chip, so you have an infinite number of cross sections, however many cross sections, and you have got your profiles, what does that tell you about the travel through the entire reservoir? I mean, you have effective flow areas and noneffective flow areas at different cross sections. Depending on the cross section as you drawdown, sure you're going to change your velocities throughout the water column; but still it seems to me you have got to get that mean overall velocity through the reservoir.

MR. McCONNAHA: Yeah.

MR. ANDERSON: We have data on the Lower Granite. And the state of Idaho says, Look we have got velocities. We have some cross sections based on our studies we did on the sedimentation problem we did up here on Lower Granite. That's fine, but what does that tell you about the overall movement through the reservoir?

the time, and if we can come up with a -- if the real simple model works, that's wonderful. But, I guess my thoughts on that is, if we're going to talk about modifying velocity, we ought to confirm that hypothesis that the simple model is fully adequate and test it. I guess I'm uncomfortable; and, from talking to hydrologists, they only seem to increase my discomfort in saying that using a simple evacuation is adequate talking about velocity in the reservoir.

MR. BJORNN: I don't have any problem with -- (Speaker indaudible.)

THE REPORTER: Excuse me, I couldn't hear you.

MR. BJORNN: I don't have any problem with that. All I'm saying is I don't think you're going to find mean travel time --

MR. McCONNAHA: That's what I would like to see, but it seems like we have to confirm that before we can really go with that kind of a model.

MR. BENNETT: So, to clarify what you're saying, to get the necessary information, aren't you going to need incremental drawdowns to get those water velocity profiles?

MR. McCONNAHA: Well, you certainly have to have a couple of points it seems like. But you would

certainly as related to the general issue of survival. It's not going to be a simple function only of travel time. There are going to be passageways that these fish have to traverse. There are parameters that have to be measured, and I think can be measured and assessed.

As I understand it, Fish Passage Center has a policy of providing spill or no transportation at flows over a hundred thousand cfs in other systems; is that correct?

MR. ATHEARN: Not exactly, no.

MR. SATTERWHITE: But, Steve Pettit here is on the fish transportation committee.

Steve, do you want to explain the spill bounds?

MR. PETTIT: For projects that don't have bypass systems, it's recognized generally that spill is a better option of improving survival than going through the powerhouse. So, to make a long story short, until the unprotected projects have completed and successfully operated bypass systems, there are -- there is a plan called a spill plan that directs the Corps to spill a certain percentage at a certain time of day water at Ice Harbor and Lower Monumental, if that's what you're referring to. You know, that will

stay in place until those projects have bypass systems.

MR. SATTERWHITE: Anyway, in relationship -- if I could finish. The reason for that is there is concern about sending fish over spillways related to nitrogen supersaturation. There is a variety of those factors. Those are survival issues that can be addressed in short time with a some degree of reliability and have been, in fact, done so in the past.

So, it's in that context that I think survival has been assessed. I would agree with Bert and Steve that we do need long-term information if we're going to get a real good idea of the overall net of the drawdown.

MR. ATHEARN: I thought I heard part of your question having to do, though, with the spill versus transport issue; and that was what I was pointing to you.

MR. SATTERWHITE: No. I wasn't going into the question of spill versus transport. I was just trying to put in my comments about measuring spill and what it means in that context.

MR. ATHEARN: Okay.

MR. SATTERWHITE: If we measure spill, we measure more than one thing. The reason for a spill or

spillways may or may not be good for the fish. Those are the kinds of things we can measure, and those are the survival issues.

MR. HAAS: In fact, I think -- I suggest we need to separate out the two different things. One, we have the operation that we want to have occur in 1992 or trying to today achieve improvemed survival of the fish in 1992. That operation or scheme. I think the test is part of that which goes beyond that. The test for 1992, I would envision, is an attempt to collect that type of data that you can so that you can better determine relationships between different reservoir levels, different operation schemes, to help you design a long-term program.

For example, the test could well include monitoring, gathering data, outside of the period when you have smolts migrating downstream because the test period, if you can collect some critical data designed either on velocities, either in the reservoir around operating -- fish operating facilities or water quality data, that would help you in the long term design basis. You should collect it during those periods when it's available. So, your test itself doesn't necessarily have to be limited to some eight- to ten-week period. The test could well fall outside of

that, the testing program.

MR. ANDERSON: I don't disagree that you can do some things and get some physical information. But, I guess what we are really probing around is the issue of smolt traveling time and its relationship to water particle travel time and then survival. I guess, I would pose a question of gathering physical information, while it may be useful, is that really going to help us answer the question about the bigger question, do the projects need to have major modification. Do we need to overhaul the way we operate the whole system.

MR. BOWLER: But, how important is that physical criteria going to be? If you're going to assess environmental impact, you're going to have to know what happens to the Lewiston levees when they go below -- those types of things you are going to have to answer, aren't you, to satisfy --

MR. ANDERSON: Well, certainly, if we implement a test, those kinds of things would be monitired; and we would have to address those in the impact statements on the test itself. We -- it might be suggested -- we might be doing a bigger impact statement on the long-term change if for some reason that's why we decided to go that way based on these

test.

But, I don't -- I guess I don't see the purpose of the test is to see if the Lewiston levees are going to fail. The objective -- the thing we have got to get at is the benefits of operating that way. And I agree, physical information on velocities and so on is good; but I guess I'm looking for some of the fishery scientists and experts to hear on this issue of smolt travel time's relationship to particle travel time.

MR. BOWLER: But, some of those physical attributes possibly could preclude testing some of the biological needs if, in fact, there was concern.

MR. ANDERSON: And, as I said earlier, I guess our intent is to develop the experimental design; and, then, we have to do a reality check. I mean, we're not going to be able to do something in '92 that extreme that's going -- the test is going to require removing Lower Granite Dam. That's not within the realm of possibility, and we shouldn't delude ourselves into that.

MS. WIK: I guess, Witt, I mean, do we agree that these are objectives that we want to look at; or do we want to focus in, for example, number two is the primary objective for a test plan; and, then, go

forward, as Witt is saying, and looking at what we would have to do to develop a test plan to answer that, you know. And, then, what are the issues that surround that as a realty check.

MR. HAAS: I have I problem with number two being related to whether or not I have --

THE REPORTER: Excuse me, I can't understand.

MR. HAAS: I have a problem in number two where you have related discussion of water travel time. Is that in any way similar to particle -- water particle time? That's such a gross approximation that I think it's misleading. Why don't you say relevant to velocity or something like that?

MR. ATHEARN: Yeah. We can -- this is a starting point.

MS. WIK: Yeah. These aren't set.

MR. ATHEARN: Feel free to comment. And maybe I would suggest that we start with the first one and define what we mean by a change of water velocity or particle, or however we want to do that. But we -- what we're talking about or at least hearing in the group discussion is some means of verifying what people have estimated particle travel time would be through this test and actually lowering the water. Now, whether we actually go out and take transects across

the reservoir at various locations up and down or not, come up with some -- some targets for products out of that and then go from there.

MR. BJORNN: I guess my -- I guess -- Ted Bjornn.

I guess my feelings on the estimates of water velocity, I would be surprised if we found that the mean velocities are really very different from what's already been forecast. I don't know whether that's worth spending a great deal of time on. I think the question -- there are a couple of questions in my mind that need to be resolved. One is, do fish migrate directly in response to water or velocities in the reservoir. And secondly, what kind of flows or lowered elevations or combination of those two do we need through those reservoirs to get the fish down to -- down through the first dam.

That leads us to a second question, which is, once we get the fish to a point where we can collect them, do we collect them and transport them, or what do we do? And it seems to me like the first question that we really need to concentrate on is, do we have enough data now -- maybe there is already -- that defines that fish migration velocity through the reservoir relationship. If that's not good enough, we need to

define that. We need to design the parameters to do that. I think that can be done.

The second part is, I think, from what I've heard, there is still a lot of numbers being banged around about how much water we need through the reservoir for acceptable capacity. I think we need to design experiments to better define that. That leaves another more difficult question. Once we get fish down through the dam, where we can collect them. What do we do with them. Do we pass them on down. Do we collect them and transport them or what.

MS. WIK: We need to focus back on the objectives for a test for 1992. And what I'm hearing Ted saying is that, do we need to consider something other than a test of a drawdown concept for 1992. Is there information that we need prior to that. Do we have all the information we need.

MR. PETTIT: I think we have the basic relationships between the fish behavior and cue.

MS. WIK: Okay.

MR. PETTIT: And the Fish Passage Center has data for a number of years on that. It's not as good as we like it, but it probably could do the job. We can definitely get a relationship between the fish movement and, say, travel time and flow.

MR. BOWLER: I think the question is, is that to simulate a cue, can we get that with drawdown. We have got that; and we have to know now, can we get the hundred and forty or the hundred and twenty equivalent "X" drawdown on, do we get the same response with fish movement.

MR. PETTIT: I don't know. We don't come close to a goal in fishery agencies and tribes in our expressed flow proposal with a draft of seven twenty-one. We have done some preliminary modeling, which we presented in our February 22 meeting, which has already been referred to by Chip, which shows a range of flows that we could expect at that time of year considering the test in April, early April, would probably result in point six to point nine a day --

MR. ANDERSON: Okay.

MR. PETTIT: -- hours of improvement.

MS. WIK: Correct me if wrong, but I'm hearing focus again on the objective of looking at what that relationship is between lowering the reservoir to get increased velocity and a decrease in travel time, decrease in residents down through the reservoir.

MR. ANDERSON: Well, I guess I would like to see some more debate on the first question that Ted posed as the relationship; and that Steve mentioned.

Is there -- is there agreement that we have the data. Is the Fish Passage Center data good enough. Do we need to do some more experimental work there.

MR. HAAS: What relationship? I'm not sure of the question.

MR. ANDERSON: The fish movement response to flow, to cue.

MR. PETTIT: I don't know what you could do different than what we are doing now. We are marking fish and recovering them sequentially down the river system and comparing that the best we can to -- maybe Chip is a better expert than I am in these areas.

Is there something that we could be doing different?

MR. McCONNAHA: Well, I don't know that that's the basic kind of an experiment to be doing here. If you were going to look at this, you would be marking fish and collecting them at some point and hopefully comparing that travel time to some nontested fish. But that could be a real problem there.

MR. PETTIT: Well --

MR. McCONNAHA: Well, I guess I wouldn't want to leave the impression that we -- that I agree with you, Steve, that the information indicates the general kind of relationship, but I'm not sure that we know all

we need to know about the fish travel time and survival and its relationship to velocity.

MR. PETTIT: Well, I wasn't trying to make that impression either. I'm not sure what you could do differently just by changing the cross-sectional area of the reservoir and testing it through means that's already --

MR. KINNEAR: The purpose, then, would be to validate on something that's already been made based on that data.

MR. PETTIT: And, in order to do that, you have to do it in a time frame that you can mark enough fish at the head of the reservoir, which means you can't do it in late March and you can't do it in early April. I mean, we're getting five fish a day at Lower Granite right now. So, in order to do an adequate job, you're going to have to do that when enough fish can be encountered at the head of the reservoir to monitor them to get statistical influence some time later.

MR. CRASE: Couldn't you mark and tag hatchery fish and put them in rather than during a high migration period, but you could set loose a group that's been tagged and put them into the head of the reservoir. We have got a counter down at the dam. You are talking the amount of time through the reservoir,

which is seven days or five days.

MR. PETTIT: You could mark fish at the hatchery, but you can't get them to Lower Granite Dam any faster than they may want to go.

MR. CRASE: But you're doing it through the high travel time, you know, probably May. But, you could mark the fish and dump them in and seven days later, you should have a pretty good idea how fast they move through the reservoir.

MR. PETTIT: I'm not disputing that fact. I'm just saying that, in order to do that, you have to do it when those fish are doing that; and that's late April, early May. And you can't collect them at Lower Granite if you're doing this test at seven twenty-one because the fish collection facility is twelve feet out of the water, you know, at that point.

MR. BJORNN: I think there's a couple of other things we need to be talking about. What if next year we get an above-average water year, do we do a drawdown just to test the drawdown or do we not. Let's say we have an average water year and the period of time where we are short is where we are usually short, the last part of April and the first part of May; and, then, we have plenty of water. Do we just drawdown during that month or do we -- you know, do we gauge the

drawdown -- basically, what we want to do is we want to provide enough velocity through the reservoir so that the fish can get down. To me, then, it seems like what we really need is a sliding type operation where, depending on what inflow you have got, that if you're going to have drawdown, you gauge the drawdown to compliment that. And you create the conditions that are --

MR. PETTIT: With some goal in mind?

MR. BJORNN: Yeah. You have got a target. You know what kind of velocity you are shooting for. So, with the combination of inflow, you multiply the drawdown to provide that velocity. And, in some years, maybe you've only got a one-week period when you've got a drawdown. In other years, when you've got dry years, you may have a ten-week period. But, there may be some times where you go way down. If you're really going to shoot for the kind of drawdown that you need, you're going to have to go clear to the spillway crest.

MR. BOWLER: The whole essence is to test that cue equivalency. And anything that we draft up in terms of an EIS, I think we would have to put a caveat in there that if we have an above-average water year, we obviously may not want to get into that. But the whole design here is to test discharge equivalency. We

don't have eighty-five, ninety-five, a hundred and ten or a hundred and forty to work with; but we possibly have the ability to draft the reservoirs to come up with those equivalencies through drawdown. And that's the essence of it. And the fish response -- is the fish response the same in that equivalency category as it is with the actual discharge when we don't have one hundred plus. If we're only dealing with sixty or forty, but you're at a seventy or a thirty foot or forty foot drawdown, are we getting the same eqivalency?

The whole issue revolves around discharge equivalency. I think we have pretty well established or reasonably well established the relationships between particle travel time, flow, et cetera, all have merit; and that's what all this was based on, was getting equivalency when we don't have the cue to work with a discharge flow.

MR. KINNEAR: Just as a question, suppose that we initiate the test during a period when we have a great deal of fish migrating and that test period runs for a shorter portion -- some portion of the fish migration period, what happens to those fish that are no longer part of the test. That is, when you start to fill the reservoir, what becomes of the fish that would

have been migrating because you had increased flows because you have drawndown and now you stop flows, how do we deal with that portion of the migration that are now in the reservoirs and filling, then, during what's normally their key migration point.

MR. BOWLER: We have to deal with that.

MR. KINNEAR: Do you have a suggestion?

MR. SATTERWHITE: I have a suggestion on exactly that issue. There are several points of discussion. There is a group that thought that it would be a great idea to test drawdown concepts when fish were present. There's another group that thinks that that's potentially dangerous to put yourself in, especially with the petitioned stocks we're dealing with. Perhaps one of the questions we are grappling with right now is what we project our test results to be.

Ted was just describing the essence of the Idaho plan, the Idaho drawdown plan, which is essentially a flexible window of drawdown to match flow to achieve an ultimate velocity objective at the lower end. And I think we need to first, though, before we go beyond what Ted described, is to decide when we want to do this. Whether it should be during normal maintenance period or perhaps some other windows or

when fish are actually present in the normal migrating pattern. We can certainly provide fish, but there's a biological window we have to provide those fish in if we're going to learn anything about the migratory behavior. So, maybe we should address that issue first.

MS. WIK: Well, doesn't that get back to what we want to make the objectives of the test to be. If we want to determine if the reservoir drawdown is a benefit to fish, or are we looking at another objective?

MR. SATTERWHITE: Well, again, there are two issues. The engineering issues and the biological issues.

MR. ANDERSON: Mike, I don't want to sound negative, but there's always engineering issues if you're going to change some operation. But do you not need to seek first your rationale for changing the operation, do you not have to support that. I mean, assuming there's a group of people that believe that drawing down the reservoir is the answer. But, what we are struggling with here is, is it the answer. How do we support that?

MR. SATTERWHITE: We can support it because the situation we have in place right now is not

working. It is killing fish. We have declining population of our natural salmon. Steelhead that are barely hanging on, and that says there's something basically wrong with the way the system is being operated. Therein is the justification for looking at a change in operation.

MR. ANDERSON: Well, we're not going to debate the policy here today. We are going to have to come up with an experimental design.

MR. BJORNN: Let me respond to this question. If we were going to look at physical aspects and not have the fish involved, then we can do it at any time. Basically, we can do it in the late fall or early spring. If we want the fish involved, we are talking about mid-April -- the downstream migrants involved, we're talking about mid-April to mid-June and maybe a little later. And that's the window.

The other thing I would like to point out is the type of test you conduct is really dependent on the kind of time frame you are going to look at. Steve alluded to it when he mentioned that full season test to look at, you know, full effects of the drawdown. In order to do that, you are really talking about a multi-year experiment. You're not going to get an answer. All you're going to get is one point on a

graph, and that's not enough data.

So, you are talking about a multi-year experimentation. If we limit our scope to the relationship between flow and fish migration, for example, we can do that in a season. And that's the task. We may do it -- we may find that you really want to do it without -- with very little drawdown because what you really want is to get a full range of flow in the time of the situation we have during April, May and June which is a wide variablility in flows. If you put marked groups throughout that time period, then you can test the wider range of flows with the migration level. If you link the flows that occur with a drawdown, all you're going to get is a constant velocity through the reservoir. So, you're not going to define that relationship. You need the variety of flows to deal with, to look at, to be able to define that relationship.

MR. HAAS: One of the fishery people can help define the relationship between the velocity and the fish passage. Only a certain range is going to occur during the ten-week period.

MR. BJORNN: That's right.

MR. HAAS: Physically, there's no reason why you couldn't extend your test beyond that period of

time and get some of the velocity points on the chart.

MR. BJORNN: You could.

MR. HAAS: Realizing, then, that the fishery people are going to have to go back and with the information they have or what they run through this other test, extend that relationship to these other points.

MR. BJORNN: Now, let me --

MR. HAAS: There's no reason to leave yourself such a short window to not get some of the other physical data.

MR. BJORNN: I agree that's probably true. The normal flow range that we have to look at during the spring runoff is -- what are we, thirty thousand right now?

MS. WIK: Approximately.

MR. BJORNN: So, we are at a low range when fish are starting to migrate. So, by the first part of June, why, in a normal year, we could be up over a hundred and twenty or a hundred and thirty thousand. So, that's the kind of range you can normally look at. If you don't get that range, if we have a low runoff year, then that would argue let's add drawdown to that to create the higher velocity that we're not going to get because there's just isn't enough water.

MR. HAAS: Well, we know that we can't in normal years and certainly in anything below normal years, there's no way that there is going to -- no way to provide the flows that year of a hundred and forty thousand or a hundred thousand, and we know that. We'd have to build twice as much storage as we now have in the Upper Snake to even come close.

MR. BJORNN: It's true, but not for an extended period of time. But, depending on the test, you're going to run you may have enough.

MR. HAAS: But, we also want to look at the relationship between velocity and reservoir drawdown. Because in looking at what information we now have, it certainly appears that it is a hell of lot cheaper to obtain velocity through some drawdown possibilities than simply drain all the storage.

MR. BJORNN: I guess I have a quick -- don't you think you can model without testing, if all you're interested in is reservoir velocity?

MR. HAAS: Not with the data that's available so far. Not with the water particle time. As I understand from the fishery people I have talked to, they would -- they have really -- all the water particle travel time is telling you is that they have -- it's like you have got an example that the person

uses, how long does it take to drain a bathtub. It tells you nothing about the velocity of cross sections across the reservoir, with depth, with the length in the reach or anything. Nothing about velocity at any of your facilities, which the fisheries people say is key to when you try to draw something down or try to design a new facility. They need to know velocity. Water particle travel time is almost meaningless in any event.

So, I think you need to do some real testing to establish a profile, velocity profile across the reservoir at different points on meaningful conditions because I don't think water particle travel time is going to be of any use whatsoever at any rate.

MR. BJORNN: I guess I disagree with that. I think water particle travel time is meaningful in the velocity.

MR. BOWLER: Chip, do you have some feel for that?

MR. McCONNAHA: I'm not a hydrologist. Maybe Witt or somebody on the Corps is and could help a lot more than I could.

I think it would be just dandy and great if the simple model we have is fully adequate to predict velocity in the reservoir because we have to do it all

MR. McCONNAHA: Well, do you mean water movement or fish movement?

MR. ANDERSON: Well, ultimately fish movement.

MR. McCONNAHA: Well, if only water movement -- and I'm not a hydrologist -- and if the hydrologists are convinced that a simple evacuation model is fully adequate for th velocity through the Granite reservoir, then I'm happy. That does not tell you -- that does not, then, answer the question about the fish.

MR. BJORNN: The problem with doing that test at the time other than the spring runoff is that you have got pretty restricted range of flows you're going to test for. You're only going to validate what's going to happen in a fairly narrow range of flows. Maybe that's enough that that tells you the model is working.

MR. PETTIT: You could augment natural basin flows with some storage for the test.

MS. WIK: But could you bring it up to what you want to compare with at the upper flows?

MR. PETTIT: It always depends on what you want to trade. And I don't think we are are at the point in time where we want to trade the water budget for the flows for a test.

MS. WIK: Yes.

MR. PETTIT: But, there is some option there that you could add augmentation to base flows to approach some equivalency that you wanted to look at for a short duration of time.

MR. ANDERSON: Okay. We want to take a short break. Gloria needs a break. Why don't we take -- how long?

THE REPORTER: About Five minutes.

MR. ANDERSON: Five minutes.

(Whereupon, the meeting was in recess at 11:12 a.m. and subsequently reconvened at 11:26 a.m., and the following proceedings were had and entered of record:)

MR. ANDERSON: First of all, all of you that have business cards, would you please leave it with Gloria so we can spell your name right?

Does anyone have any specific lunch plans that we need to think about? Go on for another half hour or 45 minutes and take a short lunch break and come back in the afternoon. Just plan to go on until 12:00 or 12:30.

Well, I guess we will wrap it up by noon. I guess I would like to still see us identify the objectives that we have here. One of the things I

would like to emphasize, I guess, in response to some something you said, Mike, that certainly we need to be doing things to improve survival. Just like in '91 there's going to be a package of measures; we will be operating at near minimum pool. But the discussion is really on the test. We want to gain some information to help us make the long-term big decisions about where the region needs to head with the operation of the system. Let's keep that in mind.

We are a little bit hung up on the objectives. Questions. It's been suggested -- suggested that maybe we ought to perhaps just move on for a moment here and start talking about an actual experiment, and Ted has been suggesting some thoughts there. I don't know.

Sarah?

MS. WIK: I would like to get back to the idea of what Bert was talking about in terms of equivalences. It seems to me that one of the major objectives has to be whether or not we can essentially simulate what's happening at the higher flows by reducing the reservoir. And, if we tackle that by looking at measuring velocities through the reservoir, as well as trying to determine how we would determine the benefits to the fish at the same time, you know,

I'm with that. I think I would like to see us establish that objective; and, then, we can go forward and determine -- or begin to discuss the experimental design for that.

MR. ANDERSON: Or maybe another way, back to something Steve said, if we just for the moment assume that we are going to do a test when there's fish in the river, we are going to mark the fish, let's talk about how you're going to acquire the data when the fish facilities would not be in operation. And I think it's clear that we're not going to be able to make the kind of modifications to those facilities by 1992 to be collecting fish at least through our contemporary system. Is there an experimental design potential out there that we can gain something with just marked fish in the river?

MR. PETTIT: We have given this a lot of thought. This isn't the first time we have been been visiting. Even though it is not as clean as you would want it, you could compare a draft of the Lower Granite and not do anything with the Little Goose pool and rely on the comparison of PIT tag recoveries at the irrigation facilities for PIT tags at Little Goose. There are three years of data behind us, although the number of points are not that great. It's 400 one year

and 500 the next and 1,400 the year when the bypass facility wasn't functioning correctly at Lower Granite. The bypass gate wasn't all the way closed, so for that reason, there's a lot more recoveries in that individual year fourteen hundred. That's not very many fish to make a comparison with. And, so, all you would be looking at is what benefit did those fish enjoy by having lowered it to seven twenty-one compared to the previous years. But, if you only did it for two weeks, if you only did it during the lock outage, you would have no test because there's no fish then. So, you would have to get them beyond that point.

MR. ANDERSON: The lock outage period, I think that's something we can discuss with those user groups about when we would schedule that. I guess, how do you isolate the flow situation so you have a valid comparison between previous years?

MR. PETTIT: Well, you just have to treat what you have got. Compare it to a velocity, equivalent velocity in the nontest years. You would have to fall back on -- based on bio relationships.

MR. ANDERSON: Simple, it's not.

MR. McCONNAHA: I agree with Steve. One thing Steve said early on, if you're going to do this, you're going to have to do it long enough and hard

enough that you're going to see a response. I think if we -- it would probably be a waste of time to try to do some jerry rigged experiments where we are going to try to tiptoe into this and not lower the pool very far or very long and what the picture is there. So, it's going to take -- like Steve said, you're going to have to be in the season when the fish is there. You're probably going to have to lower it far enough to see a measurable response. If you go through down three feet or something and you're looking at the difference in hours and we are trying to get -- between years trying to distinguish -- hoping we can distinguish between days and several days worth of travel time. So, the idea of measuring between hours of travel time isn't very realistic. So, we're going to have to lower it far enough so you can really get an appreciable change in velocity at the same time for our flow for a long enough time to really see it.

MR. ANDERSON: Let me take a step back into the forum. We have a concept plan put out here by Steve. So, the objective on this one is determining the fish response to that equivalent velocity and that equivalent velocity based on our present knowledge of mean water particle travel time.

THE REPORTER: Pardon me, mean what?

MS. WIK: Water particle travel time.

MR. ANDERSON: Is that -- I mean is there any comment on that? There's a lot of things in what you said, Steve, in terms of an experiment that makes me comfortable. We have avoided many of the problems associated with drawdowns of multiple reservoirs with this concept. There are still other issues involved. We, in that case, theoretically, can pass adult fish. There's those kinds of issues to be addressed.

MS. WIK: Well --

MR. PETTIT: You can study all these things that Mike was referring to, too. You can study gas supersaturation, one hundred percent spill. You can measure response of the adults that are approaching the project. There's the Snake River, which is on tap for the next couple of years. Those things can be done at the same time that you're doing this drawdown. Again, you're -- in order to get anything meaningful, we are going to have to do it right on the peak of the run or very close to it. And as this EIS process becomes more involved, you are going to have to see how the community feels about subjecting critical stocks to the experiment.

MR. McCONNAHA: One problem I have with that kind of a design is I'm a little pessamistic about

being able to make meaningful comparisons between what we would get and what we got in the past. But the alternative to it is maybe -- is probably -- the only alternative I can think of probably has a lot of worse aspects to it. It may be on again off again. Bringing them up, bringing them down, bringing them up, bringing them down. So, you in essence have a test, a nontest period, and a test and a nontest period. And, being scattered three times through a season, you have -- one you have within your test and nontest comparison you could make. You also have scattered through there, different physiological conditions which is going to be another factor we are going to have to control for somehow in this experiment. Now, it may, in fact, have -- there's a lot of biological questions you have to answer in this. I think, if I'm not mistaken, the adult ladder doesn't work between seven twenty-one at Granite and a minimum -- is that right?

MS. WIK: Right.

MR. McCONNAHA: It operates at that or at one or the other. But, the reason it is so important here --

MR. KINNEAR: That's for your adult fish?

MR. McCONNAHA: For this discussion, it doesn't make any difference. So, you have to talk

about how quickly you can raise the pool up and down or how you cannot get it up, anyway. But that's from an experimental -- strictly experimental design, and I'm kind of pessimistic about how effective a comparison we could make with what we have gathered this year and compare it to past years.

MR. ANDERSON: Well, I see some problems with multiple cycles in one year, but maybe two. Maybe a lowered pool "X" weeks. I don't know how many weeks it is. And, then, a normal operation for so many weeks. I think that --

MR. McCONNAHA: You have to figure out how to control it if you say lower the pool early and then raise it later, then you could argue that what you saw or didn't see was the result of the fact that fish weren't very smoltified early in the season or they were smoltified later in the season or vice versa.

MR. ANDERSON: Uh-huh.

MR. McCONNAHA: Again, on our experimental design, we have to find out how to control for that variable with some others that complicate the relationships.

MR. ANDERSON: I would like to pursue this discussion because we were caught up on objectives a little bit. If we could just start talking about it as

an experimental design, maybe we can establish it by the back door. I don't really like doing that, but if we're struggling on objectives --

MS. WIK: Am I hearing, Steve, do you feel that seven twenty-one, at which point the adult facilities would still be operable, would produce enough of a difference to --

MR. PETTIT: Well, I don't think you can measure nine-tenths of a day and fish response. I don't think you can physically measure the --

MS. WIK: The various travel times range from three to twenty-two days as it is over the course of the season, and if we're only talking a half a day, would we be able to pick that out?

MR. PETTIT: Plus, the fact you're not really measuring it at the site you're testing.

MS. WIK: And you're not measuring it in the same way you that would be as you have done in the past.

MR. McCONNAH: It's kind of a hard question to answer, Sarah, because you're really going to have to sit down with the old calculator and stuff to see what kind of change and what the power of the test is.

MS. WIK: Well, is that an issue we identify or home in on for next week? Is that --

MR. PETTIT: Based on what I have seen to this point in time through the Salmon Summit and outside of that, if you really take and measure again on adult passage, you're not going to get a consensus on the -- it's not going to happen. I don't know if you feel the same way, Chip.

MR. McCONNAHA: I would not want to see anything certainly.

MR. BOWLER: I think, at least for the exercise, we need to not get too concerned about a lot of other variables that may be highly influencial. Obviously, we need to get in and maybe set up a strawman for the duration, the length of the drawdown, size of drawdown and, then, maybe work ourselves up and down that column, and not get too hung up on the adults right now or whether the levee is going to fall in or whether we're going do have a super saturation or whatever. You have got to start with a strawman and work from there.

MS. WIK: So, we're talking Lower Granite seven twenty-one for --

MR. BOWLER: Well, I think you need to look at April 15th to June 15 on full pools to start something to work with.

MS. WIK: Okay. We're backing away from just

the Lower Granite, then, is what you're saying?

MR. BOWLER: I think, in terms of looking at some alternatives and looking at, say, to get the strawman started, something that's going to be meaningful, that we can measure. Obviously, if you could satisfy all the needs of adults and everything else, and go in and test the thirty foot drawdown at four pools for four months, it would be ultimate. I mean, it would be the best of testing.

MS. WIK: But what would you compare the beta pools that you receive under that test to?

MR. BOWLER: The priod -- okay. Rightfully so, in terms of existing travel time or data showing travel time from McNary, for example, is taking the mean over the number of years of data versus the mean travel time if you, in fact, could do that, depending on a given base flow, which is another -- trying to simplify it without getting too complicated at this point.

MS. WIK: But, those are valid questions.

MR. BOWLER: Sure.

MS. WIK: How will you compare data, if we are --

MR. BOWLER: Sure, they are valid points. All I'm doing is trying to get a strawman in terms of

testing capability irrespective of how the comparability of existing information versus what we would do; but compared to the needs of testing, we probably need two months. We need a significant drawdown if you're going to come up with some reasonable testing of a significant number of fish that would have to come out of the system or picked up at Lewiston, assuming a bypass facility would not be functional or those types of things. So, I think if you maybe start with the bottom up in terms of ultimate test, not worring about all the other variables at this time, April 15th, June 15, I would even say to go back to spillway crest fifty feet. Four reservoirs. That's a strawman just to throw out.

As to how you might evaluate travel time under those circumstances, keeping in mind we have no collection, et cetera, the fish would be picked up in the system where they will be marked, able to travel time from Lewiston to McNary Dam, probably would be a scenario. Would that be the nature --

MR. McCONNAHA: But, the question seems, if you're just lowering -- lowering the Lower Granite and you're going to mark in Lewiston, collect at Goose, if you're going to lower them all four, you're going to mark at Lewiston, collect at McNary?

MR. BOWLER: Right.

MR. McCONNAHA: Then the next jump, then, is to get back into the mud on the four pool lowering idea. What are you going to do with the adults in the lower three pools and those kind of things?

MR. BOWLER: Sure. Sure. All I'm doing is starting out with a strawman as -- as the best of tests, without all the noise right now. I know this, that is the best of tests and its equivalent and then build on that.

MR. PETTIT: I don't think we have enough time to do that --

MR. BOWLER: Maybe you don't.

MR. PETTIT: -- if we're going to have to deal with having something ready by mid-March.

MR. BOWLER: Other than you can identify the environmental impacts. Not that that's the preferred alternative, but you would identify the impacts. Obviously, we have adult problems. Obviously, we have other intake problems. We have got nitrogen problems. We have got possibly this problem and that problem. You would identify that under the EIS, would you not? Not that that's the preferred alternative, but that would give you the range of --

MR. ANDERSON: But, there's a point here.

Our job here is not to produce an impact statement. Our job is to accomplish a sound test that gives us some information. So, just a way out --

MR. BOWLER: With given levels pf impact. But we have to know what those given levels of impact are based on those alternatives. I mean we can go back and design something that's going to give us the least impact and then decide whether that's going to give us any meaningful information. You know, get all -- we can put the variables on the table and say the least impact or all of the things that might happen, not that they are not measured; and, then, we can say, Well, with that will seven twenty-one in Granite for two weeks give us any meaningful information. Probably no.

MR. ANDERSON: Steve?

MR. PETTIT: I think there's another approach; and, you know, we are all familiar with these fish velocity rule curves that were passed around at the Salmon Summit; and we have seen them at other meetings, too. Is there a way to just strictly go with that by -- in a period when it is not going to affect fish, like in the middle of summer or in the middle of winter during the low-water window. Perhaps start drafting those pools down to spillway sill and test whether this curve is accurate or not.

MR. ANDERSON: Okay.

MR. PETTIT: Then, you're going to have to, like Chip said, get your calculator out and have some faith in the model.

And how would you measure the velocity in said pool at six eighty-one spillway crest or at seven twenty-one for the ladder operation?

MR. McCONNAHA: Are you talking about Granite pool?

MR. GRAHAM: We have got cross sections all throughout the reservoir, and I think what we put together for the Salmon Summit was just a quick and dirty -- the bathtub example, that was a pretty good one. I think, if you wanted more specific velocity information, we could run a model and give that to you.

MR. PETTIT: You know, I think that should be part of the alternatives that you look at.

MR. BOWLER: But I think the ultimate response is the fish response and not -- there's going to be noise veritability from year to year on the fish response, but the question that needs to be answerd is, is there an equivalent fish response to that. And you almost have got to test that. And if you -- and you may have to do it two or three years to take some of the natural noise out of it or whatever. But, the

assumptions are there that it's velocity related. It's time related. Survival is time related and all that. But you have got to almost work with the fish to see if there is a significant reduction in travel time that we are making the assumption that it is equivalent to velocity, and it's the assumption it is survival and all this other stuff. But you have to -- we are all working on predicated assumptions there that we are trying to test.

MR. ATHEARN: I think I captured on here at least the four main points that you had. And I want to make sure that I have got those. And I guess I would assume that if these actually become pretty much sideboards, if this is the ultimate or the most that could be done in a study, maybe we can focus down from there, bringing in what Steve mentioned.

But is this pretty much what you had in mind: four pools, April 15th to June 15th, lower the pools to spillway crest, release fish at Lewiston to be recovered at McNary?

MR. BOWLER: That would be an alternative. One alternative.

MR. ATHEARN: I understand. That is the broadest --

MR. BOWLER: That's probably --

MR. ATHEARN: -- alternative.

MR. BOWLER: -- one that's on the low end, right, I would suspect for this consideration.

MR. ATHEARN: Right. So, we can -- for nothing else, then, for right now, let's put Plan 1.

MR. CRASE: Why don't you say July 15th to include fall chinook in that migration?

MR. McCONNAHA: At the time, I made the decision not to.

MR. CRASE: Well, maybe you don't want to --

MR. McCONNAHA: No. That is --

MR. BOWLER: That's valid.

MR. CRASE: -- make that one as part of the ideal experiment.

MR. BOWLER: The summer migration are a different -- kind of a different issue; but this design, I think, mostly is working with spring migrants.

MR. PETTIT: I think you're going to be forced to look at the other.

MR. ATHEARN: So, you want to change that to July -- July 15th, then?

MS. WIK: Do we pretend to know --

MR. BOWLER: Or even longer.

MS. WIK: Do we need to go even longer than

that if we are going to really look at fall chinook through the system of four reservoirs? Aren't we talking about longer than July 15th, if we're going to do it?

MR. BENNETT: I think the data indicates that we need a longer period of time than July 15th.

MR. BOWLER: How far would you go?

MS. WIK: Yeah. How far would you go?

MR. BENNETT: Fifteenth of August.

MR. BOWLER: Okay.

MR. ANDERSON: So, shall we not, then, define what you're going to test here? You're going to mark fish so you will learn something about their movement through the system. You can look at supersaturation. You can observe the adults stacking up at Ice Harbor. I mean -- and I don't mean to be facetious, but --

MR. BOWLER: Uh-huh.

MR. ANDERSON: -- I mean --

MR. BOWLER: No, right. Right.

MR. ANDERSON: We need to start putting down what exactly it is we are going to do here --

MR. BOWLER: Exactly.

MR. ANDERSON: -- so we can --

MR. SATTERWHITE: We need to look at a remedy for adult migration. A short-term remedy that will

work will address that issue.

MR. ANDERSON: And that, perhaps, we need to assign a task group just to do that. Can we collect adults in Ice Harbor and transport them? You know, that was discussed in the Salmon Summit.

MS. WIK: Well, will the adults find their way into the Ice Harbor facility for collection, given a hundred percent spill conditions? Those are questions that would need to be addressed.

MR. BOWLER: Well, why don't we -- why don't we develop some ranges of alternatives now, I mean, rather than getting too involved; and then we can pick each one of them apart --

MS. WIK: Okay.

MR. BOWLER: -- in terms of the problem.

MS. WIK: Okay.

MR. BOWLER: Okay. This is on the lower end.

MS. WIK: Uh-huh.

MR. BOWLER: Well, let's work our way up.

MR. McCONNAHA: Can I suggest that we separate the spring period from the fall? I agree that the fall chinook are -- I don't want to ramble on either -- but they are really a different beast. I mean that -- that schedule unduly makes this proposal look even worse than it might otherwise be if we go all

the way from April 15th to August 15th. We might just want to separate it into April 15th, June 15, looking at spring migrants. And then a separate proposal is June 15 to August 15.

MR. BOWLER: And I agree with that. And I think just in terms of sampling right now, the problem is if you were just to look at it to get fish samples to work with and then the comparative -- we have no previous data to speak of on fall chinook, and to just go out and collect fall chinook marked during that period of time would be difficult. So, I think Chip is right. There are two different time periods. We don't need to address them both, but there ought to be a spring period and a summer period.

MR. ATHEARN: What was the summer period that you suggested?

MR. McCONNAHA: Well, I would set up August 15. So, it would be, I suppose, June 15 --

MR. BOWLER: June 15 to August 15.

MR. SATTERWHITE: Mike Satterwhite. I would like to make a comment here.

For those people that are listening to what's going on here and are hearing August 15th, we are talking about what I think are realistic biological realty for the fish concerned. These are -- this is

just the time period when the fish are in the river. Includes spring and summer chinook and fall chinook, and that's when the fish are present. And what we are doing here is sitting a window that deals with the biological realty, the requirements of the fish. Okay?

Does anybody in the audience -- do you understand what I'm trying to say here?

(No discernible response made.)

MR. SATTERWHITE: We are looking at the biological realty when we are talking about the window in which the fish are present, and that's the point I'm trying to make. And the problem we have to deal with really is not limited to April 15th to June 15th migratory period which is somewhat arbitrarily set by the Fish Passage Center, which are the people that have been dealing with fish migration over the past years. We have got a big problem with fall chinook which migrate later in the year, and that's why we are talking about August 15th.

MR. KINNEAR: That's reasonably inclusive for juvenile migration of fish --

MR. McCONNAHA: Yes.

MR. KINNEAR: -- and not intended for the adult migration which --

MR. BOWLER: To begin with, for test

protocol --

MR. SATTERWHITE: Right.

MR. BOWLER: -- we need to separate them. Because you test them -- they are tested differently.

MR. KINNEAR: Uh-huh.

MR. BOWLER: So, all we are doing is just separating them for test purposes.

MR. BENNETT: Do we really have the numbers of fall chinook to run any kind of a valid test?

MR. BOWLER: We probably don't.

MR. ANDERSON: Probably not.

MR. BOWLER: That's why I was making that point. Test protocol is different for those two fish.

MR. ATHEARN: Did you say you want to hit some other plans and proposals?

MR. ANDERSON: Yeah. Bert suggested let's not take potshots at them now. Let's put them in --

MR. BOWLER: Yeah. We need to develop some other alternatives.

MR. ANDERSON: Steve, recap the one you have.

MR. PETTIT: Well, I think at the other end of the spectrum, if we are looking at the extremes, purely physical test that would have the minimum impact on the fish in the river. Something you could do during the -- in the water -- I'm just using these

because the in-water windows that have been already agreed upon by consensus have the least effect on the fish in the river, and that's a summer window and a mid-winter window and do some physical drawdown to the extremes down to spillway sill level, and "X" number of points in between to get the most data points you would want.

MR. ANDERSON: Okay. The windows -- let's specify the windows. The summer window is?

MR. PETTIT: Boy, I think it is mid-July to mid-August.

MS. WIK: Yeah. I think it's sixteen July to fifteen August.

MR. ANDERSON: Okay. And the winter is what?

MR. PETTIT: December 15th to March 1st.

MS. WIK: Yeah, it varies. But roughly January -- the month of January and February would do the same.

MR. ANDERSON: Did you get those, Jim.

MR. ATHEARN: No, I didn't.

MR. ANDERSON: Summer window is July, August.

MR. PETTIT: Right.

MR. ANDERSON: Mid-July.

MR. PETTIT: Right.

MR. ANDERSON: July to August?

MS. WIK: No. Mid-July to mid-August.

MR. ANDERSON: Okay. One month.

And the winter was?

MS. WIK: One January to end of February. I think would be the best one.

MR. ATHEARN: One January to the end the February?

MR. ANDERSON: Yeah.

MR. BENNETT: How are you coming up with these dates, Steve?

MR. PETTIT: These are the established in-water windows where the -- if the Corps would do some in-water work, they are allowed to go in and do it during these time periods because we have determined that that will have the least amount of impact on both juvenile and adult passage.

MR. BENNETT: Okay.

MR. KINNEAR: Is the winter period more preferred than the summer period?

MR. PETTIT: Yes.

MS. WIK: Yes.

MR. PETTIT: For obvious reasons. It's a longer period of time, and there's really no movement involved because the water temperatures get down.

MR. BENNETT: Certainly that July 15th

period, though, is of concern from a fall chinook standpoint.

MR. PETTIT: Right. So, then, what you test is a time relayed cross sectional area of reduction to particles -- there I've said that cruel word again -- travel time. I'm not quite -- I'm not a hydrologist. I don't know how you measure this physically, but I'm sure the hydrologists in the room could add to that.

MR. GRAHAM: I'm not a hydrologist either; but, if you want to measure in the field, you can by using a velocity measuring device. The Corps has a number of them.

MR. PETTIT: To the best of your ability to test the relationships that we're entering this whole debate on. I mean, if you reduce the relationship assumption, if you reduce the cross sectional area, you would get a velocity equivalency there and test that the best you can in the-- you know, go out and test the physical environment and see if to the best of our ability if we are --

MR. ATHEARN: Steve, could you list again what you had then for test elements? Specifically what you were talking about.

MR. PETTIT: I would suspect that you would go down to spillway elevation, six eighty-one, I

believe it is --

MR. ATHEARN: Okay.

MR. PETTIT: -- spillway sill, maybe some -- that's about forty-five feet down, if I'm not incorrect. Then maybe a thirty, a twenty, you know....

MR. ATHEARN: Ten foot increments?

MR. PETTIT: Right. You probably would want to include the seven twenty-one because that's what everybody is familiar with.

MR. KINNEAR: Are you proposing this just for Granite, or are you proposing this for all four pools?

MR. PETTIT: I don't think it is necessary. I think, if you do it for one pool, you can make some general assumptions for the other pools. Again, I'm not -- I don't know.

MS. WIK: Would you want to propose as an option to look at adding more water to improve flows to get it closer to the range that we might be looking at during the fish season just as a thought? Again, then, you're back to the question of trade-off between additional flow during these windows versus additional flows during fish migration; but, you know, if we are talking -- if we're going to throw out creative ideas here, I guess that is a question.

MR. PETTIT: Well, at that time of the year,

if you want --

MS. WIK: Because you are pretty low at that point in time.

MR. PETTIT: -- maximum discharge capacity of Lower Granite, you have got a 25 K Granite -- at Dworshak and probably twenty at Brownlee.

MR. ATHEARN: Sarah, what you're talking about then is all varying the flows?

MS. WIK: Yeah.

MR. PETTIT: Not varying.

MS. WIK: I guess not varying during that but --

MR. PETTIT: During the winter it is very low.

MS. WIK: -- I guess, supplementing it.

MR. PETTIT: So, I guess you're -- can you double winter-based flows?

MS. WIK: Right. Not varying them within that but supplementing to....

MR. ATHEARN: Well, for purpose of discussion, you know, I can easily vary anything.

MR. PETTIT: You might add flow augmentation as one of the elements.

MR. ATHEARN: But that -- your objective is to measure the physical response?

MS. WIK: Correct.

MR. PETTIT: Yes.

MR. ATHEARN: In terms of mean velocity, cross sectional velocity and --

MR. PETTIT: Right.

MR. ATHEARN: -- probably spill effects, saturation, something -- something in the tailrace in terms of the circulation pattern. What else? I'm just trying to list these things down.

MR. PETTIT: And the physical impacts on the levee system.

MR. ATHEARN: Yeah.

MR. PETTIT: And on the marinas.

MR. ANDERSON: Do you have that?

MR. KINNEAR: Not to be used as a trade-off for lack of water to move fish in the summer or in the normal migration period.

MR. ATHEARN: But --

MR. ANDERSON: So, really the objectives are, Jim -- I don't want to put words in your mouth. The objective in this test is to determine phyiscal response in a number of areas. Water travel time, structural response --

MR. PETTIT: Right.

MR. ANDERSON: -- on levees and other

facilities and so on.

MR. McCONNAHA: It doesn't have to be all mutually exclusive either. You could do this as a prelude of doing a biological test later in the season since you could go to more extremes with this. You can take it down to spillway, where you can't take it down to spillway when the fish are there. You could do it in the winter and give you a more extreme test just from the physical effects.

MR. ANDERSON: You can't take the spillway down because of the adult passage?

MR. McCONNAHA: Right. And I mean -- and, also, yeah. Also, you might not be as inclined, for any number of other reasons, besides biology, not to go down to spillway in the spring. Because if you can do it right now, you can do that possibly in addition to a test some other time from a biological standpoint. I'm just saying that these aren't necessarily all mutually exclusive.

MR. ANDERSON: Uh-huh.

MR. ATHEARN: Is there anything to add to this list?

MR. ANDERSON: Duration. I don't believe we've said anything about duration within the windows.

MR. PETTIT: You have a two-month window

there more or less.

MR. ANDERSON: We're just looking at --

MR. PETTIT: You want to make each incremental test long enough so that you could physically measure what you're after. You can do that in three days, or you can do it in a week.

MR. KINNEAR: What are the subsequent impacts of refill on the rest of the system then, or what are the potential impacts biologically?

MR. ANDERSON: Well, if you go down to spillway at Granite, you're talking two hundred sixty thousand acre feet, two hundred seventy thousand acre feet to refill.

MR. LOVELIN: About ten days.

MR. ANDERSON: Yeah. I was talking if you had to --

MR. BOWLER: I believe you could have it back at full pool by the fifteenth of March.

MR. SATTERWHITE: I was told that Lower Granite Dam filled in two and a half days shortly after it was constructed and --

THE REPORTER: Pardon me, I couldn't understand you.

MR. SATTERWHITE: I was told that Lower Granite pool filled in two and a half days shortly

after it was constructed at about eighty-five thousand cfs.

MR. ANDERSON: Yeah. I think four hundred eighty thousand acre feet of storage; that's about right.

What minimum release would you have to have at Granite? What discharge would we have to have at Granite during those windows? Is there any?

MR. PETTIT: Winter minimums. You would have to maintain winter minimums.

MS. WIK: Well, if you're talking incremental, Steve, are you going from six eighty-one to seven hundred to seven ten, seven twenty, you would be -- you would be filling it back up throughout that course of time, anyway, wouldn't you?

MR. PETTIT: Right.

MS. WIK: So, you wouldn't be looking at filling the entire from six eighty-one to seven thirty-three at the end of the test if you're working --

MR. PETTIT: The way you test it is on the way down.

MR. KINNEAR: Yes. Unless you tested on the way down.

MS. WIK: Yeah. That's the question. Which

way would you do that?

MR. ANDERSON: I think logically you would test it on the way down in case we had some major physical problem that we can observe and refill immediately. Levee failure or something like that.

MR. PETTIT: I don't think you need to debate it much longer; but, you know, now you have got the in-between with the fish, I would assume you would look at some kind of a test, since you have been debating all morning long, that the goal is to do something biological.

MR. ANDERSON: Well, can we do that, the one you suggested earlier? Put that one down to Granite only?

MR. PETTIT:. Yeah. I think that's one that's been proposed in black and white more or less in several literations by Idaho people.

MR. ATHEARN: Did we call this a biological test then? Is that --

MR. PETTIT: I don't know what you would call it. Anybody else have a better word?

MR. BOWLER: Alternative 3.

MR. ANDERSON: Yeah.

MR. PETTIT: It was Granite to seven twenty-one, and you might put in parentheses behind

that, maintain adult passage. I mean, that's the goal. Maximum drawdown, that's a goal.

MR. ATHEARN: I guess it's a little -- a lot late, but is this large enough for everybody to read? Should I write larger?

(No discernible response made.)

MR. ATHEARN: Granite lowered to seven twenty-one.

MR. ANDERSON: The time period would be sometime after April 15th.

(Unidentified person entered room.)

MS. WIK: Do we have a Loren Kronemann in here?

MR. KRONEMANN: Yes.

MS. WIK: Here's a phone message for you.

MR. KRONEMANN: All right.

MR. ATHEARN: For what duration?

MR. PETTIT: Well, Option A under this No. 3 would probably be we would do it during the lock outage time period. Option B would be for a progressive longer test for the whole juvenile migration.

MR. KINNEAR: The lock outage --

THE REPORTER: Excuse me, I couldn't hear you.

MR. KINNEAR: -- doesn't have a biological

concern.

MR. PETTIT: Well --

MS. WIK: Unless you're saying move the lock outage --

MR. PETTIT: Right. We move the lock outage to --

MR. BJORNN: Should we confuse the issue by that? Let's just say --

MR. PETTIT: Maybe not.

MR. BJORNN: Let's just say we are designing the test where we're going to draw it down, Lower Granite to seven twenty-one and see what happens.

MR. PETTIT: April 15 to June 15th.

MR. ATHEARN: Okay. We can do that time frame and say either a two-week test or a four-week test or whatever, you know.

MR. BJORNN: Whatever is necessary for the migration.

MR. ATHEARN: Yeah.

MR. PETTIT: Realistically, if you are going to compare it to previous data, you would probably want to do it for that long of time period.

MR. ATHEARN: So, you don't want to suggest week increments?

MR. BJORNN: Are you thinking here, Steve,

that a drawdown would be no lower than seven twenty-one, but it might be less than seven twenty-one depending on what the inflow is?

MR. PETTIT: Yeah. I think, as you get into the parameters of this test, you're limited by the capacity of the spillway to successfully abate the nitrogen. So, that's eighty. And then I have been told by Corps representatives that if you try to run a unit at less than full pool, you begin to get cavitation effects; and juvenile mortality goes off the charts. And whether that is actually correct or not, I don't know; but I've been led to believe that that is a real factor. So, that would probably lead me to believe that if you exceeded 80 K you would have to start filling the pool because you wouldn't even want to run a unit even ten below without causing severe cavitation.

MR. ATHEARN: Ted, what you're suggesting, though, about perhaps being less, if we keep in mind maintaining adult passage, that forces us to stay at that lower level or quite a bit higher because there isn't adult passage in between.

MS. WIK: Yeah.

MR. BJORNN: Well, there isn't any adult passage in between?

MS. WIK: No.

MR. BJORNN: The emergency chute is not functional higher than that, and seven twenty-seven is the sill to the -- to the normal ladders so....

MR. PETTIT: Is that a fact? I mean, I've heard this proposed that you wouldn't want to have water coming up into that pipe.

MS. WIK: Well, this is --

MR. PETTIT: Is it the fear that the fish might stay in that pipe and never come out, or is it physical injury in the water or what?

MS. WIK: Well, this is -- seven twenty-one is assuming you cut off the pipe quite a bit, Steve, already because the actual exit is down to lower than that. And I forget --

MR. ANDERSON: Seven twenty.

MS. WIK: Yeah. But I'm not sure of the exact elevation where that pipe comes out of the wall, but that's -- I mean, that's what you're limited by. You have got to have some sort of an exit chute, and it's not clear up at a higher elevation.

MR. ANDERSON: But is that not a minor structural modification?

MR. GRAHAM: We could add or subtract the pipe. I mean, we can put on a half a pipe on there if

it's a round pipe; and we can service the adults --

MR. BJORNN: I think it is a round pipe down there.

MS. WIK: Yeah.

MR. GRAHAM: Of course, the lower part of it is half round.

MS. WIK: Yeah, but the upper is -- I think -- you know --

MR. ANDERSON: Would you have really a hard constraint, the question is.

MR. GRAHAM: It's easy. We could cut the pipe or modify the pipe if we want to put a half round on it. We would have to send divers out to do it, but I mean we could. That's a minor modification to the pipe, and it could be done. I don't see a problem.

MS. WIK: Well, except at what point -- at what elevation is the pipe exactly to where water is going to be backflowing into that? I mean, I think that's the question. It's not just a matter of adjusting the pipe.

MR. GRAHAM: I don't know what a fish would do when it hit the water. I think the concern is it might plug up the fish because they would hit that water, and they wouldn't swim -- it wouldn't swin out of the pipe; and I guess -- I'm not so sure what the

problem is. What would happen if we had a submerged pipe, the end were submerged?

MR. PETTIT: I'm not sure. I don't think that is a hard contraint myself.

MS. WIK: Well, I think we need to look at it because, depending upon how the system operates with the pumps and where the exit lies, it's -- it's not a problem of the fish hitting the water. It is what's going to happen if the forebay elevation is higher where it is forcing water into the system. Or, you know, I think we need to --

MR. PETTIT: I think the limiting factor is where the intakes for the three auxillary pumps sit, is it not?

MS. WIK: I'm not sure, Steve.

MR. BOWLER: Can you take that to seven ten and still maintain adult ladder operations?

MR. GRAHAM: Well, there's a problem now if it extends down below seven twenty-one; and I can't tell you if it's seven eighteen. Do you know what that is?

MR. PASSMORE. I know you sent me a drawing, but can't recall off the top of my head what it was. But the lower part is half round.

MR. GRAHAM: So, for the seven twenty-one

test -- and I'm not sure. I think originally the seven twenty-one was -- was talked about because that's where we thought the end of the pipe was. Well, it's somewhere -- it's below seven twenty-one.

MR. PETTIT: Below seven twenty-one.

MS. WIK: So, if it's --

MR. GRAHAM: And I don't think we've ever run that system, and I don't know -- we know the pumps work. We know the pipe is still there.

MR. ANDERSON: Let us leave it this way, if we pursue this further, that's a work assignment for our next meeting that we come back with some better information --

MR. PETTIT: I would like --

MS. WIK: Right.

MR. ANDERSON: -- and with better knowledge about the biology.

MR. GRAHAM: But one point I would like to bring out, though, is that we have -- we have erosion protection on the earth fill portion of the dam; and that seven twenty-one is just -- I don't know if it was coincidence or not -- but it jives with how low we can draw the reservoir down without impacting that embankment section.

MS. WIK: Right. The seven twenty-one didn't

come from the emergency fish ladder chute, I don't think.

MR. GRAHAM: Well, I was never around when that number was brought up.

MS. WIK: Yeah. That may be --

MR. ANDERSON: That's a further refinement of the constraints when we actually start getting serious about a test.

MS. WIK: Yeah.

MR. ANDERSON: We are going to have to address that.

MR. PETTIT: Bert has an idea. Make Option 3 the lowest minimum pool we can get with the adult passage.

MS. WIK: Okay.

MR. BOWLER: And then take the other variables that we have been talking about which would have to be incorporated into any --

MS. WIK: Yeah, okay. I think that's --

MR. PETTIT: If we go for the lock, all these things have to be addressed.

MR. ANDERSON: Sure.

MR. PETTIT: The absolute minimum at which the adult ladders can operate.

MS. WIK: That's a good resolution.

MR. GRAHAM: We think they will. They need to be tested. We don't know. They have never been run at seven ten or seven fifteen or whatever that is. We need to look at that at Granite, test that at the very optimum -- the very lowest possible operating level for the ladders.

MR. McCONNAHA: Can the ladders be tested during the winter without the fish?

MR. GRAHAM: Now, I'm not sure what you want to test.

MR. McCONNAHA: Well, I'm not sure --

MR. GRAHAM: The pumps work and --

MR. McCONNAHA: -- what you guys are talking about. Maybe you can't test that way.

MR. PETTIT: They have already tested the auxillary water pumps, and they provide a full 75 K in the ladder.

MS. WIK: Yeah.

MR. GRAHAM: The pumps work and the pipes there. We just have never had to run the fish through there because we have never had to draw the reservoir down.

MR. McCONNAHA: I mean, I would just hate for us to get into a situation where we get into this and find the ladder isn't working a hundred percent, and

the two remaining sockeye can swim to nothing.

MS. WIK: Well, I guess, when we throw that out, don't we need with any of this, at least when fish are in the river, to have an emergency plan or what are we going to look at here to where we say, We are causing so much negative impact that we need to stop that.

MR. PETTIT: Oh, yeah.

MS. WIK: I mean, wouldn't you --

MR. PETTIT: Right.

MS. WIK: I mean, that's a given if suddenly it becomes obvious that that emergency chute is not passing fish, for whatever reason, even though it physical functions --

MR. PETTIT: Right.

MS. WIK: -- we would say we need to re-evaluate.

MR. PETTIT: The ladder can work fine. The fish also have to be able to find it. We haven't even got to that yet.

MS. WIK: That's....

MR. ANDERSON: Any more description of these alternatives, Steve? And we'll call it the Pettit plan.

MR. ATHEARN: We had on the other one about

where we release and recover fish. In this case, you're talking about release at Lewiston and recover at Little Goose?

MR. PETTIT: Correct.

MR. BJORNN: You would have marked fish releases upstream someplace and then recovery at Little Goose.

MR. PETTIT: And I think you're bound by the nature of the beast to use the Lewiston traps. Because if you mark fish at hatcheries, you're not quite sure how they are going to behave or whether they are going to be at Slot "X" -- Spot "X" at the right point in time at the head of the pool. So, you want to mark a migrating smolt; and you assume a fish reaching the trap is well on its way. I don't think you have another option.

MS. WIK: Okay. Can I throw out one alternative for consideration?

We are assuming we need to pick up fish at Little Goose because of the PIT tag facilities. Would it be worth exploring using juvenile radio tags as an alternative to where you could get actual travel time to Lower Granite via additional receivers similar to what Ted's already got out there now. Is that --

MR. PETTIT: Quite frankly, that's the first

time that's been presented to me.

MS. WIK: Yeah.

MR. PETTIT: And I didn't know the tool was there, and it's been used in the past at Granite. It could be an option.

MS. WIK: Yeah.

MR. PETTIT: It could be an option.

MS. WIK: Okay. I think that's worth considering because it does give us more direct -- I mean, if we can assume that the type of tag doesn't have an effect on travel time, then we could apply that directly across comparing travel times from the confluence down to Lower Granite.

MR. PETTIT: Is there any --

MR. ANDERSON: That applies to any alternative then.

MS. WIK: Correct. Except that we do have -- we know we have a good data set -- or at least I think we have the best data set of travel time from the confluence to Lower Granite. You know, points on down river get, you know, fewer and fewer in terms of the number of data points we have, so....

MR. BJORNN: I guess one of the things that probably needs to be stressed on this is that it's not -- I don't think we are talking about pulling down to

minimum adult passage level and holding it there during the whole time. We are talking about a variable level drawdown.

MR. ANDERSON: The drawdown rate, I guess we concluded, Greg, is a maximum of two feet per day.

MR. BJORNN: Well, excuse me, not the rate; but that we would --

MR. ANDERSON: Want to test it?

MR. BJORNN: Yeah. As Steve said earlier, if the flow goes up to where we're starting to get a real super -- nitrogen supersaturation problem, we have to bring it back up and start passing the water in another way.

MS. WIK: But, is that an end to the test; or is that trying to see if we can pick out the difference in travel time and then whether it is flow or because of the drawdown or --

MR. BJORNN: Well, not necessarily. You could look at it in the sense of what we often get is a spring pulse of water in late April, and then we get a lull again in mid-May before we get the high elevation runoff. And so, you might want to be flexible enough in your drawdown that you respond to that.

MR. PETTIT: There's going to be a bunch of biological concerns there, and exceeding the flip lip

capability is one of them. And the other is, if you're marching along on this test and your adult passage deteriorates to zip because they can't find the ladder entrance because your spill -- your powerhouse collection facility is inoperative, then you're going to have to stop also. So, you know, these things, I don't think we need to dwell on that too much.

MR. BJORNN: We may need the time to let the fish get through the system too. So, you just don't shut it off when you get to a certain point. You make the adjustment to keep the test going.

MR. PETTIT: Well, I would think that you would build that into the test, you know. An option for flows over 80 K and also inability for the adults to find the entrances.

MR. ANDERSON: Have you got everything down? Okay. We've got --

MR. ATHEARN: I don't know if anyone said anything else.

I would suggest being even more creative on this and getting back to -- I don't remember who now mentioned the concept of having more replicates throughout the season -- but another way to consider that would be to have Granite down, Goose up and Lo Mo down and Ice Harbor up. And if this radio tag thing

would work, track those fish through a fast pool and through a slow pool, another fast pool and slow pool as a food for thought here.

MR. BOWLER: Why don't you list that as another alternative.

MS. WIK: Yeah.

MR. ANDERSON: Yeah.

MS. WIK: Alternative 4.

MR. PETTIT: But this alternative assumes that you're going to maintain adult passage at all four projects, and that limits you to the normal five-foot operational pool level --

MR. ATHEARN: Unless you were to trap fish in a mobile ladder.

MR. BJORNN: Let's talk about that as another option, if you want to.

MR. BOWLER: Yeah.

MS. WIK: Yeah.

MR. BOWLER: I think we need to not get too hung up on the problems with them now. We want to scope some range of alternatives here and something may just shake out, you know, not to be feasible. But those ideas, we need to capture those ideas just to be safe; and that ought to be the next alternative and let's look at some alternate ranges in each of the

reservoirs without getting too hung up on the problems associated with it.

MR. ANDERSON: Okay. This is the alternate plan, so Athearn can write it all down.

MS. WIK: Yeah.

MR. ATHEARN: Well, all I was suggesting was Lower Granite and Lower -- it's handy we named them this way --

MS. WIK: Lower lowers.

MR. PETTIT: Both are lowers.

MR. ATHEARN: Lower and Lower to "X" level. Granite at seven twenty-one, whatever we decide. Little Goose, Ice Harbor near full.

MS. WIK: Normal operating pool.

MR. ATHEARN: And the time frame, I would presume, would be the same as what we identified before, April 15th to June 15th. And this concept really requires radio tags.

MR. BOWLER: Is the juvenile radio tag functional?

MS. WIK: It's my understanding that they are functional. It would have to be built; but, yeah, we looked into it for this year's test. They are certainly out there functioning.

MR. BENNETT: What's their longevity, Sarah?

MS. WIK: I think that varies with what you want in terms of --

MR. BENNETT: I mean, you are kind of limited to chinnok, aren't you?

MS. WIK: We are talking up to a year in terms of the adult.

MR. BENNETT: Yeah, but --

MS. WIK: I would have to look back to my information, but we are talking roughly two months as I recall.

MR. BOWLER: Now, what would be the advantages on this one?

MR. ATHEARN: What we are looking at with a single pool concept is just the fish movement there and assuming some rate of change; and, as Chip pointed out, depending on what stage of smoltification you are at with these fish and the variability that Sarah talked of, three to twenty days right now of fish movement time, with a single pool, you run the risk that you're misled in seeing a difference. If you have two pools and you see a change twice, it gives you the opportunity to see that they did go more quickly through Granite. They slowed down at Goose, but they picked it back up at Lo Mo.

MR. BOWLER: I don't think that's a likely

response to the physiological part of the problem.

MR. PETTIT: Of course, I don't know. Is it manditory that these pools are similar in nature and in distance? I mean. --

MR. ATHEARN: That's another -- yeah. In all likelihood they are generally similar in terms of length and what have you.

MR. ANDERSON: In terms of volumes --

MS. WIK: You could look at a rate.

MR. ANDERSON: -- they are fairly similar.

MS. WIK: Yeah.

MR. LATHAN: Are we looking at pool levels or are we looking at velocities through the reservoirs?

MR. ATHEARN: You mean picking a target velocity?

MR. LATHAN: Picking a target velocity instead of target numbers.

MR. ATHEARN: I hadn't specified. I was just thinking in terms of pool lowering with that assumption. But, if somebody wants to suggest that, that's another approach. If you could estimate what velocity it would actually get to be.

MR. PETTIT: This assumes a major chaotic adult passage through the reservoirs.

MR. ATHEARN: I wouldn't -- I wouldn't -- I

hope not. This assumes that we can come up with a way of avoiding the problem.

MR. ANDERSON: Well, I see one -- one of the assignments we need to grapple with that was discussed briefly at the Salmon Summit is the feasibility of trapping adults, whatever the project.

MR. BOWLER: It needs to be explored.

MR. ANDERSON: Yes. It needs to be explored. We have got to make an answer on that question. I'm -- I'm beginning to list some work assignments that we will have to grapple with in the next week or so.

Why don't we -- why don't we take a lunch break.

MR. McCONNAHA: Are you done listing alternatives?

MR. ANDERSON: Well, I'm not sure that we are. Do you want to list another alternative or two and then take a lunch break?

MR. McCONNAHA: I was --

MR. BOWLER: We can eat later.

MR. McCONNAHA: -- we need lunch.

MS. WIK: I think we need to --

MR. ANDERSON: What I was going to suggest is I think we need to come back, then, and address some of these biological issues. The adult passage, some of

those -- your biological testing questions unless someone has another proposal. But I think we need to begin to refine these and zero in on a test plan because we just can't lay out half a dozen alternatives. We have got to scope these down.

Lunch, back at quarter after. Okay.

(Whereupon, the meeting was in recess at 12:27 p.m. and subsequently reconvened at 1:36 p.m., after which the following proceedings were had and entered of record:)

MR. ANDERSON: Why don't we -- since I don't know when everyone has to leave this afternoon, let's at least establish our next meeting and talk about the eighteenth meeting as well as. Next week the meeting is scheduled for Kennewick.

MS. WIK: Kennewick. Cavanaugh's in Kennewick. The same starting time, twelve April.

MR. ANDERSON: Does that fit with everyone's needs?

MR. SATTERWHITE: 9:30.

MR. BOWLER: Friday.

MR. PETTIT: Do you know where?

MS. WIK: Cavanaugh's in Kennewick. It's on Columbia Drive -- Columbia Boulevard.

MR. ANDERSON: Okay. And then the eighteenth

meeting in Portland. Wednesday, there was a Coordinated River Operations group meeting which basically consisted of the agencies and the operators of the projects; and there was a number of things going on in that arena. But, to get to the bottom line, there is a meeting on the eighteenth at Bonneville Power, Room 106, beginning I think at 10:00 o'clock in the morning; and it's going to involve a good portion of the policy level membership that we anticipate going back to on the eighteenth with our test proposal. So, I would propose that we piggyback our eighteenth meeting on to that meeting; and, if we did that, we would -- we can expect to have our portion of the meeting beginning at 2:00 o'clock. And I would hope in two hours we can resolve any of the policy issues such that we can proceed. So, if no one has a problem with that, I think it would be an efficient way to do it, since we will have those same people in the coordinated river operation meeting.

Mike?

MR. SATTERWHITE: So, the equivalent of this meeting on the eighteenth will start when?

MR. ANDERSON: 2:00 o'clock, Room 106 in Bonneville, give or take on the time on that. Because I really don't know how long this other meeting will

take. The thinking was -- I talked to ~Ned Sikless (phonetic), since he volunteered to host that meeting -- that they would be done by about 2:00.

MR. BOWLER: Usually they get -- try to get done by 2:00 o'clock.

MR. ANDERSON: Yeah. Do you have a feel for that?

MR. BOWLER: I've been to them.

MR. ANDERSON: Does that start at 10:00?

MR. BOWLER: Yeah.

MR. ANDERSON: In fact, I'm sure anyone is welcome to sit in on the other agenda for that day. It will involve the same kind of people.

Is that okay, Sarah, then?

MS. WIK: Unless there's objections from those here, I don't --

MR. ANDERSON: What we will need to do is get a letter out to the members that we sent the initial notice to these series of meetings, which was the coordinating committee of the Salmon Summit. We will get a letter out -- Sarah will get a letter out to those folks saying that we will have this policy discussion on the test at that meeting.

Wayne?

MR. HAAS: I'm not sure, but I think the

flight back and forth from Boise is around 5:00 o'clock.

MR. BOWLER: 5:00 o'clock our time.

MR. HAAS: Do you know when they leave?

MR. BOWLER: 11:30.

MR. HAAS: Do they all come in at 11:30?

MR. ANDERSON: I assume you would hope that we could discuss what we need to discuss within two hours in which case you can get back.

MR. HAAS: The 5:00 o'clock flight, there's a lot of people trying to catch it. And if they leave at 4:00 --

MR. ANDERSON: Are you taking the Fraturian (phonetic) or are you taking the shuttle?

MR. HAAS: Pardon?

MR. ANDERSON: Would you be taking the shuttle?

MR. HAAS: Probably.

MR. ANDERSON: I don't have a better idea. We need to have this meeting on the eighteenth for us to maintain a reasonable schedule.

MR. HAAS: My thought, if there was any way that the other meeting could be moved from 10:00 to --

MR. ANDERSON: Okay.

MS. WIK: Shift it a little bit.

MR. HAAS: -- 8:30, and this one moved to around 1:00 o'clock or something. .

MR. ANDERSON: Okay. I'll tell you what I'll do. I'll discuss that with corporate people on Monday and pass the word to Sarah; and, when she gets the letter out, she can just tell you what the time is.

Any other business we need to take care of before people leave?

What I thought we might do at this point is perhaps we can recap the alternatives that we put on the table, identify any other alternatives that people might have thought about over lunch or had in mind beforehand and get those up; and then I think the next order of business is to start looking at those more critically to see what really makes sense and what is doable. We can do some of that this afternoon. And/or we can look at some of the critical issues and questions on these alternatives in some work groups for report back next week.

MS. WIK: I think we can flush out some of the issues today at least what we need to look at in further detail. Some of it may fall out based on discussion today, so....

MR. ANDERSON: Okay.

Maybe, Jim, you can just kind of quickly recap the four alternatives we have.

MR. ATHEARN: Okay.

First one we had was the one that basically covers everything, all four pools, April 15th, August 15th, lowering the pools as low as we can get them which is to spillway crest, releasing the juveniles at Lewiston, picking them up at McNary Dam and for both spring and summer migrants within the right time frame. So, April 15th to June 15th for spring and until August 15th for summer.

MR. BOWLER: What -- could there be an option of removing turbines and going below the spillway --

THE REPORTER: Pardon me, I couldn't understand.

MR. BOWLER: Removing the turbines and going below spillway crest? Is that -- is there anything lower than spillway crest?

MR. PETTIT: You're getting back to the days when we had skeleton bays, and we tried to run fish through those gates.

MR. BOWLER: I mean, is that -- I'm just asking that question.

MS. WIK: I guess that would have to fall under the category of major structural modifications,

and I --

MR. PETTIT: Plus taking fish through the draft through the skeleton bays was tried --

MR. GRAHAM: Slotted bulkheads.

MR. ATHEARN: We made major modification to the fish when we tried that.

MR. SATTERWHITE: You're talking about lowering the pool even further?

MS. WIK: Even further, Mike?

MR. BOWLER: Yeah. Even further by pulling like turbines out of their --

MR. SATTERWHITE: Walter Bean (phontic) suggested that it wouldn't be possible to lower the pools much below spillway due to the limitations of available passage space of the turbines. If you did it under certain water conditions, you couldn't get enough water evacuated down through those ports to draw them physical through the spillway, again, under some conditions of inflow.

MR. ANDERSON: Yeah, I think that's correct.

MS. WIK: I do want to point out one thing here in terms of the spillway crest. That's elevation at Granite, for example, six eighty-one; but it would be several feet above that, depending upon your flow. For example, I think, you know, at eighty-five

thousand, it's about seven zero four. I'm not sure. But just so people understand that at six eighty-one nothing would be happening because -- because of the head -- you need head on the system to pass the water, so....

MR. ATHEARN: Probably the best way to describe those things is like we are doing to for the '91 operation where we say "near minimum." We would go down as far as minimum --

MS. WIK: Right.

MR. ATHEARN: -- depending upon the operation that actually existed within the reservoir system. It could be somewhat above that periodically, so --

MS. WIK: Yeah.

MR. ATHEARN: -- these things, then, I guess you would say, would be near spillway crest.

MS. WIK: Near spillway crest.

MR. PETTIT: When is this supposed to start, by the way? Changing the subject, but when is this minimum pool operation --

MS. WIK: This year, Jim, I think is what he's asking.

MR. ATHEARN: Oh, the near minimums?

MR. PETTIT: (Speaker nods head.)

MR. ANDERSON: It was discussed the other day

at the Coordinated River Operations, but our anticipated plan of operation is to be near minimum 15 April --

MR. PETTIT: 15 April.

MR. ANDERSON: -- through 15 July. But I think there's a task group looking more specifically at the time frame.

MR. ATHEARN: A task group that's going to meet Monday morning at Portland and go through a list of whatever recommendations that can be developed to take back to that group on next Friday also. I think Monday the 15th, or whatever the fifteenth is, would be the soonest.

MR. KINNEAR: Does that operation level apply only to Lower Granite or --

MR. ANDERSON: The four Snake projects to John Day to an elevation at which we don't suffer major impacts which probably will be in the range of two sixty-two to two sixty-three, which is about five feet below full on John Day. John Day is in the eleven-foot range.

MR. BOWLER: Sarah, do you have a feel at all for full pool, the head, in terms of collection for Lower Granite?

MS. WIK: Well --

MR. BOWLER: I know that the surface is --

MS. WIK: -- we know the collection is better -- or not -- I won't say better, but fish pass more efficiently at higher head --

MR. BOWLER: Higher head.

MS. WIK: -- than they do at the lower. We don't have exact data points to my knowledge, but we do know that passage efficiency drops as you lower the pool. So that -- you know, we have talked about that.

MR. ANDERSON: Let's have Jim recap quickly each of the alternatives.

MS. WIK: Yeah.

MR. ANDERSON: And then lay out anything further that we need, and then we will come back and talk about some of these issues and questions.

MS. WIK: Because that's going to come out on some of the tests, too.

MR. BOWLER: Probably at the Monday discussion about that.

MS. WIK: Yeah.

MR. ATHEARN: That's one end of the scale, Option 1. Option 2 is the opposite end of the scale, which is just a physical test as described by Steve, incremental drawdown to spillway crest in ten-foot increments. The summer period of July 15th to August

15th and a winter period from January 1st to the end of February. Other elements that we talked about was consider fall augmentation. Physical impacts on roads, levees, what have you, and then water velocity measurements and the measurement of actual water movement in the reservoir.

MS. WIK: Jim, can I add one thing in terms of physical impact? I think we would want to add water quality impacts as well. I mean, that's in a sense physical; but it's dealing with more than just your road and levee and that type of physical impact.

MR. PETTIT: Is the impact on the nonoverflow section of the dam significant enough to have it as a separate bullet now?

MR. GRAHAM: Are you talking about the embankment sections?

MR. PETTIT: Yeah.

MR. GRAHAM: Yeah. That's a pretty major thing.

MR. ATHEARN: I was -- I will list the concerns to each of these items.

MS. WIK: Yeah.

MR. ATHEARN: Maybe we will list that there, Steve.

MR. PETTIT: Okay.

MR. KINNEAR: Jim, before you pull that, is there means of indicating that the winter would be preferred than the summer; or is that, in fact, the consensus of the group? You're looking at two different potential times, but the winter would be preferable in terms of at least the impact biologically.

MR. ATHEARN: I think we can note that on here.

MR. PETTIT: I think it probably would be -- probably would be no advantage to go into either one because the basic flow is going to be about the same.

MR. ATHEARN: Okay.

Option 3, we got into biological test alternatives, starting with Lower Granite pool lowering to whatever the lowest level was we can achieve and maintain adult passage.

MS. WIK: Can I kick in here?

That would be seven ten. I checked with the District over lunch, and seven ten is the minimum operation, and there was some hesitancy. But I think we could make the adult fish emergency exit functional between seven ten and normal -- normal operating range. It would require some modification, but they certainly are not major. But seven ten is the bottom because

they need five foot of head on the pumps and the intake for the pumps is seven zero five.

MR. ATHEARN: Okay. April 15th to June 15th. Release juveniles at Lewiston, recover them at Little Goose. That's under the premise of a PIT tag collection. We also talked about the option of radio tags tracking just through the reservoirs.

Four was another alternative. This one had Granite and Lower Monumental lowered and Little Goose and Ice Harbor near full pool. Same time period as the previous one. Use radio tags. Release fish at Lewiston, tracking through the reservoirs slow, fast, slow, fast.

MR. BOWLER: I thought of some alternatives on "X" level. Seven ten at Granite and five zero nine at Lo Mo. Obviously, we would struggle with ladder considerations at Lo Mo. But that would be at least a similar drawdown at Mo as Granite would be; that's twenty-eight feet for full pool.

MR. ATHEARN: Five zero nine?

MR. BOWLER: Yeah.

MR. ATHEARN: Okay. The last one we talked about -- I guess that was it.

MR. BOWLER: There's always the no action alternative.

MR. ATHEARN: Right. I thought there was five on the next one, but there's nothing on it.

MS. WIK: Are there other alternatives that we want to --

MR. McCONNAHA: Yeah. I would like to throw back my on-again and off-again program --

MS. WIK: Okay.

MR. McCONNAHA: -- to try to --

MR. BJORNN: Describe that, Chip.

MR. McCONNAHA: For example, as I recall, it takes three days to bring it down to seven twenty-one; and the Corps had some --

MR. ANDERSON: Two feet per day.

MS. WIK: Two feet a day.

MR. McCONNAHA: I don't remember how many days it took to get it down. And then, anyway, you would have to maintain that at, say, seven -- now this is Lower Granite, I'm speaking of -- and the other pools are maintained at normal elevations. Keep it at, say, seven twenty-one for seven days, bring it back up to normal for another seven days, bring it back down to seven twenty-one and back up.

MR. BOWLER: Pulsing.

MR. McCONNAHA: That's one of the questions you would have to think about. Are you really testing

pulsing here or testing velocity and whether or not that would be sorted out. But you could end up over a season having three replicates of high- and low-flow condition that would be both early and late that way for actual physiological conditions as well. A little extra bonus is conceivably barge traffic could go up during the full time, and you wouldn't loose barge traffic for the entire season. But you would be -- when I say seven up there, Jim, you know, it might be five or it might be eight or nine. Anyhow, the concept here is to try to end up with three low periods and three high periods during the season. And, obviously, you're marking fish at Lewiston and recovering at Goose all during that period.

MS. WIK: Or could you also as an option recover at Granite with the radio tags?

MR. McCONNAHA: Actually --

MR. KINNEAR: Why use radio tage?

MS. WIK: Well, with radio tags, you can recover at Granite at low pool as well.

Chip, why necessarily seven twenty-one? Why not down to seven ten?

MR. McCONNAHA: Yeah.

MS. WIK: Except for the time that's going to be involved in lowering and refilling is -- you're not

including that in the time block of --

MR. McCONNAHA: No, no. That's -- I at one time sketched this out, and I think it ended up -- I don't have it with me unfortunately -- but I think it ended up you get three seven-day periods of each one within a season. April 15, June 15 period, I think. I would have to figure out how many days it took to lower it, and how many days it took to raise it.

The other decision is, what do you do with the adult passage while you're lowering and raising. And, I don't know, does this modification you guys are talking about on the Granite ladder make it usable in between seven twenty-one and --

MS. WIK: Yes. That's what I was just talking about.

MR. McCONNAHA: Oh, okay. That would be better.

MS. WIK: We can't -- I believe that we can modify it to make it it functional.

MR. PETTIT: Chip, how would you guarantee a fish that was marked on "X" day and then got to the Lower Granite some period of time later was only affected by one regime or another? Are you --

THE REPORTER: Excuse me, I couldn't hear you. Was only affected....

MR. PETTIT: -- by one regime or another. You know, based on what we know about travel time to that pool, it would be real difficult to measure it, I would think.

MR. McCONNAHA: Of course, if you are using PIT tags and you were really concerned about that, I suppose you could discharge any PIT tags that migrated outside the particular test period or say that we would only count those PIT tags released in Lewiston or collected within the regime of test conditions.

MR. PETTIT: At Little Goose?

MR. McCONNAHA: At either -- yeah, presumably Goose. I don't know. I -- there's things you have to work out on any of these.

MR. PETTIT: Yeah.

MR. McCONNAHA: I'm not sure how you would handle that one, that particular one. That's a good point, though.

MR. SATTERWHITE: Just one question about the drawdown rate.

The two foot per day, is that hypothetical drawdown rate based on some engineering assumptions, I assume; or would there be some attempt to assess that; and, if the two foot per day drawdown rate appears to work without consequences, do we accelerate the

drawdown -- try to accelerate the drawdown rate?

MR. ANDERSON: I think that potentially is the situation. We would have to plan on entering this with a two foot per day limit.

MR. GRAHAM: I think -- I think if it goes anyplace beyond, it will probably go back. I mean, two foot is probably the maximum we can do, maybe less.

MR. KINNEAR: Why?

MR. GRAHAM: Pardon me?

MR. KINNEAR: Why?

MR. GRAHAM: Well, as Mike pointed out, it is kind of a preliminary -- or -- or -- very initially when we looked at it, it was one foot a day. And our soils people say we feel comfortable at one foot a day. And they did a little more looking and talked with some other districts that had done some other studies similar to this; and they said, Well, one and a half foot a day we can live with. If you want to stretch it out, we can say two foot. But you are taking more risk at two foot a day.

MR. KINNEAR: That's because the banks are sloughing and you're -- you're drying them out?

MR. ANDERSON: Yeah. Saturated slopes.

MR. SATTERWHITE: What I'm getting at is if there were multiple cycles. The first drawdown would

give you a good indication of your engineering limitations, and then it may be possible to reconsider a maximum rate.

MR. GRAHAM: So, you're assuming if you draw it down at two foot a day and you don't have a problem, you can increase that. Well, I guess I don't believe in that philosophy.

MR. SATTERWHITE: I'm not asking you to do it. I'm just asking you if you're planning on considering the option of accelerating the rate of drawdown if it appears that the two-foot rate is acceptable.

MR. GRAHAM: I guess about all I can tell you right now is our soil engineers are starting to feel uncomfortable at two foot a day. They would like to drawback to a foot and a half.

MR. SATTERWHITE: I fully understand your interest and caution. I think it's wise. But there needs to be another side of it, a willingness to experiment with the limitations and the real limits of --

MR. ANDERSON: I think it -- suffice it to say, we will certainly gain some information if we actually implement a drawdown like that.

MS. WIK: I think one other thing we need to

consider, Mike, is just in terms of the drawdown, how that happens. You know, you're talking about the inflow plus pulling the reservoir down; and you're talking about it going over the spillway. I mean calculations need to be made as to how much water that puts over the spillway.

MR. SATTERWHITE: That's right.

MS. WIK: We would want to be careful that what we are doing is not setting us up for a problem downstream in terms of dissolved gas levels as well. So, just by virtue of increasing that just to speed the process up, I mean it's going to happen anyway, but that would increase the --

MR. BOWLER: Are you going to be able to model some of the dissolved gases under some of these alternatives?

MR. BJORNN: We can monitor.

MS. WIK: We can monitor, but we don't --

MR. BOWLER: Are you predicting any particular type of modeling?

MS. WIK: We are going to look at that, but that's pretty -- pretty tough. We don't have good information about what happens right below the dam right now. We are installing instruments to get that information this year; but we, you know, know what the

conditions are at the next pool downstream at the forebay. But, you know, a major concern is going to be what's going on down at the tailrace; and I don't know we have good info from that from which to model. We will attempt it, but I think that's a big....

MR. SATTERWHITE: I guess my point is, if you can push a drawdown to the maximum, you can shorten the duration of transition which should have an advantage for some interested parties, I would think, by shortening the duration of the test or allowing other options to occur.

MR. GRAHAM: The one problem I have with that is there's many areas around the reservoir where there's random fill, and we don't know exactly what type of material it is. You know, it's random. And to do any kind of calculations on there, we would have to go in there and figure out exactly what type of material that is. So, there's -- there's risk.

MR. KINNEAR: The first drawdown will tell you, won't it?

MR. GRAHAM: Pardon me?

MR. KINNEAR: The first drawdown will tell you, won't it?

MR. GRAHAM: Well, that's a big problem. It may. But, if it doesn't tell you, that doesn't mean

the next time you draw it down or if you try to draw it down a little faster, you won't run into problems.

MR. McCONNAHA: That might be a good reason to do Steve's physical experiment prior to doing anything else. You can do it during a noncritical period when it won't hurt anything. You can draw it down two feet a day and see what happens.

MR. ANDERSON: Do we have any other alternatives?

MR. HAAS: Well, one of the -- I'm wondering if one of the alternatives couldn't be a combination of physical alternatives with some of these others? Is there any reason why you didn't want to do that or --

MR. ANDERSON: I think that is certainly something to consider. They are not mutually exclusive.

MR. HAAS: I didn't mean that.

MR. ANDERSON: If you did something in the winter, is that physical?

MR. HAAS: Is that one of the things we are considering?

MR. PETTIT: I think that it's physical, not biological.

MS. WIK: That's right. You would --

MR. PETTIT: If the impacts are too great to

the resource, for whatever reason, yes, they -- it's common sense then that maybe we have no alternatives, you know, but to just go with a physical test.

MR. HAAS: From a standpoint of the test, just looking at the test results, it would seem to me there wouldn't be any reason why you wouldn't -- if you are setting up the test itself look at all the windows of opportunity to do the test within.

MR. BJORNN: That's right. I think we are.

MR. HAAS: I don't know whether you need to list that as an alternative or whether it is just understood when you go through this --

MS. WIK: I think that's a given under the biological list of alternatives, that we would also look at the physical. That's a given.

MR. McCONNAHA: I think the sixth one should be --

MR. ATHEARN: Excuse me, before you get to a sixth one, have I captured everything on this one because I added a couple of things while you all were talking.

MR. McCONNAHA: Unless you wanted to say something about Sarah's idea using radio tags.

MS. WIK: Yeah. Recover at Little Goose or Lower Granite with radio tags too.

MR. ATHEARN: Okay. Little Goose would be PIT.

MS. WIK: PIT. Lower Granite with radio tags.

MR. ATHEARN: Okay.

MR. PETTIT: It would be nice to have somebody like Lowell be present at the next meeting to talk about what he thinks are the realistic uses of those tags and whether they would affect the behavior to the point where you may want to try a different --

MS. WIK: Okay. I'll talk to him to see if he can.

MR. BJORNN: We need somebody to talk to him for sure.

MS. WIK: Yeah.

MR. McCONNAHA: I think the no action one here is actually a variant on what we already do. That's why it's no action. But, if the intent -- purpose of lowering reservoirs is solely to look at the effect of velocity changes on fish movement, then we could do -- we would not necessarily have to lower the reservoir a lot for all that to be the best, if you want to get the widest variety of test conditions. But, even within the season, we get different velocity in the reservoir. And one possibility would be to give

some thought to a well-designed fish travel time experiment with or without -- accompanied by -- accompanied or not accompanied by pool drawdown. In other words, right now, most of the travel time information we have is the result of monitoring studies which are obviously necessary and good; but they are not necessarily designed to test all of the different ramifications of fish travel time. We actually have never done a really thoughtout designed travel time experiment in a long time. We are more into monitoring probably now. And one -- again, if it's velocity that we are interested in here and not the physical effect of having the pool lowered, which may have some other kinds of behavioral affects that we don't know about other than just velocity, one alternative would be to conduct a travel time experiment looking at physiology, flow, time of release, all of the other factors which go into this fish travel time equation.

Did you get that, Jim?

MR. ATHEARN: Yeah. I was trying to figure out how many words to cut it down to. How about if -- what you're talking about, then, is normal pool operation --

MR. McCONNAHA: Right.

MR. ATHEARN: -- taking advantage of whatever

flows we have and monitor migration timing and develop a relationship with some velocity?

MR. McCONNAHA: Yeah, Jim. I guess what I'm trying to do is get the -- saying another way to look at velocity is within a year and trying to take advantage of the velocity conditions that occur within a year. For instance, if we got into a situation that Steve was mentioning, where we had BSA considerations or common sense or whatever says we shouldn't do this right now, but we still need to get -- obviously get improved information on fish movement in response to water velocity, we can do Steve's physical experiment to get physical information and think about how we could design a travel time experiment within -- we wouldn't even have to limit ourselves to Lower Granite pool for one thing at that point. We could look at other pools. And try to get a variety of velocity and a variety of physiological conditions and other factors and see what we can learn about fish travel time from -- without taking perhaps the broader measures we are talking about. Although, that's a less preferred alternative in my mind

MS. WIK: I mean, that's -- you're basically summarizing what Ted to one degree or another talked about earlier.

MR. ANDERSON: Yeah.

MS. WIK: You know, I guess one advantage to keep in mind, too, with something like that is that it would make sense to do it no matter what the flow conditions are next year. And, again, as Chip says, it may not be the preferred alternative; but I think it is something we need to consider.

MR. KINNEAR: Do we not now monitor fish that are released above Granite pool? What you're talking about is simply the ongoing operations.

MR. PETTIT: Well, like Chip was alluding to, you can fine tune that more than just the simple monitoring.

MS. WIK: Yeah. Monitoring versus, as Chip says, a well-designed travel time experiment are two different things.

MR. PETTIT: There's a lot of difficulties, though, in laying your hands on fish at the right period of time. Right about the time when a lot of fish are coming, your flows got too high to operate the Clearwater traps, so you pull those out; and you can't mark those. The Snake may be inundated at that time, and you can't catch fish there.

MR. McCONNAHA: Well, there are maybe some things we need to think about, no matter what test we

do. Say, we are limited in how we can -- the kind of experiment and the information we can get by performance of existing traps we have to perform at different flow conditions. I bet it is a heck of a lot cheaper than a lot of this stuff to have some bright engineer sit down and say, Can you design us a trap that will operate efficiently within these flows and give us the information we need? If we are in that -- if we fall into that kind of a situation. I don't know.

MR. PETTIT: Support that.

MR. ATHEARN: How am I doing, Chip, is this getting close to capturing --

MR. McCONNAHA: Well, I think that's....I guess I would just say something more about a design experiment because that sounds like exactly what we are doing now.

MS. WIK: Yeah.

MR. McCONNAHA: And that's -- I'm certainly not belittling what we do now. I'm saying augment what we do now, go beyond what we are doing now in terms of design experiment.

MS. WIK: Yeah. For example, we don't calculate how many fish we would have to mark in Lewiston in order to get adequate recovery at Little

Goose?

MR. McCONNAHA: Right.

MS. WIK: Or McNary or wherever, and that would be what you would really want to look at is, you know, how many fish do we need to have in the system to get that information.

MR. McCONNAHA: Right.

MR. PETTIT: One thing that would really have to change for doing these fish replicates is to correspond to individual flow change.

MS. WIK: Yeah.

MR. PETTIT: You can't predict what you're going to get unless you also improve augmentation in further test data.

MR. McCONNAHA: Yeah. Or ways in which we can control for the physiological conditions. Time of release, all these other factors that we are trying to sort out.

MR. PETTIT: How much effect do you think frequent stops of fish would have?

MR. McCONNAHA: I don't know. Ted had mentioned that it. My guess would be that it would be more of an effect of them coming out of a hatchery, a different physiological state maybe, a different size maybe, you know, kind of a genetic stock effect. I

don't know. But that's something we don't know.

MR. BJORNN: I think, if we were going to do that, there's a couple of things to think about. One, as Steve mentioned, is if you depend on traps at Lewiston, you run the risk of going out of operation when the water goes too high. So, you maybe want to think about releasing groups of fish from a place like Rapid River or Dworshak and using more than one species. Use steelhead and chinook. So, you might not release the fish at Lewiston and that doesn't necessarily impair the experiment.

MR. ATHEARN: Anything more for No. 6?

MS. WIK: Do we hear No. 7?

MR. ATHEARN: Yeah. Do we have a No. 7?

MR. KINNEAR: No. 7 would simply be run of the river. I think Witt has already told us he won't entertain that.

MR. ANDERSON: Won't entertain that?

MS. WIK: Removing the dams.

MR. PETTIT: Blowing the dams up.

MR. ANDERSON: Oh, oh. I'm sorry. Yeah. I've got to get a new mind set.

MR. BOWLER: Bedrock.

MS. WIK: Blow them up and rebuild them.

MR. BJORNN: That's certainly not a 1992

option.

MR. PETTIT: One or two smart bombs would.

MR. ANDERSON: What? Smart what?

MR. PETTIT: One or two smart bombs.

MR. ATHEARN: Do we want to go ahead, then, and go back to these and start talking about the concerns that we have for these different alternatives? How do you want to handle that?

MR. BJORNN: I think it would be helpful for the people who are going to put it together for next week to hear what everybodies concerns are.

MS. WIK: I think we should do that. Shall we start with Option 1?

MR. ATHEARN: I almost feel like starting backwards is easier. But, yeah, let me flash one back up here just to refresh everybodies memory.

MS. WIK: I think within this discussion, you know, we will flush out some of the things that also apply to the others.

MR. ATHEARN: Okay. All four pools; three-month, four-month time frame; low as they can go. Spring, summer migrants. Okay.

What are the issues to be resolved?

MS. WIK: Who wants to start?

MR. BJORNN: I think adult passage is a

serious one that needs to be really evaluated.

MR. BOWLER: And that might be coached in the terms of timing. If you were to back the timing back to some less severe total time. In other words, run it under a test, April 15th to May 1 or May something or something less than that.

MR. ATHEARN: Okay. How about if we -- adult passage is the concern and possible solution is timing.

MR. BOWLER: Adjust the timing.

MR. KINNEAR: Jim, did you mention that a possible concern would be handling adults and trapping, some physical means of moving --

MR. ATHEARN: Would that be a concern or would that be a potential solutions?

MS. WIK: Yeah. The adult fish passage is the concern. How do we get the fish around the dams. So that would be something --

MR. ATHEARN: So, develop adult trapping.

MR. PETTIT: Yeah.

MR. ATHEARN: Actually, it's trap and haul, which, in itself, begs the question, how far you haul them. But you get around -- well, let's say the Tucannon problem, I assume you would release them -- any fish captured at Lo Mo, for example, immediately upstream rather than above Granite.

MR. BOWLER: And any ladder modification.

MR. BJORNN: I'm not sure I understood that last comment, Jim. How would you have them released at Lo Mo?

MS. WIK: Yeah.

MR. PETTIT: Trapping at Ice Harbor.

MR. ATHEARN: Trapping at Ice Harbor and releasing from Ice Harbor. In other words, if you had all four pools down and you wanted to maintain adult passage and felt you could do it through ladder trapping and hall them out of each dam.

MR. PETTIT: I think you could --

MR. BJORNN: In order to solve the Tucannon's Lion's Ferry issue, you would let them go just upstream and you would just truck them around one dam.

MR. ATHEARN: Yeah. You just --

MS. WIK: Well --

MR. ATHEARN: Yeah.

MR. BJORNN: Rather than all three.

MR. ANDERSON: Trap them. Trap them and haul them again.

MR. ATHEARN: Well, you run into other risks if you capture them at Ice Harbor. For example, if they were in mid-Columbia waters --

MS. WIK: Well, you run into that, I think,

anywhere, the question of fall back and whether those fish really did want to be above that dam or not.

MR. ATHEARN: Yeah. Ladder modification.

MS. WIK: Would you include under that, Bert, the concern of them even finding the collection channel --

MR. BOWLER: Sure.

MS. WIK: -- because of the spill, I guess, is my -- not just that the collection channel may not function, but that the spill may inhibit the fish in finding where they are supposed to be.

MR. SATTERWHITE: Doesn't that already occur in the system?

MS. WIK: At high spill, yes. And that's the concern that we are creating a condition of high spill for the test which we know --

MR. KINNEAR: Confuses the adults.

MS. WIK: Right, right. What we're creating now --

MR. SATTERWHITE: To some degree we already have that problem.

MR. ATHEARN: The difference being there, Mike, that when you're in a real high flow situation where you have high spill, you also have powerhouse operation. So, you have an attraction for the

powerhouse site. But, if you switch to a low pool operation where you're, in effect, not using the powerhouse, you lose that.

MS. WIK: Yeah.

MR. ATHEARN: It's a big -- potentially a big disruption and significantly make things worse.

Does that capture adult passage? I was going to put spill down next unless there are other things that are there.

MR. BOWLER: Well, put a space so we can go back to that, but leave a little room. Spill would be another one.

MR. ATHEARN: Here we have got dissolved gas.

MR. BJORNN: Uh-huh.

MR. PETTIT: There's been some discussion that if we had spillway elevation, wherever the head is plunging, that the plunge is not as significant. So, you may not get the same amount of dissolved gas supersaturation as you would with a full operation.

MS. WIK: But, Steven, your tailwater would be -- your tailwater would be down in this case too.

MR. PETTIT: Okay. So, that's -- I'm just wondering about that.

MS. WIK: Yeah. No, I'm not meaning to throw it out. It's just that it would depend upon what

happens to your tailwater basically.

MR. PETTIT: What about considering how the flip lips themselves would become inoperable because of low tailrace.

MR. ATHEARN: That's entirely possible.

MR. BOWLER: Put down effectiveness.

MR. ATHEARN: But effectiveness of dissipating the energy, but also potential effect on juvenile migrants.

What do you call the baffles down there? Dentates?

MR. ATHEARN: Dentates.

MR. PETTIT: They're gone.

MR. BJORNN: There's energy dissipaters.

MR. GRAHAM: We have energy dissipaters. We have got an insill on the stilling basin.

MR. ATHEARN: So, there are some pieces down there for fish for bounce off of. Okay.

MR. PETTIT: So, some of the projects still have those dentates in place? They haven't all been ground down --

THE REPORTER: Pardon me, I couldn't understand what you said.

MR. PETTIT: There's some accessory apparatus at the spill flip lips, and one of those are called

dentates which is a big I-bar piece of steel hanging down out of the conrete.

MR. GRAHAM: I don't know if those have been removed or not. I can sure find out.

MR. ATHERAN: I suppose we need to put down here channel passage disruption.

MS. WIK: Physical impact to juvenile fish. I mean, that's tied to that, but --

MR. ATHEARN: All right. That's --

MS. WIK: -- even beyond just those questions, there may be concern at that volume.

MR. PETTIT: Is the concern that once you exceed inflows that renders the boilerplate effectiveness of the flip lips? What I am trying to say is, pretty soon you have to start getting rid of some of that inflow by either refilling or going through one of the units.

MR. GRAHAM: I don't follow you.

MR. PETTIT: Okay. If Granite runs in -- the flip lips have a 10 K forebay effectiveness. If you have more than eighty thousand cfs in the river, you exceed the nitrogen abating capabilities of the flip lips.

MR. ATHEARN: It overrides the flip lips, yeah.

MR. PETTIT: You have to do something with the rest of the flow.

MR. ATHEARN: Right. I think we captured that here.

MR. PETTIT: Is that what that falls under?

MS. WIK: Yeah.

MR. McCONNAHA: This may not apply to all of them, but maybe just -- there's some people here that have expressed concern about concentration of predators.

MR. ATHEARN: That wouldn't be under spill.

MR. McCONNAHA: No.

MR. ATHEARN: Now we are talking about a major --

MR. McCONNAHA: We're talking under --

MR. ATHEARN: Okay. Is there anything else under spill? We can come back to this, too, I guess.

MS. WIK: I guess one quick question is, Ice Harbor does not have flip lips. So that would be one....

MR. ATHEARN: Okay. That may be good.

MR. PETTIT: Mo only has six.

MS. WIK: Goose and Mo only have six. Granite is the only one with eight.

MR. BOWLER: As far as gas accessment there,

does Ice Harbor build up high levels of nitrogen?

MR. ATHEARN: Yes.

MS. WIK: We don't know what it is immediately below Ice Harbor, but it does increase the levels when we're spilling and testing projects, both Mo and Ice Harbor.

MR. ATHEARN: Okay. Let's go into predators.

Steve left. He said more concentrated at lower pools.

MR. BOWLER: Is there any information about predators and velocity as to --

MR. ATHEARN: We have target velocities for release sites at our collection facilities, for example, with, say, about three and a half feet per second, Sarah?

MS. WIK: I think that's what it is.

MR. BOWLER: That you shoot for --

MS. WIK: Three to three and a half.

MR. ATHEARN: Yeah.

MR. BOWLER: -- that don't tend to concentrate predators at high velocities?

MS. WIK: Right.

MR. ATHEARN: But they would tend to avoid velocities of that much or more.

MR. BOWLER: Three and a half feet per

second?

MR. ATHEARN: Yes. Of course, that depends, too, on how close cover would be. They could be right in the midst of a real fast velocity if they had some means of getting out of it, but still being able to arch into the flow to cover.

Anything else to specify under known predators?

MR. OSBORN: Well, I think lower pools might also affect the ability for limitation of a squawfish managment program, either dam handling or sportman's access to the reservoirs.

MR. ATHEARN: Okay. So, impact to ongoing control effortd.

MR. OSBORN: Implementation of squawfish management program, you know, by ODFW.

MR. ATHEARN: Okay. You're calling it management rather than control?

MR. OSBORN: Either way.

MR. BOWLER: Kill them.

MR. OSBORN: Stopping the squawfish.

MR. ATHEARN: Any more on predation?

MR. KINNEAR: Relative to higher concentration, that's an assumption that will effect the additional concentration of squawfish or higher

concentration, is it part of the protocol, perhaps, to adjust whether or not we do have higher concentrations of squawfish?

MR. ATHEARN: Per unit volume it's going to have more fish, but does it mean anything? It's a valid question.

MR. KINNEAR: Yes. If the predation -- or the squawfish are there because of much higher incident of stunned or otherwise damaged fish coming through the turbine, which won't be the case under a spill situation, You might not have a higher concentration of squawfish.

MR. OSBORN: You might even know that most of the squawfish do concentrate in the fall out and bypass facility, not necessarily in the powerhouse.

MS. WIK: But, on the other hand, they may end up concentrating along the spillway and for some reason that impacts the juvenile fish going that route, too. But, it's a given that there is a certain amount in the reservoir volume, and you decrease that volume, you effect -- the concentration goes up. Whether, you know, just overall the concentration goes up.

MR. SATTERWHITE: But you might also except redistribution?

MS. WIK: Right. And that's what he's

saying.

MR. ATHEARN: I had a change in distribution. Anything else under predation?

(No discernible response made.)

MR. ATHEARN: All right. How about other effects?

(No discernible response made.)

MR. ATHEARN: Add a change in distribution. Anything else under depredation?

(No discernible response made.)

MR. ATHEARN: All right. How about other effects, concerns?

MR. HAAS: We're talking about the effects other than biological?

MR. ATHERAN: I was thinking --

MR. HAAS: You're talking about things other than biological, or are we still concentrating on that?

MS. WIK: Well, we still have some more biological concerns, so....

MR. ATHEARN: I don't care what order we go in next.

MS. WIK: Yeah. Well....

MR. ATHEARN: Sarah, do you want to hit some more biological?

MS. WIK: Well, yeah. Some of the concerns

are in terms of water quality. You might want to make that --

MR. ATHEARN: Water quality.

MS. WIK: In addition to dissolved gas concerns, there may be a turbidity problem. And related to that may be the release of sediment contaminants.

MR. McCONNAHA: On the other hand, if the reservoir was down, that would give you an opportunity to get rid of contaminated sediments without having the water to deal with.

MS. WIK: Well, it's a question of getting rid of them. Would you really be getting rid of them, or would you merely be relocating them and resuspending them in the water column where they may affect the biological --

MR. McCONNAHA: Well, if they are still out there. But if you have such PCBs as a sediment, it --

MS. WIK: Well, dioxins, furans, PCBs, other --

MR. McCONNAHA: If you want to get rid of -- can't get rid of them right now in the river, with the water and everything that will just wash it down. So, you lower the reservoir and the stuff is high and dry now, and you get rid of it then.

MS. WIK: Well, except in the process of lowering, you are going to pulling -- pulling that material into it because you're going to have the wind and wave action when you're lowering it.

MR. SATTERWHITE: But, you are doing the same thing when you dredged annually or semiannually when you're moving that water back into the river.

MS. WIK: That's true, Mike; but we do test in those areas that we dredged; and the material in the areas that we are dredged is very coarse, whereas contaminants like dioxins and PCBs tend to bind to the finer material, which is in other areas that may be exposed under this scenario that normally we don't expose in the dredging process.

I mean, those are questions that need to be evaluated. You know, I'm not saying that's a given; but that's something that you would want to be concerned with.

MR. SATTERWHITE: That's one comment that I would like to make about what we're going through right here. I think these are issues that need to be further addressed and discussed and not regarded as absolute concerns or negatives. I think that these things -- all these things that we have just listed here need to be evaluated and discussed and put into a realistic

context to try to make some assessment whether it really is, in fact, a factor worthy of concern. I think we are going to be surprised.

MR. BOWLER: Yeah.

MR. SATTERWHITE: I don't want to go to the meeting on Friday and say, well, these are all the reasons we couldn't do it.

MR. BOWLER: Another thing, that is totally judgmental at this time.

MR. ATHEARN: I think we just want to get everything on the table.

MR. SATTERWHITE: That's right.

MS. WIK: Yeah.

MR. BOWLER: Water temperature, the change in the water temperature.

MR. MCCONNAHA: Go ahead, Bert. Anything else on water?

MR. BOWLER: Dissolved oxygen.

MR. OSBORN: I just want to back up to the contaminated sediments. Not only with the PCBs and things like that, but also the resting stages of diseases are also something that should be pointed out that should be addressed and have a fairly good idea of the contaminated sediments, not just PCBs, but also fish diseases as well as.

MR. SATTERWHITE: This gets to another point on the issue of water quality. If you were to propose to do this option number one, you would want to initiate and continue a water quality study that would continue for the duration of test run to follow the level of all the water values that you're talking about to put it on a meaningful basis. For example, you might expect siltation early on in a process like that. But, later it might disappear and no longer become a problem. And may not even be a problem in subsequent years because you have redistributed the silt to a more stable delivery.

MS. WIK: Right.

MR. SATTERWHITE: That's what I'm saying. If we are going to deal with all the issues, then we have got to do this in a context of a long-term study throughout the duration of the period.

MS. WIK: Well, there's two concerns there. One is what Wayne was talking about. You would examine these automatically. In doing this procession, you would monitor turbidity in the end and so forth. But, on the other hand, you do want to at least consider the short term. If we did know that there was going to be a considerable pocket of disease exposed, if there's a way to determine that ahead of time or a significant

factor of highly contaminated sediment that could have a very negative impact in the short term, you know, we would want to further evaluate that because those could impact a lot of fish in a short period of time in a way that we don't want to do. So there are both aspects to that, both the short term and the long term.

MR. ATHEARN: Okay. Number one, water quality?

MR. BOWLER: Resident fish.

MR. ATHEARN: Resident fish.

MS. WIK: Can I back up?

MR. BOWLER: Sure.

MS. WIK: This is sort of related. Before we went to resident, I thought we might want to talk about the effect on shelter and food sources. In other words, macrophytes and the food sources within the reservoir for the salmonids. I'm not sure what category --

MR. ATHEARN: Do you want to do that under resident fish and other organisms? Or is that too broad?

MS. WIK: Okay. That would --

MR. BOWLER: No.

MR. PASSMORE: So, wouldn't your concern actually have some affect on the --

MS. WIK: Correct. But that would fall out under other aquatic organisms. What would happen to them and what that affect would be on salmonids.

MR. KINNEAR: Migration food resources.

MS. WIK: Yeah. You could lump it other acquatic resources.

MR. ATHEARN: So, impacts on the food organisms. And I heard habitat. Do you want to break that down finer to, say, resident spawning habitat? You may have some some other term you wish to use. I assume cover.

MS. WIK: Yeah, habitat. Cover habitat. That's not just resident fish. That would be, for example, fall chinook.

MR. BJORNN: Juvenile fall chinook habitat.

MS. WIK: Yeah. That would be all fish cover habitat.

MR. PETTIT: How about predator concentration?

MR. ATHEARN: We have that under predators.

MR. BOWLER: That's where it would help in some respects, you know, all of that predation. There would be a lot of data there already.

MR. ATHEARN: What about angling?

MR. BOWLER: Do you want that under

recreation?

MR. ATHEARN: Do you want to cover recreation later? Under resident fish and organisms, anything else?

MR. PETTIT: What about waterfowl?

MR. BOWLER: Waterfowl? Wildlife?

MR. ATHEARN: Do you want to go into --

MR. PASSMORE: Waterfowl would be one specific. Fur bearers would be another one.

MR. ATHEARN: Okay. Anything -- what about biological? Sarah, do you have others?

MS. WIK: I guess maybe one would be the impact of the population of fish that then hits McNary pool, what happens at that point in terms of, you know, overloading facilities at McNary? I don't know. I don't know how exactly to put that into --

MR. McCONNAHA: Are you saving that many fish by that proposal?

MS. WIK: Well, you're not saving. I'm not saying saving, but you're passing what normally you would take a lot of them out of the system at Lower Granite at Little Goose. You are now running the entire population through -- through those four lower reservoirs and depositing them at McNary pool, which is different than the normal operation. Are there any

concerns with that?

MR. SATTERWHITE: Well, you have certainly built enough growth capacity into the system to handle improvements.

MR. KINNEAR: Resident fish, are you still talking resident fish and the impact --

MS. WIK: No. I'm talking about monitoring particulates.

UNIDENTIFIED SPEAKER: (Speaker inaudible.)

THE REPORTER: Excuse me.

MS. WIK: I'm not saying there is a definite problem. I'm just asking, do we need to consider what the impacts to Reservoir McNary and facilities beyond may be by doing this?

MR. McCONNAHA: Is that any different than what happens during high flooding?

MR. ATHEARN: Potentially it is, but it might be something that you just plan for. You can plan to park all the barges down there, for example, and just load right on them. I might have said that too quick we may have spillage problems with that.

MR. SATTERWHITE: It might also even along the same consideration that the Northwest Power Planning Council would have a goal of doubling runs.

MR. ATHEARN: The difference is the timing

question.

MR. SATTERWHITE: Difference in the timing.

MR. PETTIT: Not if you're taking them out above.

MS. WIK: You're just doing a different operation that even the Power Planning Council is talking about because you have all your steelhead coming through as well, which even if you were bypassing those chinook, you would still be pulling your steelhead out, for example.

MR. BJORNN: What about the evaluation of the cost or benefits to the salmon themselves as kind of an operation? How do we evaluate if we're doing any good by doing this?

MS. WIK: In other words, do we have data with which to compare what benefits may exist in terms of increased travel time under this scenario?

MR. BJORNN: Not really an economic evaluation; it's a biological evaluation.

MS. WIK: Uh-huh.

MR. BJORNN: Are we really improving smolt to adult survival by doing this?

MR. OSBORN: Along those same lines, you would be eliminating the smolt monitoring program and that is a concern that we have no idea of the timing of

some of these fish, wild hatchery stock coming out of the Upper Snake Basin until we get into this. This is something we feel we need to monitor. Is that part of the evaluation. Could it be put in the evaluation, the ongoing research stating to the pool of the Snake down to McNary.

THE REPORTER: I'm sorry....

MR. OSBORN: I was just saying along the evaluation side, you would eliminate your smolt monitoring program. A lot of the ongoing research in the Upper Snake River would be eliminated.

MR. ATHEARN: Impacts on ongoing research.

MR. OSBORN: And part of the evaluation as well.

MS. WIK: Is it unfair to back up to that question, how would we evaluate whether or not the drawdown did have positive benefits? I mean, it's back to where we were --

MR. BOWLER: I thought we listed that to begin with, and I think we're just culminating that looking at the ways we would do the evaluation.

MS. WIK: Yeah.

MR. ATHEARN: Well, let's go to some more. Do we have some more biological effects?

MR. McCONNAHA: I have a -- Jim, I have a

couple of things. One thing -- we could probably deal with a couple of exceptions like the adult ladders and maybe a few of the spillway considerations. We should deal with almost every one of these -- every one of the programs. Every one of the alternatives we have. So, hopefully the rest of these won't be as long as the rest of them.

MR. ATHEARN: I agree with you.

MR. McCONNAHA: And, then, secondly, do we -- although we are trying not to be judgmental about these, most of these things are potential costs to each proposal. There are concerns and some problems. Do we want to talk at all about the potential benefits of particular alternatives? I mean, some of them -- they all have particular features that youi're trying to get at. Some of them have different variances over each other. Do you want to list those, too?

MR. SATTERWHITE: Can I interject? Maybe we are getting beyond the intent of being here, and that is to try to design a general experimental strategy. It sounds to me like we are going back into the same thing we have already discussed to some degree at the Salmon Summit. We came here to try to devise an experimental scenario and discuss to some degree the effects we have and biological problems to solve here.

MS. WIK: But we do have to identify some of these issues if we are looking at six different options, which of those options will have the least negative potential negative impacts on the fishery resource that we are concerned with. And I think that's what we are trying to do here.

MR. SATTERWHITE: Isn't that a policy decision that's going to be made later on down the line?

MR. BOWLER: Why don't we just move on.

MR. ATHEARN: So, far as we are identifying things that need to be considered in the next step of protocol development, I think we need to have them all listed out. It doesn't mean that they are all bad. They are things we have got to overcome or figure out a way to handle in the process of conducting the test. And whoever said it is right. Once we get through the detailed list this time, we have just about covered the gamut of the concerns.

MS. WIK: Can we move on to the Option 2?

MR. ATHEARN: I thought we've got some more on this one.

MS. WIK: Oh, okay.

MR. ATHEARN: We haven't addressed recreation and some of the others which I know are waiting in the

wings.

MS. WIK: I don't know if we want to get into that.

MR. ANDERSON: I think we want to stick with the biological aspects. And, certainly, we get to the NEPA process which is the recreation and other users it will have to be evaluated in depth. Not to say that we ignore those now. We don't want to put blinders on, but he did want to keep to the experimental design I think.

MS. WIK: Yeah. There's a long list of other impacts.

MR. ANDERSON: Let's do a check here, where we're headed. My view is we have laid out some optional experiments. We can -- we can plan to refine those and take a hard look at those by next week and come away from next week's meeting with perhaps two or three that look like they make some sense, and we can proceed with those. We can take those to the policy level on the eighteenth and then move out.

I don't think we can take what we have now to the eighteenth and make any kind of a sound recommendation to that group. Does anyone disagree with me on this?

(No discernible response made.)

MR. ANDERSON: So, I think we need to continue working on the biological issues, again, with the goal of developing an experiment.

MR. PETTIT: I might mention that a lot -- (Speaker inaudible.)

THE REPORTER: Excuse me, I can't hear you.

MR. PETTIT: A lot of the things that we are doing now have been debated in the last two months at the Salmon Summit.

MR. ANDERSON: The point is that we are revisiting --

MR. PETTIT: There was a lot of dejavu, at least to me.

MR. ANDERSON: Well, that's right. I guess, I don't disagree, Steve; but how are you going to get to a point of developing an acceptable --

MR. BOWLER: Had we developed an EIS at the Salmon Summit. But, no one ever came to grip with these issues A, B, C and D alternatives, et cetera, et cetera. No one put it all together so it would get culminated. Even though it might have been battered around in the Salmon Summit. So, this has to be done to get on with it. And I think what you're doing here, you're on the right track. And you don't want to get too much of the Salmon Summit confused with what we're

doing here.

MR. ANDERSON: That's right. And we don't want to get the environmental review that's going to have to along with this full development of a test over the next ten months. That's a given. We are going to have to do that unless we develop a test plan that's not going to require an environmental review. The things we talked about today will. So, we certainly don't need to get off track about it today. But we do need to refine our test proposal.

MR. SATTERWHITE: I think we need to decide on a couple of experiments that give us the most possible information, biological information. We already know what some of the other problems are. The recreation, the transportation and all those other issues. We know that. But we still have to decide what's the best experiment that we can do, and the most information we can gather and answer the questions we pose.

MS. WIK: May I make a suggestion that we go forward like we have done here with the other five alternatives and see which of the concerns that we have listed under the maximum case fall out and so, under the other alternatives, see which concerns are left.

MR. HAAS: What do you mean, "fall out"?

MS. WIK: Well, which ones aren't a concern. For example, if you're not lowering all four reservoirs' spillway crests, you're only lowering Lower Granite, then you don't have the concern of adult fish passage problems at the bottom three. So, adult fish passage at all four is no longer a concern. It is just the one or whatever. I think if you can pull out which of these aren't a concern under the other alternatives. Is that....

MR. BOWLER: Right.

MR. PETTIT: Right.

MR. CRASE: Aren't most of those concerns just a matter of degree?

MS. WIK: Well, I don't think necessarily. I mean, if you're not lowering all four reservoirs --

MR. CRASE: You're not going to worry about the sediment. You're not going to worry about temperature or --

MS. WIK: Well --

MR. BOWLER: No. That was just an example. Adult fish passage was an example that would shake out.

MS. WIK: The first thing --

MR. BOWLER: Others may be common to all of them.

MS. WIK: And it may be like you're saying, a

case of degree. But that's what we walked through here. Which concerns fall out, which are still a concern but may be to a lesser degree. But, I don't know how else to really do it except to --

MR. HAAS: In other words, if you were to list the alternatives down the left-hand side and this would solve the problem, if you put an "X" -- in other words, if you were to list the alternatives down the left-hand side and this would solve the problem, if you just put an "X" under where it applies --

MS. WIK: Yeah.

MR. ANDERSON: Maybe we ought to stop and check our process, too. It may not be essential that we do it in this group today, if you're willing to entertain a concept of a smaller work group that could do that in the next several days. And I don't know how the right people could get together. Maybe it's on the phone or, Sarah, you take a strawman approach. We have laid out the biological --

MR. BOWLER: Sort of a matrix to go through and address all the concerns --

MR. ANDERSON: We could develop a matrix by next Friday, let's do it next Friday. And, then, that will be our task next Friday. That would be our task to then select those best options to answer all our

objectives.

MR. CRASE: Why -- why -- you know, we went through, and we laid out six alternatives. Why do you need to eliminate any of them, period?

MR. ANDERSON: We may not need to, Fred.

MR. CRASE: I got the impression these were the alternatives, that we were going to evaluate as a part of a group process.

MS. WIK: Well, I think --

MR. CRASE: Now, we never selected a preferred alternative.

MR. BOWLER: It wasn't to eliminate an alternative. It was to eliminate some things that weren't a concern as an alternative. It wasn't to take away all the alternatives.

MR. CRASE: How are you coping --

MS. WIK: Well, now, wait a minute. On the one hand, if everybody at the table agreed that because of these concerns -- this is again assuming that everybody agrees -- that this Option 1 is probably not a good idea, rather than go forward with the scoping process that tries to analyse this entire -- you know, all the possible alternatives under that option, you know, that's going to take a lot of time, as we talked about before. We are -- we're already on a short time

frame for the EIS.

MR. McCONNAHA: Do you want -- on the other hand, not everybody that's going to have to look at this, unfortunately is going to have the benefit of this whole discussion. And if you go into a policy group and say, Well, these are the three alternatives we have, and they all involve lowering Granite Dam, we eliminated the four pool option and go on from there, somebody is going to stand up and say, Well, why did you eliminate the four pool option. That was my favorite option. What are we -- wouldn't we be better following along with what Fred says, list all six of them with our opinion of pros and cons in a recommendation. And, then, somebody can say, Well, the four pool -- we eliminated the four pool option because of unrealistic impact on adult ladders.

MS. WIK: Do you really think that decision will get made in two hours on the eighteenth?

MR. McCONNAHA: No, no. Maybe a weekend, but that will take a whole --

MR. ANDERSON: I would think it's going to take some kind of a grouping for that. This is what we did. This is what we considered, and here's why we recommended what we have to recommend. Certainly, you are going to have to explain what we screened out if we

have screened it out, and then I think that Bert has a good concept to start with, we can put this into a matrix form.

MR. McCONNAHA: A matrix with the pros and cons is okay. But, I'm saying we chose this one or we recommend to you this one because it has certain advantages.

MR. SATTERWHITE: I'm still a little troubled by the way this process is being distilled down into a simple set of statements here. I could take issue for one with the issue of resident fish adverse effect on macrophytes and food sources, that's a matter of opinion and not even maybe based on a complete foundation in fact or study because it's never been examined under the way we are proposing to use it.

MS. WIK: Mike, we're not saying that's all the problems. We are saying that's an issue.

MR. SATTERWHITE: That's a concern.

MS. WIK: Right. We are not saying that that's a definite.

MR. SATTERWHITE: Are we going to be eliminating things because there is concern about potential problems; or are we going to try to analyze these problems, these potential problems, first and then evaluate each plan against the evaluation of those

concerns?

MS. WIK: Isn't that what this dialogue is for, is to look at which one of these would be, you know, a potential versus one that we feel strong enough is a definite?

MR. SATTERWHITE: Well, we can't do that until we have addressed all these concerns and determined whether, in fact, they are real. Some certainly are. Some aren't.

MR. BOWLER: That's what the whole EIS process --

MR. PASSMORE: We don't need to sit over the next few weeks at these meetings to come up with a long list of alternatives to analyze in the NEPA process. If we had the two years or three years to it do at this time, which something of this magnitude would probably take, we could have gone through this process. What we tried to do is bring experts together to look at alternatives, and weed those out so we can go in with one or two alternatives to look at, which are reasonable for the '92 test. Now, some of these will fall out because of physical constraints, et cetera. But, if we can't paw through all the concerns and decide one or the other is going to be more practical or more realistic, then we are not going to get

anywhere within three weeks?

MR. HAAS: I believe we could complete the matrix this afternoon. I don't think that would be a terrible big chore. I think it would be easy to put an impact, a yes or no perhaps someplace and a question mark. I question, however, whether after we've completed that matrix whether we are going to be ready to make a decision to select one or throw one out. I can tell you right now, the one that has the most impact is the first. The one that's going to have the least impact is no action.

MR. ATHEARN: There's one more.

MR. ANDERSON: Which one is going to gain you the most information?

MR. HAAS: I think we can get this matrix of what we have here and go back through the options between now and next week, and we can agree to have people look and analyze it and be ready to come back and do something in-depth. I don't think -- at least, I'm not prepareed to say, Okay, we looked at the example in the matrix, okay, throw out this one, this one, and we concentrate on this one.

MS. WIK: We weren't talking about throwing any alternatives away. We were talking about essentially walking through all the alternatives, and

whether you call it a matrix or whether you just list what is or isn't a concern, maybe that's the same thing. We leave with that today and come back with next week.

MR. ATHEARN: I would like to cover a few more things here because if I were to sit down and go from here to the test protocol, if I might ask you a question, if you wanted to bring up things like equipment and techniques and talked about radio tags and PIT tags, and somebody needs between now and next Friday to make sure that if we are going to rely on the radio tag technology, it exists and can work for us.

If we decide that we want to get physical measurements, that there is actually equipment in the range of expected velocities that were -- that we can measure it, these to me are show stoppers for the test. If we don't have the technology to actually conduct this test, then who cares about debating the policy and politics of it.

MR. KINNEAR: Do you mean at the Corps of Engineers or is the "we" everyone else?

MR. ATHEARN: I'm looking at "we" as sitting here and anybody else that's interested. No. It's not the Corps of Engineers, Brian. We are trying to help get this process going, but it's not our test.

MR. HAAS: But, the Corps -- you are going to be the lead agency in doing the logistics from the standpoint of getting the equipment?

MR. ANDERSON: That has to be defined, Wayne.

MR. HAAS: Yeah.

MR. ANDERSON: Certainly, we will have some lead on that, but it may be a cooperative effort with the agencies on the test, and we'll --

MR. HAAS: It certainly will be a cooperative effort, but we have got to have some lead agency. We can't design that thing by making --

MR. ATHEARN: We have already taken the lead. We have got people together here, and we are trying to get the numbers for having a proposal written down.

MR. ANDERSON: That's it. We are trying to develop a proposal here so we can get on with the process.

MR. HAAS: Okay.

MR. ATHEARN: The ideal end product to take to the policymakers on the eighteenth is a proposal or a couple of proposals that would then go the very next step.

MR. BJORNN: It seems to me like the next step is one of -- the really important one is the design. Can we really design something that we are

going to get some information. All we're talking -- if we just quit throwing up ideas here of things we might do, and actually sit down and try to put it together and see if we can make it work, we might find, Hey, we can't make that work for '92 or any other year in some cases.

And so, then it becomes -- then we come back to the next meeting. Somebody comes back to the next meeting and says this is what it's going to take to do this particular alternative. And, you know, you sort of have a design to look at. This is the kind of data you're going to get back. Is it worth it?

MR. HAAS: I agree.

MR. McCONNAHA: I think it's unrealistic if you're going to have experimental design with all the problems worked out by the eighteenth. The best you can do is come down to two or three you can't eliminate because they're totally absurd, or we are going to have to call out the National Guard to enforce it or something like that. To get rid of those and come down to two or three that you're going to send out with a bunch of eggheads, and they are going to figure out whether or not you can do it. How many fish you are going to mark. What rate you're going to collect them at. That kind of stuff.

MR. SATTERWHITE: I guess what I see in this list here are things that are of concern, that are things that we are going to be finding out when we actually do the experiment. Say, we are worried about the predators. We're not going to know if it's a problem unless we do the experiment and assess that. If we're going to rule it out because it's a concern, then we are ruling out the -- we are selecting the information we would like answers to.

MR. McCONNAHA: That's what you're doing. Then you could then go to the predator experts and say, What do you guys think if we do this. If they talk to them, they say, Yeah, it looks like it is. Maybe it is a reason for a negative, if they say no effect.

MS. WIK: Well, I'll be honest, I don't see something like the predators eliminating an option. The only thing that I might see eliminating an option is if we -- whoever goes forward and takes the task of looking at what to do with adult passage says this idea of trapping them below each of the four dams and dumping them out above is not something we want to do, I mean I think the adult passage is going to be one of the biggest things that will eliminate an option. I don't think the rest of these, Mike, are necessarily something that would kill it.

MR. SATTERWHITE: Well, I would agree. I would agree.

MS. WIK: And all we are trying to do is list the concerns here. We are not trying to kill it, based on those.

MR. McCONNAHA: By the way, based on listing of that five or six, I think it's less than a half an hour to go.

MR. ANDERSON: Okay. I think -- I think we beat this one enough. We need to think about how we get to the next meeting, and what we need to accomplish in the next meeting. I mean, we have got the next two meetings, and if we are going to meet the schedule, we have got to accomplish the development of the proposal.

MS. WIK: Do you want to try and finish building the matrix today in terms of looking at what falls out, or do you want to make that a take back?

MR. PASSMORE: I would make --

MR. ANDERSON: Well, since we won't get that today, we need to discuss how we accomplish that the next time. Talk about our job -- our work at the next meeting.

I guess I'll throw out a proposal. I think the best people to do it are the fisheries experts and anyone else who is interested, for that matter. Maybe

it's going to be this whole group, and that's fine, but I don't know if it will take another meeting prior to next Friday's meeting.

MS. WIK: Even if we have a conference call and talk.

MR. ANDERSON: If you remember, we're developing a biological test design here; and you have got to have the right people discussing that. Not to the exclusion of any one, but --

MR. ATHEARN: Well, Witt, I wrote some more things down behind your back there; and I was getting a little antsy that we're going to get away from here today without some pieces that a work group is going to need to consider, and it isn't -- this list isn't all inclusive, but it's a different direction here, and that is some practical things for both a test development and an experimental design development and in this small group sample size, as Steven mentioned, is critical. How many fish are you talking about. Everybody is going to ask that. What kind of stocks. Is it going to be hatchery fish, wild natural migrants, or whatever. These are things that are going to have to be presented in some framework that we bring back to the table next Friday.

MR. ANDERSON: Do we have a smaller nucleus

of people that should work on this?

MR. SATTERWHITE: We had talked about that briefly. I think our feeling is that the issues that are technical in nature in designing and conducting the experiment should be done by people that do it for a living. Fish passage people should be involved. Fishery biologists should be involved from a number of different agencies. But I think we can come up with a list which might also involve the water managers to some degree. But the Corps, the BPA, Fish and Wildlife Service should be involved. We think the fish and game representatives of the Fish and Game Departments of at least Idaho, probably Washington and Oregon, should be involved in the design. I mentioned the fish passage people. Idaho Power, the Corps.

MR. HAAS: I'd say it could even be a smaller group. Are you talking about getting together between now and next Friday? Getting technical experts together?

MR. ANDERSON: I couldn't agree more.

MS. WIK: I would like to propose getting those folks together next Wednesday.

MR. KINNEAR: I would suggest that you at least add the tribal fisheries.

MR. SATTERWHITE: I figured they were

represented through the Fish Passage Center on this issue. You know, I'm not limiting the membership.

MR. KINNEAR: I think it should be all the fishery technologies, too, Mike, to design and conduct this experiment.

MR. PETTIT: I don't know about anybody else but this time of year things are happening rapid fire; and I can speak for myself, it's going to be very hard in the next week -- I mean, today is Friday -- to get anybody going. We may be able to a accomplish quite a bit on a conference call type of thing. But, I've got a full docket, and I know Bert does

MS. WIK: I think all of us do.

MR. HAAS: Maybe the Corps --

MR. PETTIT: I have no money to travel with.

(Indiscernible discussion amongst speakers.)

MR. SATTERWHITE: One of the problems of the whole process is we have been in a big hurry. We are in an emergency situation; we are trying to get a lot done in a period of time that's too short to do it. This is a problem we've got. Somebody like us comes up with a question about the changes of the policy, we discuss it for half an hour, then, we are a half hour behind; and then we finally have a plane to catch. There's just not enough time in a one day, one

afternoon, session to do it. So, I think we're are going to have to commit more time to solve the problem.

MS. WIK: I mean, based upon what Steve is saying about all our schedules, Mike, do you have an alternative? Do you have a better option to throw out?

MR. SATTERWHITE: Well, realistically, the Corps initiated the series of meetings. We would just have to do the best we can and try to allow yourself enough time to do that.

MS. WIK: I guess I would like to reiterate that while you are talking a technical working session between now and next Friday, that's what we tried to accomplish here today is get a relatively small group of technical staff together to do that very thing.

MR. ANDERSON: Well, let me ask this, do you people have next Friday on you calendar, could you not, in fact, do it next Friday?

MS. WIK: Or can I throw out another option? We've talked about this stuff, can I take a stab at a strawman, fax it to those of us here, to additional parties that we feel should have been here or should be at a technical meeting and pull it together and have comments to that next Friday? Is that a reasonable --

MR. BOWLER: It might be the quickest way to do it.

MS, WIK: I'm a sucker for extra work, I guess.

MR. PETTIT: I think we should draw on a lesson we have learned getting to the point we are today. If we go back to try to redesign the wheel and come up with a lot of these things, impasses that we have had for the last two months, we are just going to be at the same place a week from now. For obvious reasons, we came up with a far left and a far right. There's no way we are going to do Plan 1; it's a joke. Plan 1 for '92, for '92. It really kind of sets the strawman up. You know, if we really wanted to get something progressing, we are going to have to make in the last half hour we have here today, maybe we can limit them down to one to concentrate on before we go.

MR. CRASE: The point I want to make is why do we need one to present to the policy group? I see at least of those six that -- five that I would like to see some people do a study on. I think you can eliminate a couple that are obviously beyond our reach. But -- and then the actual final alternative you end up with may be some hybrid out of the three. I don't know yet. I don't know. Why not go to the policy group and say, Here are the three we think should be studied?

MR. ANDERSON: If we could do that right now,

and then we could -- Sarah and the right people could go and address some of the questions that Jim has just put up on the board by next Friday, to the extent possible, and we can lay out a proposal here. And remember, I said in the beginning the objective was by next Friday we have a more refined proposal or proposal and alternative. And, then, we can discuss that Friday, and then we have the concept that we are going to the policy group with. Remember we have to develop a proposal here. If we end up reinventing the wheel, as Steve said, for the next three meetings, we're not going to have anything to act on. We have got to bite the bullet. We either have a program to pursue for '92, or we're not going to have one. We are trying to make it happen, and we are asking people to cooperate, and Sarah is willing to take on more work than she should. And if we have to send out a strawman to do that....

MR. BOWLER: I think it would be wise, and not to get all involved in it, but to carry all the alternatives to the policy group.

MR. ANDERSON: That's fine. I think we can --

MR. BOWLER: Just so they are laid out and put on the table. And they can be narrowed, but I

think they are --

MS. WIK: Okay. I guess what I would like to do is maybe we can go ahead and carry all the alternatives, but we need amongst ourselves to recommend which of those -- three of those six we believe have the most --

MR. ANDERSON: We're not --

MS. WIK: -- feasibility.

MR. ANDERSON: We're not going to spend a lot of time in the next week trying to develop alternative one and two if that's not real for '92. It's a waste of time. We are not going to waste our time.

MS. WIK: I think if we document why we eliminated three or two of the six alternatives and we brief the prople at the policy Group level as to that --

MR. ANDERSON: So, let's right now, in the next five minutes, pick two or three that we will concentrate some further efforts on. Some critical thinking in the development of a test plan for next week. Is that --

MR. HAAS: Well, we said that probably alternative one as it was laid out was a maximum for a strawman. I think there may be some variations of alternatives on that, that could very well be

presented. That involve lowering all four pools, but maybe not necessarily all four of them down to absolute minimum. So, we have variations -- in fact, that's probably true of all the alternatives we have to look at. I think -- I'm not sure that right now we are in a position to look at it. To particularly start throwing things out. I, for one, am not willing to throw out the concept that there needs to be some sort of a drawdown on all four pools. Now, maybe it can't be a maximum, but could be something else. Some variation of that might be possible.

Why don't we list those alternatives and then we'll come back next Friday and flush them out.

MS. WIK: Well, it --

MR. HAAS: Why don't you put them all on one page?

MR. ATHEARN: There's six alternatives that we've talked about. And we have one -- one vote that one is -- or several votes that one is not doable for '92. Okay.

UNIDENTIFIED PERSON: I didn't know we voted on it.

MR. ANDERSON: Well, Wayne just says he sees some scenarios for one that may perfectly well be.

MR. HAAS: We looked at a scenario of one

where we took all four pools and brought them down to their absolute maximum, and that probably is not doable. There may be other alternatives that Sarah -- on one that involved all four pools that aren't all that possible.

MR. McCONNAHA: I think it's still on all three of those going below minimum operating pools, I think would still be a problem. The reason being -- the reason you can eliminate number one is the impact on adult fish.

MR. HAAS: Well, one of the things that we've invested money with is for MK to look at some of the problems and how to overcome them. We don't have that factor.

MR. PETTIT: I don't know anything that they are going to do will be usable for '92.

MS. WIK: I guess I would like to reiterate, too, that we have put a lot of work in getting the facilities that we have out there functioning to the best that we can; and I'm not sure we want to assume that a proposed structural modification for 1992, that if it actually could be implemented by 1992, that we would guarantee that it would -- it would work the way that it is designed to on paper. I don't know that we want -- do we want to take that risk?

MR. BOWLER: That needs to be spelled out --

MS. WIK: Yeah.

MR. BOWLER: -- in any kind of introductory remarks that you put in any of the -- people need to understand that, if it took twenty years to get where we are at now, we didn't start from -- to think that you could, you know, especially modify something and have it functional instantly is not reality.

MS. WIK: I know.

MR. BOWLER: Not to say that would prevent me from trying something or doing something, but from that experience that needs to be pointed out in any kind of a document you're working on in my opinion.

MS. WIK: Gloria needs a break. Can we take just a few minutes.

(Discussion held off the record.)

MR. ANDERSON: Let's take five minutes, only five minutes, please, so we can wrap this up.

(Whereupon, the meeting was in recess at 3:14 p.m. and subsequently reconvened at 3:24 p.m., and the following proceedings were had and entered of record.)

MR. ANDERSON: At least two things I would like to do. First of all, I would like to have Jim just quickly review the objectives we talked about this

morning. We have got a group of alternatives, good, bad and indifferent. But we do have some alternatives laid out. Let's just go back through the objectives. Then we have got to make a decision here on the process between now and next week, and Sarah has offered her services to do a strawman, and that may be the best thing at this point.

Jim, just go quickly through the objectives.

MR. ATHEARN: And I rewrote these somewhat because of some of the way the alternatives came out. For example, on Objective 1, we're going to determine the change of water velocity with pool lowering. We had an option that we've also talked about functioning. So, I threw in and/or flow manipulation to be more all encompassing. The second one being the juvenile fish part of it. Migration relative to water movement or velocity. And then thirdly, if possible, to determine the survival relationship with respect to increased migration rate or decreased travel time, however you want to define it, is basically the three main areas. These two are in the measurable category; and this one, based on what Steve said about it, might take multiple years of study and what have you. This might be a little bit more difficult to pin down, whether or not, it would at least be something we would like to try to

do with whatever data we are able to obtain.

MR. ANDERSON: I want to echo something Ted said earlier. That we need to think about the design. Do we have a design that is valid? Can we gain some information from a test? We're going to have to be able to make some conclusions about that when we go to the policymakers. So, I think we need to take at least one of the alternatives or maybe all of them, if possible, and do some critical thinking about design. And Sarah has suggested -- go ahead.

MS. WIK: I was just going to say that we would make that part of the matrix.

MR. ANDERSON: And Sarah can develop a matrix, and I guess begin to layout what a design would look like. And layout the pros and cons about ability to gain some information. Now, I guess you will do that on your own and send it out to this full group early in the week?

MR. BJORNN: You are really going to use the fax machine.

MS. WIK: Yeah. You took the words right out of my mouth.

MR. ANDERSON: Okay. All that want to see Sarah's matrix leave your -- or tell her right now your fax number. And you will get this out sometime next

week before Friday, then. Okay.

MS. WIK: Hopefully, no later than Wednesday, so.... What I'm going to do is send this sign-up sheet around again with an attachment to it. If you want to be in on this, please add your fax number to that. I believe I have some of them. But please put them down. I will also include a copy of overheads at the same time of what we have put down so you have got where we came from.

Any other comments or questions that are --

MR. CRASE: Where is the meeting going to be next time, in the Tri-Cities?

MS. WIK: I think that's the simplest at this point. We have arranged for Cavanaugh's in Kennewick which is on Columbia Boulevard in the Tri-Cities.

MR. CRASE: That's pretty hard to get to from Boise, isn't it?

MR. BOWLER: Fly to Pasco.

MR. PETTIT: Portland is pretty easy to get to from Boise.

MR. CRASE: I'm not so sure that commercial service between Boise and Pasco are very good.

MR. SCHLUETER: Better than it is to Lewiston.

MS. WIK: And, if you have got a definite

other suggestion in mind, I will try to throw it out. But I will say, for one thing, we have had difficulty in finding a meeting place in Portland for the eighteenth. Fortunately, we are piggybacking in another location now, but we do want to make these meetings where other constituents may be more likely to get to as well.

MR. McCONNAHA: Why don't you move it to Portland? We will find you a room.

MS. WIK: Okay.

MR. SCHLUETER: How big do you want?

MS. WIK: Well, if it's in Portland, I would say we would need at least space up to two hundred people in addition to those around the table.

MR. McCONNAHA: I can check on our big room on that date. I don't know.

MR. SCHLUETER: You're talking about next Friday.

MS. WIK: Yeah. That's -- is Portland what you're in essence looking for or are you looking elsewhere?

MR. CRASE: Boise.

MS. WIK: Let me put it this way, if you -- I'll throw this out. If you want it in another location next Friday, Boise or Portland, if you are

willing to try to set it up and let me know by a real short time frame because we have got, you know, to fax out to people were it is going to be and so forth. You know, I would just as soon as stick with the Tri-Cities because we --

MR. SCHLUETER: This decision was made an hour ago or two hours ago.

MS. WIK: Well --

MR. ANDERSON: Yeah. People brought it back up.

MR. ATHEARN: We have people that left, though, that left two hours ago with --

MR. ANDERSON: I think it's best if we use the Tri-Cities.

MS. WIK: Yeah. I'd just as soon stay where we're at.

MR. SCHLUETER: We have our travel plans. We have our flight reservations.

MR. ANDERSON: Yeah, it's Kennewick.

MR. SATTERWHITE: I can get to Kennewick two and a half hours from here. You just fly up here and I'll drive you over.

MR. CRASE: Okay.

MR. SATTERWHITE: I'm serious. We can even arrange for a suburban and meet with some of the others

and ride over.

MS. WIK: Okay. Let's leave it that way then.

MR. ANDERSON: We will set the agenda items or Sarah will in connection with her matrix, I guess. Is that fair guys?

(Indiscernible discussion had among speakers.)

MS. WIK: I'm hearing we need a map.

MR. ANDERSON: Is everyone here planning to be there in Kennewick? Can can you make it?

MR. BOWLER: I won't. Steve will be.

MR. ANDERSON: Okay. I think it's critical that people show up, and Mike agrees that some of the people that aren't here today like that we need to contact them and see if we can encourage some of these folks to attend. We will be better off in the long run.

MR. PETTIT: I really think -- maybe we should try to identify a core of passage people to, you know, to be a solid core of what we are trying to do. I ran through a list of names.

MR. ANDERSON: Uh-huh.

MR. PASSMORE: It would be nice --

MR. PETTIT: I don't want to exclude anyone.

MR. PASSMORE: It would be nicer to have a couple of agency people.

MR. ANDERSON: Yeah.

MR. PASSMORE: Because if you don't include them in the building process --

MR. PETTIT: And they sit there like a buzz saw --

MS. WIK: I want to note that I did contact Washington, and they told me they would have somebody here as well as Oregon. So, I -- you know, again, I'm not sure what happened. I didn't get the follow-up phone calls saying we changed our mind or something came up.

MR. BOWLER: Maybe the maple bars would have gotten Frank here.

MR. SATTERWHITE: He has an aversion to coming to Lewiston.

MR. KINNEAR: This process has been scheduled on very, very short notice, and most calendars have been filled for a long time.

MS. WIK: You're not saying anything we don't already know.

MR. ANDERSON: We understand too, Brian; but, you know, there's been a strong advocacy for this operation. We're trying to make it happen. We're

trying to cooperate. And I guess I will say that I expect that in return. You know, you can't expect anything less.

MR. KINNEAR: But don't be disappointed if other commitments have precluded you from getting the people you want on such short notice.

MS. WIK: Well, that's --

MR. ANDERSON: Well -- and people better understand what the implication is to implementing this kind of an action in 1992. I mean, I just have to say that. There's people that are insistent we have got to have this happen. We are going to try to make it happen. And, if we don't have the cooperative efforts and some degree of consensus for it, it very likely won't happen. Whether the Corps dosen't make it happen, or we get into a legal challenge or an injunction or what have you. So, we have got to expect that people are going to make the effort to get involved.

Wayne?

MR. HAAS: At the beginning of the meeting, you mentioned the fact that the Corps determined that you have a legal requirement to prepare an EIS, and I asked you for a copy. You said you were going to send me a copy of the legal analysis regarding the EIS?

MR. ANDERSON: Yeah. The Walla Walla District has a -- has -- has a report. I won't term it a legal analysis, but it's a determination that an EIS is required. Do you have that? You don't have one?

MR. PASSMORE: We will get it.

MS. WIK: Yeah. We'll get that to you, Wayne.

MR. ANDERSON: Okay. Anything else?

I guess -- Sarah, do you have any other -- where is the fax sheet?

MS. WIK: It's coming around. Okay.

Do we -- I guess the only other thing I was thinking of, do we -- would we want assign someone in particular to look in more detail, for example, at the travel time experiment, instead of just making that part of the matrix? Would that be worth having someone like --

MR. ANDERSON: Chip.

MS. WIK: -- Chip be volunteered for that? I'm just throwing that out.

We talked about that, and I don't see that we can really flush that out in detail under what I'm going to do. But, is that worth someone like yourself --

MR. McCONNAHA: Well, I can think about it

and talk to some people. Actually, I think that anything that we would come up with on that is actually applicable to any of the experiments. We are all talking travel time, and we are all going to be talking about detailed controled experiments here. So, I mean, really --

MS. WIK: Correct.

MR. McCONNAHA: -- the no action alternative is almost an overlay off all the others.

MR. ANDERSON: Yeah.

MS. WIK: But, how would it -- I guess I'm just looking in terms of maybe specifics of how it would differ from what we do now in terms of monitoring. And maybe that's not --

MR. McCONNAHA: No. We -- I will try to put some thoughts together on those.

MR. BJORNN: Chip, you might also think about looking up the information to put together on a high-low alternating sequence.

MR. McCONNAHA: Okay.

MR. PETTIT: We also have -- you know, the Fish Passage Center has a paper prepared on pulsing.

MR. McCONNAHA: Uh-huh. Yeah. I haven't seen it.

MS. WICK: Yeah. I guess another request

would be any -- any pertinent info that you are either aware of now or you become aware of that we haven't talked about today, such as what Steve just mentioned, I would sure appreciate a copy of that in a short time frame. I don't have that paper on pulsing and would like to see it just for my own benefit.

MR. ANDERSON: Okay. Thanks for coming. Appreciate it. Expect to see you next Friday and more. And work the network and get some of these other folks out. I think Steve is right on, we need to have the other agencies here.

MS. WIK: Did everyone who had one give Gloria a copy of their business card? If not, she would appreciate it for her task ahead.

(No discernible or visible response was made.)

(Whereupon, the meeting was adjourned at 3:40 p.m.)

CERTIFICATE

STATE OF IDAHO)
: ss.
County of Nez Perce)

I, Gloria J. McDougall, CP, RPR, CSR, Freelance Court Reporter and Notary Public for the States of Idaho and Washington, residing in Lewiston, Idaho, do hereby certify:

That I was duly authorized to and did report the above-foregoing meeting in the above-entitled cause;

That the foregoing pages of this transcript constitute a true and accurate transcription of my stenotype notes of the above-foregoing meeting of all audible proceedings had to the best of my ability.

I further certify that I am not an attorney nor counsel of any of the parties; nor a relative or employee of any attorney or counsel connected with the action, nor financially interested in the action.

IN WITNESS WHEREOF, I have hereunto set my hand and seal on this 9th day of April, 1991.

Gloria J. McDougall, CP, RPR, CSR
Freelance Court Reporter
Notary Public, States of Idaho
and Washington
Residing in Lewiston, Idaho
My Commission expires: 9/9/91, 8/24/91

L A W Y E R ' S N O T E S

APPENDIX U-2

Minutes from the April 12, 1991 Meeting

of the

Reservoir Drawdown Test Design Team

COPY

1992 RESERVOIR DRAWDOWN
SECOND TEST PROTOCOL DEVELOPMENT MEETING

Taken at the Conference Room of Cavanaugh Inn
Kennewick, Washington
Friday, April 12, 1991 - 9:36 a.m.

CLEAR WATER REPORTING

LEWISTON, IDAHO 83501
Post Office Box 696
(208) 743-2748

Serving Northern Idaho and Eastern Washington
(800) 247-2748

12 April

Development of 1992 Test Protocol

Name	Agency	Phone #	Fax #
Fred Crase ✓	USBR, Boise	(208) 334-1555	(208) 334-1341
Dick Nason ✓	Chelan PUD	(502) 6638121	(509) 6631446
Dale Johnson ✓	BPA	503-230-5209	503-230-3314
Dick Watts	FFF	503 367-2785	503 376-3111
Mike Satterwhite ✓	Trout Unlimited	208-746-7288	509-335-7643
Frank Young	ODFW	503-229 5410 x352	503 229 5602
Will Whelan ✓	I.A.G.O.	208-334-2400	208-334-2690
Steve Pettit ✓	IDFG	208-743-6502	208-743-4314
Bob Woellle	Tri City Herald	509-582-1535	509-582-1510
Bruce Lovelin ✓	N.W. Irrigation Util	503-2335823	503-233-3026
Jonathan Schlueter	Pacific NW Grain & Feed	(503) 227-0234	503 227-0059
Ted Bjornn ✓	ID Coop Fish & Wild Res Unit	208-885-7617	208-885-6226
Will Anderson ✓	CoE	503-326-5179	503-326-3572
Bill MacDonald ✓	CoE	509-522-6625	
Pete Poolman ✓	CoE	509-522-6619	
Ron Reimann	T&R Farms Inc	509-547-7855	509-547-0583
Bob Gilchrist ✓	Redwolf Marine (Clarkston, Wa.)	509-758-6563	
Randy Staudacher	TRIDEC	509-7351000	509 7356609
Steve Proctor	TRIDEC	509-735-1000	509-735-6609
Jim Sanders	Benton PUD	509-582-2175	
Bob Hagman	Central Ferry Terminal Assn	509 549-3595	509 549-3335
Michael Rihe ✓	Shaver Trans/ Columbia River Towboat	503-228-8850	503-274-7098
Chris Randolph ✓	Idaho Power Company	(208) 383-2922	(208) 383-2208

I N D E X

PAGE:

CORPS OF ENGINEERS PERSONNEL PRESENT

Witt Anderson
Sarah Wik
Bill MacDonald
Pete Poolman

Reported by Gloria J. McDougall, CP, RPR, CSR, Freelance Court Reporter and Notary Public, States of Idaho and Washington, residing in Lewiston, Idaho.

STIPULATIONS

It was stipulated by and between counsel for the respective parties that the meeting may be taken by Gloria J. McDougall, CP, RPR, CSR, Freelance Court Reporter and Notary Public for the States of Idaho and Washington, residing in Lewiston, Idaho.

FRIDAY, APRIL 12, 1991

MR. ANDERSON: This is the second of a series of three meetings regarding the proposal to drawdown the Lower Snake River projects or a project in 1992 for providing fish benefits, juvenile migration, anadromous fish benefits and travel time and to discuss the experimental design to go along with that.

First of all, maybe we should all introduce ourselves. I'm Witt Anderson with the Corps of Engineers, North Pacific Division office.

MS. WIK: Sarah Wik with the Walla Walla District, Corps of Engineers.

MR. CRASE: Fred Crase, Bureau of Reclamation, Boise, Idaho, office.

MR. NASON: Dick Nason, Chelan PUD, representing Mid-Columbia PUDs.

MR. JOHNSON: Dale Johnson, Bonneville Power.

MR. WATTS: Dick Watts, Federation of Fly Fishers.

MR. SATTERWHITE: Mike Satterwhite, Trout Unlimited.

MR. YOUNG: Frank Young, Oregon Fish and Wildlife.

MR. WHELAN: Will Whelan, Idaho Attorney General's office.

MR. PETTIT: Steve Pettit, Idaho Fish and Game.

MR. LOVELIN: Bruce Lovelin, Northwest Irrigation Utilities.

MR. SCHLUETER: Jonathan Schlueter, Pacific Northwest Grain and Feed Association.

MR. MacDONALD: Bill MacDonald, Corps of Engineers, Walla Walla.

MR. POOLMAN: Pete Poolman, Corps of Engineers, Walla Walla.

MR. STAUDACHER: Randy Staudacher, TRIDEC.

MR. PROCTOR: Steve Proctor from TRIDEC.

MR. SANDERS: Jim Sanders, Benton PUD.

MR. HAGMAN: My name is Bob Hagman. I'm with the Central Ferry Terminal Association.

MR. RIKE: Michael Rike with the Columbia River Towboat Association.

MR. WOEHLER: Bob Woehler, Tri-City Herald. You might say what TRIDEC stands for. They may not know.

MR. STAUDACHER: Tri-City Industrial Development Council.

MS. WIK: There's a sign-out sheet -- or sign-in sheet coming around. I was up too late last night.

Anyway, please make sure you get your name on it.

MR. ANDERSON: The meeting was adjourned, then?

MS. WIK: Yeah.

MR. ANDERSON: As we did last week, we have a court reporter, Gloria, here, who's going to take notes. This is not a formal hearing. The purpose is to get good notes so we have a good record as we proceed. So, all -- everyone at the table has a name tag, I see, which is helpful to her. Also, when we talk, you might say who you are so she might get that down in the record.

As I said, this is the second of three meetings. We sent out a letter to all the Salmon Summit participants a couple of weeks ago --

MS. WIK: Uh-huh.

MR. ANDERSON: -- our Walla Walla District did, indicating that, as follow-up to our decision not to implement a test drawdown in 1991, we would facilitate a regional discussion to come up with a plan for that kind of an operation in 1992. We felt the best way to approach that was to have two -- two what we kind of characterized as technical meetings to develop the test plan and the environmental design

framework. Then, in the third meeting, which is next week in Portland on the eighteenth at Bonneville Power, Room 106, 2:30, we would present what we have come up with in the first two meetings to the policy level, if you will -- I guess, in essence, the coordinating committee level of Salmon Summit and other interested parties, for that matter.

Last week we said our purpose was to frame up the plan and the test design, and this week to come back and further refine that. Then, next week present it to the policymakers.

Sarah has done some fantastic work since last week putting together a matrix and some discussion items of the alternatives that we developed last week. We did develop six alternatives. What we will do today is go through those.

First of all, I would just like to put up on the screen the objectives we laid out last week. I guess my feeling is we didn't pick any specific objective last week. We talked about that quite a bit. We got a little bit caught up in the objectives, so we we went on to actually framing up some alternatives; and maybe we will back into the objective. But, I'll put those up first; and then I think what we need to do today is go through the matrix Sarah has sent out to

everyone. She has copies here today. And I would like to see us get a little more specific on the real programs that we might be able to implement in 1992 for the benefit of fish and also for gaining that -- that biological data in terms of what the benefits are for the fish. Because it is certainly my feeling that we need to get a handle on that if the region is going to pursue this path of dramatic changes in the operation of the system or major changes to the projects.

So, let me just show the objectives we had last week.

MS. WIK: If any of you don't have or didn't receive the other fax, the matrix sheets, I'll pass them around. I only sent to those who had indicated a desire to see it before today.

MR. ANDERSON: The three objectives we discussed last week were: One, determining the change in water velocity with lowering or flow manipulation. Another was, determining juvenile fish migration rates relative to the water movement or the velocity. And the third was, determining survival relationships with respect to the decrease in travel time, that we all assume we will get with pool lowering, just as you get with augmenting flows.

As I said, we talked about those quite a bit.

We didn't really settle on any particular objective. If anyone wants to comment on that, please feel free. By the way, this meeting is a free discussion. It's informal, and we want to have input.

MR. JOHNSON: Witt, could you leave that on?

MR. ANDERSON: Oh, I'm sorry.

MR. JOHNSON: Thank you.

MR. ANDERSON: You bet.

Let me add -- I should back up a moment here just because we do have a couple of new people.

We talked about why we set up this process the way we did. The Corps determined that we will do an impact statement on any plans to implement in '92 that would draft the pools below their normal operating range, and our objective was to define the proposal. Quite frankly, it is kind of difficult to go out in a NEPA process without having a proposal. So, we had set these meetings to allow -- allow sufficient time or the most time that we possibly could to actually get through the National Environmental Policy Act process, the full public review, scoping and so on, by the '92 time frame, which means we have to start that very soon. We indicated at the end of this month. So that was an underlying objective in this process.

Is there anything you want to add, Sarah,

before we actually get into the alternatives we framed up last week?

Will?

MR. WHELAN: Well, you mentioned that you didn't quite get through the discussion of alternatives -- or objectives last time; and I was wondering where issues and concerns with the three objectives should be brought up. Is that supposed to be at the Portland meeting? Is that supposed to be this meeting?

MR. ANDERSON: Well, in fact, I would just as soon, if there are some, that we do that today. We talked pros and cons about those quite a bit. I guess I had hoped that we would -- we would select the objective. I mean, it's certainly our goal to have an objective identified. But there was quite a bit of debate. But, perhaps, that's the first -- first order of business. I mean, we don't have a formal agenda, like we did last week, today because we really need to review the alternatives. But, let's do that first, right now. Let's discuss those objectives. If anybody has input -- for that matter, if anyone has a different objective that should be considered, just recognizing that any implementation next year is going to have to be a decision of the Corps of Engineers and, as I said last week, we are fully intending to sincerely

facilitate the process such that we can come up with a reasonable plan and an implementable plan. And we also talked last week about some other considerations: The consensus and major modifications to the project. And I guess I don't plan to cover that ground today unless there's any questions on those -- on those items. But -- go ahead, Will, we can start with the objectives.

MR. WHELAN: I guess I'll sort of struggle around and try to express this. Sort of throw it out for comment.

My concern is that in Items 2 and 3, that you have up there, that we may be trying to pose questions that are going to be very difficult to answer in a one-year test. Particularly No. 3, determining the survival relationship with respect to decreased travel time. We are doing -- well, some of our alternatives call for a one-pool drawdown. We may have a great deal of difficulty getting real firm biological answers with regard to survival relationships; and I'm concerned that by having that objective up there, if we produce useful information, say, on Objective 1, water velocity, but we are unable to produce conclusive results on Objective 3, that the test will be deemed a failure.

MS. WIK: Well, these were objectives that we

just threw out as possibilities. These weren't saying that any test we propose for next year would try to address all three objections. We were just trying to get at initially what the -- what the objective of a test for '92 was, and those were some of the concerns that we raised last week was, Could you get any information regarding Objective 3, which is, you know, in essence -- you know, overall what we are looking for is increased survival.

MR. WHELAN: Right.

MS. WIK: But, is that realistic under a one-year test plan scenario? So....

MR. WHELAN: It's quite conceivable that a test will produce some fairly knowable and even dramatic results of water velocity, and it's strongly argued that travel time and survival through the system are closely correlate. But, with one year and one pool, we may not be able to produce those types of biological results. And my concern is that we not set such a high threshold in terms of an objective that then the results of test are called inconclusive; and, therefore, we don't go forward with something in future years.

MS. WIK: I don't think there's any argument there. One of the things that we talked about, also,

was that, whereas, for example, on Objective 3, you might not be able to measure benefit, we did at least want to try and measure some sort of benefit in that there are negative impacts; and you need to be able to weigh in the long run, you know, is there an overall benefit to doing something. And we're not saying there's not. It's just that there needs to to be some ability to measure there.

MR. WHELAN: Is there disagreement -- you know, I'm not a technical person, so it is a basic question; but bear with me -- is there disagreement that reducing water velocity by -- I mean increasing water velocity provides a benefit for the fish?

MS. WIK: I don't think so.

MR. ANDERSON: No. I guess I'll speak to that, and let some of the fishery folks.

I think it's pretty clear that there's a relationship there. I guess what's uncertain is the magnitude or the precise relationship. Does anyone else want to offer -- Ted?

Ted, why don't you come up here. We have a name tag for you.

MS. WIK: Yeah. And a seat over here, Ted.

MR. YOUNG: We do have a relationship between travel time and water velocity, average water particle

movement; and, like anything else, it has some variability associated with it. But it's probably better than the kind of information we would get from trying to measure a small change in water particle travel time relative to survival estimates for downstream migrants. Probably that's not doable in a practical sense. We had great difficulty doing it over a number of dams where the difference was very great.

I have kind of a different kind of problem with the same area, objectives. I guess I would like to see us identify the biological objective; such as, reduce downstream migrant travel time, and then identify possible -- the possible range of ways that you might do this.

Do you want to write that down?

(No discernible response was made.)

MR. YOUNG: Okay. I'd just say reduce migrant travel time.

MR. ANDERSON: Do you want to call it a biological objective, to make that distinction?

MR. YOUNG: Well, I think, if we don't have a biological objective, we shouldn't be doing this.

MS. WIK: I'd like to --

MR. YOUNG: You can call it an objective or a goal, or whatever you want to do with it.

MS. WIK: I want to address that a little bit, Frank; and that's what, you know, under Objective 2 there, we were trying to get at --

MR. YOUNG: Yeah.

MS. WIK: -- is to -- you know, the relationship but, in essence, looking for on increased -- or a decrease in travel time.

MR. YOUNG: Right. But I would like something more direct.

MS. WIK: Okay.

MR. YOUNG: And under that I would say "A" under that, and I'd have --

MR. ANDERSON: Just a second. Does that capture your --

MR. YOUNG: Yeah. And then "A" under that, displaying the range of alternatives would be: reservoir drawdown.

MR. ANDERSON: What was the first word.

MR. YOUNG: Reservoir drawdown. "B" would be flow augmentation. No particular order here. And "C" would be dam removal. And there may be some in between. But what I'm trying to do is display the range of alternatives that are available for addressing the biological objectives and then some description or narrative in the introduction of this that shows how

reservoir drawdown then fits into the total picture. I'm not suggesting that you address the other alternatives in this process; but, in this process, identify what the other -- the range of other alternatives are, and how they will be addressed.

I understand you had some discussion about this at the Lewiston meeting, but that it was inconclusive as to how these -- this range of alternatives was going to be addressed in the future. And my only concern is that we will proceed down a pathway of looking at reservoir drawdown and may find it's infeasible and then say we have done our job.

MR. ANDERSON: I guess our objective here was -- the Salmon Summit proposed a measure, the Idaho caucus and others proposed a measure based on the premise that there is benefit to help migrants; and the task was to develop a plan to test that hypothesis, I guess. And what you're suggesting here is, perhaps the objective is a measure which we think will do that; and maybe we will have some research associated with it. And, also, you're suggesting that we look at some other alternatives to just a drawdown, is that --

MR. YOUNG: Of course, all of these, plus the objective, have been discussed ad nauseum in the Salmon Summit.

MR. ANDERSON: Right, right.

MR. YOUNG: And it's just that, in this instance, they have focused on a drawdown.

MR. ANDERSON: Yeah.

MR. YOUNG: They discussed augmentation.

MR. ANDERSON: Yeah.

MR. YOUNG: They discussed dam removal.

MR. ANDERSON: Yeah.

MR. YOUNG: They discussed modifying dams.

MR. ANDERSON: Uh-huh.

MR. YOUNG: And there is probably a NEPA process involved in all of this that may not all fit together. And my concern is that I want to make sure that this all fits together, and it is taken care of --

MR. ANDERSON: Well --

MR. YOUNG: -- and that we know what part of it we are addressing here. We're not -- our objective is not to drawdown the reservoirs. That's not my objective.

MR. ANDERSON: And I guess we came to this meeting with the objective to look at this particular measure, this proposal, this hypothesis and develop a plan where we are actually developing an experiment for it.

MR. YOUNG: And I don't have a problem with

that.

MR. ANDERSON: Yeah.

MR. YOUNG: So long as a part of this is identified as to how this fits in --

MR. ANDERSON: Okay.

MR. YOUNG: -- with the other overall problem.

MR. ANDERSON: You're looking at the bigger picture.

MR. YOUNG: Right.

MR. ANDERSON: I understand.

MR. YOUNG: I think it is a mistake to go out on a deadend -- perhaps a deadend track and not have identified what part this is to the real problem.

MR. ANDERSON: Yeah.

Let me just address there's other things going on here. Two things that the Corps is involved in. One is a system operation review, and another termed "our mitigation analysis" to define the mitigation requirements for the eight Corps projects on the Columbia and Snake, and then look at alternatives for meeting a mitigation objective, should that be beyond what we have right now. Those are ongoing processes that won't be completed in '92. The Corps, Bonneville Bureau and some other people, are also

looking at needs by 1992 for a more programatic implementation of measures, not just the Snake River test. Flow augmentation with Dworshak, Brownlee, Upper Snake water. Drawdowns on the Lower Columbia River. In that case, we have set a limit not below minimum operating pool. That was -- that was kind of a conclusion out of the Salmon Summit. So, there are other alternatives going on.

And, I guess, what I think I hear you saying, Frank, there's got to be sense made out of the whole package --

MR. YOUNG: Right.

MR. ANDERSON: -- of all of these alternatives. That, we just don't select one and spend the next few years looking at that, ignoring these other opportunities.

MR. YOUNG: I -- I -- all I'm proposing is that there be an introduction to this that describes what you have just described and with an accompanying schedule.

MR. ANDERSON: Okay.

MR. YOUNG: So, we will know --

MR. ANDERSON: And I don't want to get out in front -- it's not the purpose of this meeting, but we are looking at -- the agencies are looking at what we

need to do in a bigger picture sense by '92; and, then, how that relates to the other activity we have ongoing, such as the ESOR and the mitigation analysis.

MR. YOUNG: Yeah. I'm aware of all those other things.

MR. ANDERSON: Okay.

MR. YOUNG: I just don't want for this to be isolated.

MR. ANDERSON: Really our purpose in these meetings was this particular measure. How do we --

MR. YOUNG: I understand.

MR. ANDERSON: -- how do we implement this measure. How do you test it such that the Corps can get into the National Environmental Policy Act review, and we can go through the public scoping and start looking at those issues. We felt we needed to get to the experimental side, the biological, the scientific aspects. Can we design a plan where we can gain some useful information. Then, we need to look -- do a realty check with a lot of other users out there and see -- see just what is implementable in 1992.

So, it is our hope that we can develop something fairly reasonable and gives us some information; and we would hope benefits the fish in '92. Certainly, that's the underlying premises we are

trying to meet.

MR. YOUNG: Yeah. I understand that.

MR. ANDERSON: Okay.

MR. YOUNG: But I just want it to be kept in context so that maybe, when we get all through here in '92 and say, that didn't work, you check it out; and that doesn't mean you're all through.

MR. ANDERSON: Right.

MS. WIK: Yeah.

MR. YOUNG: You just proceed from there, too.

MR. ANDERSON: Sure.

MR. YOUNG: There's some recognition of that in the document that comes out of this.

MR. ANDERSON: Okay.

MR. WHELAN: This issue of scoping, I think, is important right now. Because the type of context that Frank is talking about, the broader context, this mitigation analysis for the Columbia River, is the type of thing that would be useful for us to have some information on in terms of our comments during the scoping of this and the EIS. So, if you could provide us with as much information as possible on what these other NEPA processes are.

MR. ANDERSON: Okay.

MR. WHELAN: What their purpose and

parameters are.

MR. ANDERSON: Okay.

MR. WHELAN: That will help us in terms of getting comments in the scope of this document.

MR. ANDERSON: In fact, just to comment on that, there was a meeting of the Council of Environmental Quality this week on Monday talking about that very item; and they talked about a framework document. How does all the activities in the region going on to deal with the salmon situation, how do you make sense of all that to the public, and how do we make sense in the collective decision-making about the types of measures that are pursued. How they might fit together.

MR. WHELAN: I take it, from your description, that the Columbia River mitigation analysis, that will be a NEPA process? You will be producing an EIS to do that?

MR. ANDERSON: No. I wouldn't call it a NEPA process. There may be NEPA procedures associated with it, but that's really an analysis process.

Maybe, Sarah, you want to comment on that.

MS. WIK: Yeah.

We are -- we're still looking in terms of what -- of what we would do under -- with the NEPA

process, but it is more of an analysis, as Witt said; and there will be public involvement and so forth with the analysis, but not necessarily the typical scoping initially with that, that would go on with preparation of an EIS, for example.

MR. WHELAN: I have a fairly specific concern with the way that this EIS process has been described and scoped thus far; that is, we are really talking about a 1992 test here -- that's the way it's been described --

MR. ANDERSON: Yes.

MR. WHELAN: -- I'm concerned about getting into '92, doing a test, several months later having some interpretation of the results; and then a conclusion coming out from that that we really need another EIS to take another step. And that that EIS will take eighteen months to two years, and we will lose -- we will lose progress. We will lose momentum during '93 and '94. So, one of the things that would help address that concern is, perhaps, the early commencement of an EIS process that is more broadly scoped along the lines that Frank Young talked about a few minutes ago to begin to provide the NEPA coverage necessary for actions in '93, '94 and beyond. The Columbia River mitigation analysis may be one process

process to provide that NEPA coverage.

MR. ANDERSON: And the system operation review as well, in terms of the flow operations, we have a schedule for the system operation review; but, in view of the way the terrain has changed in the past six months with the petitions and now we have tentative species, that schedule is being looked at. And also, again, I think you will be seeing a '92 environmental statement. We are working on that right now. I don't really -- I can't -- I don't want to comment too much on that, about the types of measures that will be addressed in that, because we are looking very hard at that. Perhaps, by next Thursday's meeting, we will be able to articulate what that package is going to look like. But we have now a specific request from Congress, some language in a supplemental appropriations bill, that requests the agencies to identify the environmental procedures and management actions and other things that needs to be prepared to deal with the potential listing or the listing of these stocks in 1991 and 1992. So, all of the federal agencies are taking a hard look at that right now to report back through the administration of Congress. So....

MR. WHELAN: That might be a good thing to

bring back up next Friday -- next Thursday. Thank you.

MR. ANDERSON: Yeah. That's right, Will. With the policymakers that would certainly be a comment that, perhaps, you might want to make.

Okay. Are you ready to actually walk through these alternatives that we discussed as a group?

(No response was made.)

MR. ANDERSON: Anything else?

MR. JOHNSON: I would like to suggest two other objectives. In reading the material that Sarah put together there, in most cases, there will be --

THE REPORTER: Excuse me, I need you to speak up.

MR. JOHNSON: -- there will be -- in most cases, there will be effects on adult fish. And two possible other objectives: One would be to determine the effect on adult passage, the delays and mortality due to difficulty finding the ladders; and the other is to determine the effect on adult and juvenile survival due to gas supersaturation.

MR. ANDERSON: I --

MR. CRASE: Are these objectives?

MS. WIK: I think that was kind of an understanding, Dale, that that would be a given. That we would be monitoring for those, and that that would

be part of a more specific test design.

MR. JOHNSON: Okay.

MS. WIK: What we were trying to do is set up the basic test framework to get the information regarding the concept of a drawdown; but, under that, we would, of course, include within that --

MR. JOHNSON: Test --

MR. ANDERSON: -- a monitoring impact on the adult fish, monitoring dissolved gas levels, turbidities. And that's -- we were trying to not get too specific before going forward with this; but, I guess, I envision that we would continue with a small technical work group to -- to decide on how to get to some of those issues in terms of actual test plan.

MR. JOHNSON: Yeah. I'm recommending alternative objectives, and maybe I'm talking about tasks within objectives. Maybe you are talking about the overall goal of reducing travel time. I wasn't at the last meeting.

MS. WIK: Okay.

MR. JOHNSON: So, maybe the perceptions are different. But goals, tests -- goals, objectives and tests, but....I was just offering up that there are other objectives that could be pursued in a research study.

MR. YOUNG: I think those are really tasks, Dale.

MR. JOHNSON: Okay.

MR. YOUNG: I think we are all in agreement that all those things need to be addressed.

MS. WIK: Yeah. I guess I would agree with that. Does that --

MR. JOHNSON: That's fine.

MS. WIK: Okay.

MR. NASON: I wasn't at the other meeting either, but we haven't talked specifics yet, and I hope that we don't let the politics of the situation drive a '92 test. Because I think that once we start addressing Dale's concern for adult mortality, monitoring turbidities, things of this nature, we will find this is a horrendous test; and we probably should be starting immediately to secure the fish. Whether they are going to be hatchery, wild, whatever. And I think that, when you start getting into the specifics, it's going to be very difficult, even without on EIS process, to meet '92.

MR. ANDERSON: Well, that --

MR. YOUNG: What politics?

MR. ANDERSON: In fact, that was the discussion last week; and we will walk through those

very types of issues in Sarah's matrix and in her discussion. But, that's quite right. That's why we need to get to -- to the design of this program in '92, the plan itself and the environmental design to go along with it.

MS. WIK: And we need to walk through those concerns as we develop them. That's critical that we evaluate those.

Any other thoughts before we move into....

(No response was made.)

MS. WIK: I guess what -- just a quick rundown on this, and some of this will be reiterating what Witt said.

But I would like to see us today review the alternatives as we discussed them last week, go through the matrix that was developed and come away with reasonable alternatives that we want to recommend. I don't -- well, I'll throw this out, but I don't know that we want to go forward next week with all six alternatives, which was something we discussed last week. I would like to see us pare that down, looking at these issues, such as Dick brought up, such are on the matrix and decide what really is reasonable for '92.

Will?

MR. WHELAN: I'm sorry to keep -- when we get to the technical stuff, I'll shut up.

Why are we trying to pare down alternatives at this stage, prescoping?

MS. WIK: Because we -- in the short time frame for the EIS, we cannot -- we cannot scope all six alternatives reasonably, and do -- do we want to. I mean, if there are definite ones that we agree we don't want to implement for 1992 because of adult fish passage concerns, or whatever, then....

MR. WHELAN: Yeah. I understand the concern. But, you know, NEPA says that the consideration of alternatives is the heart of the document.

MR. ANDERSON: Uh-huh.

MR. WHELAN: And really -- as you go forward through your NEPA process, you really need to have a range of alternatives included; and, if you don't have that range in the document, then I think you're going to be subject to criticism and possibly attack. So, I think you are much safer having at least six alternatives. And beyond that, you don't need to identify a preferred alternative at the notice of intent stage.

MR. ANDERSON: I don't disagree with that fact. We will present all of these six alternatives at

least in the document. Our objective was to see if we can't come to closure on a proposal. Do we have a proposal. And I mean, let's be frank, we need -- we need to get the fishery agencies and other responsible parties to conclude that the proposal is acceptable. I mean, there's people responsible for the fish out there as well as the Corps of Engineers responsible for a number of other items, as well as the fish. The point is we want to see if we can develop a plan and an environmental design that is implementable. I mean, that was the purpose to come and have these meetings, such that we have a proposal; and we will go out with the NEPA process. And, of course, we will want alternatives. I agree with you. That's part of the purpose of NEPA. But, I guess, we -- I think what Sarah is saying, at least in my view, is we want to try and focus in on some plans that make some sense. I mean, I don't think there's any kidding here that there's a lot of debate about -- about these various proposals, these alternatives. Now, maybe we can all come away agreeing that there might be something here that does make some sense, might benefit fish. We might get some good information, and it's actually implementable when we get through the EIS process.

MR. BJORNN: Could we talk for a minute about

what we think is going to happen next week, at the meeting next week. I think that might have an influence on what we -- on how we view this process. If the policymakers next week are going to look at six alternatives that we are considering and select one, then we approach that meeting in one way. If they are going to look at all six of them and say, Okay, those six are all okay for your consider in the NEPA process, then that's a different approach.

But, if they are going to come away with -- you know, and want to make a proposal to the Corps and say, That's the one we want you to do the NEPA process on, then we need to go into that meeting with different preparation than if we just expect them to say, Okay, those six look okay. Go ahead.

MR. ANDERSON: We would like to see direction, a proposal, a regional proposal, that was our mission at the outset here. Having sat in the Salmon Summit over the past six months, I'm not sure -- not sure that it's wise to expect that to happen. But I do think that we will get some comments. And I will, for example, look at Bruce here or I'll look at the navigation industry. If, for example, we said we are going to do a four-month drawdown on all the projects; in fact, we had a good experimental design for that.

Bruce, I mean, are you going to come in and say, Well, we better screen that now because we're not going to go with that.

MR. SCHLUETER: Yeah.

MR. ANDERSON: And not to say that the Corps will not consider that in the NEPA document. We will. But we really want to get focused on something that's reasonable. Because I know there's other people out there that have indicated in the Salmon Summit, a test, we accept the concept of a test; we want to get some information; but we have -- we have to have something that's reasonable. And I expect that to be the discussion next week.

MR. SCHLUETER: Our point has been made -- and I think that's why we are having these meetings, not necessarily from our point; but we are pleased to see the Corps undertake these kinds of meetings and develop an experiment. We felt that, first off, you need to get the biologists together and develop a biologically credible experiment; and then, second, we need to involve the river users in terms of trying to mitigate for their impacts to the extent you can. And, hopefully, that's the steps we are going through right now.

Today we will complete the biological test.

And, hopefully, next week -- and I know that's a big -- a big agenda for a two-hour meeting with a group of the Salmon Summit members, and that is to have recognition for navigation, irrigation, for resident fish, public safety and other issues in relation to those drawdowns. And it was our expectation that we could come to some kind of a general consensus on an experiment. So that we enter, if a NEPA process is required, such as an environmental impact statement, you folks need to start going through that, at least we have some consensus at the leading edge of it. We did not feel -- we did not feel that NEPA is a proper vehicle to be designing a biologically credible experiment. We felt it should be developed in this kind of a forum here and, hopefully, gaining consensus from nav and irrigation and other folks, a leading edge. We don't -- we don't want to be obstacles in an experiment -- excuse me -- in an experiment or in the environmental impact statement. And we thought, again, in a leading edge, before you start an EIS, if that's required, it would be pretty nice to help that process through to have some consensus at the start.

MR. ANDERSON: Let me -- is it not fair -- excuse me a little bit -- to say that, I think we will have to present the alternatives to the group; but that

we don't have an -- we have an objective to narrow that to one or two tests that we actually think are doable and have some -- some sound experimental design, I mean, again focusing on the biological aspects and the experiment. I mean, I certainly would like to go back to that group next week and say, We have looked at these six. Here are some of the major pros and cons of these, and we are really looking at one or two of these, at least in our collective wisdom. Is that not a fair objective?

MR. WHELAN: I think there's a way of getting that done and still more or less going towards Ted's second option. I think that it's -- you don't need to go forward with just one alternative. Now, I think it would be a mistake to try to limit the range of alternatives or say that we really have one test proposal here and this is it. We will consider these other alternatives, but here it is. What you need right now is a proposed action, a list of possible alternatives and some description of their impacts for a very brief notice of intent, a page. A page. Your proposed action is to test reservoir drawdowns in 1992. You have got six alternatives right now. They can be refined. Some added, some dropped. But I think six is a decent number for present purposes. Put them in the

notice of intent and very briefly summarize the impacts.

To go beyond that and to try to get the group to start focusing on just one alternative really is getting the cart in front of the horse. You want to use the NEPA process to take a look at some of the specific advantages and disadvantages of each alternative and to make an informed decision at the proper point in the analysis. But I still think we can go into Portland's meeting with some sense of the concerns and the points raised on a technical level about each the alternatives as long as it's being put in the sense that these are the comments to date. We're not making any decisions at this point. But here is sort of some weight of opinion about this alternative, and here is some comments about that one. I think you can do that, and I think that accomplishes your purpose of giving the policymakers some sense of where this group is headed. But to make decisions selecting between alternatives, which ones are going to be the preferred alternative, I think that would be a mistake this morning.

MR. SCHLUETER: If I could respond to that.

If your objective is an environmental impact statement for NEPA, I would agree to that. Except my

objective is a little bit different, and my objective is to come up with a biologically credible experiment, one that's not going to impact my industry and some of the other industries, impact them in a negative way. And if -- with that as an objective, I would just think that this group would be spending its time wisely in doing some kind of filtering process and going through some of those objectives. I mean, let's face it, an objective of a four-dam drawdown for several months, you know, that -- that may have some biological credibility at least for smolt survival; but, you know, is it reliable for adult returns and things of that sort. Is it going to be something that is going to make it through the political and policy level folks, or is it going to be something that's salable. And I'm concerned about that. I think we ought to be narrowing ourselves, realizing that if we do get into a NEPA process, I'm sure the attorneys will be in there arguing to -- that it be broadened, we look at all kinds of options.

But, again, I would just request that the biologists here kind of narrow this thing down.

MR. ANDERSON: I hear you're concerned -- thank you, Bruce. I hear you are concerned that you don't want to eliminate something, and we will have to

look at alternatives in the EIS. But, I guess, I still think we set out to talk on a technical sense of what we could develop and implement that can help fish, not harm fish; and we can gain some information and implement it. And, if we don't come away from this recognizing that there's some -- some problems to overcome in some of these alternatives, then I'm not sure we have -- we have done much in these meetings; and the Corps is going to have to make a hard decision about where we go from here after the eighteenth. But I....

MR. WHELAN: You don't need to make that decision on the eighteenth. You need to make it at the final EIS stage for the notice of intent. Don't set your -- don't set the bar you have to clear too high here because you're just going to get a lot of grief trying to clear that bar right at the outset. It is a very simple thing to do at this point. I think this group is making good process towards that.

MR. ANDERSON: Well, I guess, let's get into the alternatives because I think we have got some information on these alternatives that helps -- helps clarify what -- what may or may not be reasonable and recognizing that we will present alternatives in the NEPA process.

Ted?

MR. BJORNN: I'm just trying to think through, is there anybody here that's an expert in the NEPA process? One of the --

MR. ANDERSON: There's one over there (indicating).

MR. CRASE: How about someone that's written several impact statements, does that make them an expert?

MR. BJORNN: One of the thoughts that comes to my mind is that the NEPA process is usually gone through when you have got a proposed action; and that's different, for example, than from a Forest Service management plan which proposes a whole raft of alternative ways of doing business. And it seems to me like there's -- you know, we are looking at -- we are trying to do more under the NEPA process than maybe it's designed to do. I don't think that's the process to make -- to choose between alternatives. What it is, is to evaluate -- and I stand to be corrected -- the actions that are proposed -- you know, the results of a proposed action. And, if that's true, then, that demands that we come up with some kind of a proposal.

MR. WHELAN: Yeah. Can I make a suggestion? That we deal with some of this stuff at a break maybe.

I have the NEPA regs here (indicating). If people are interested, a few of us can get together and take a look at this stuff, hash it out over just a real quick break and come back. We don't need to take everybodies time for some of this stuff

MR. SCHLUETER: I guess I would recommend that -- my attorney is not here, and he's quite versed on the NEPA regulations. And, if we want to get together on some conference calls or something or during the next week or something --

MR. ANDERSON: Sure.

MR. SCHLUETER: -- we would be willing to do that. We have already come to a position on this and express that to the Corps.

MR. ANDERSON: Is there anyone else that has the same concern that Idaho -- I'll characterize it for you, correct me if I'm wrong, Will -- your concern is that we might get too focused on a proposal and eliminate something that you might want to see happen as opposed to the proposal that the group is focusing on, is that --

MR. WHELAN: And that we need to distinguish between a proposed action and a consideration of alternatives. Idaho is not concerned with the proposed action here. The proposed action is a test of

reservoir drafting in 1992. What I'm concerned about is, is that we establish prior to the EIS -- and, in fact, prior even to the publication of the notice of intent -- a momentum for a single one of the alternatives in that proposed action.

MR. ANDERSON: A momentum towards a single -- let us establish a proposal and alternatives that will be evaluated in the process. We don't have any decision on that proposal, but the intent was to get some collective consensus in the region. And we talked about this last time. We had said during this we want a consensus, recognizing that it is going to be very difficult to get. Failure to get full consensus is not going to stop us from going through the process. But certainly, if we don't get some understanding about the proposal, that's a difficult one to overcome, I mean to make sense of going into a process, making sense of what we are proposing to the public.

Does anyone share that concern? I mean, does anyone else have any views about --

MR. PETTIT: Well, Witt, I certainly don't want to waste all our time if we're going to flaw the process by limiting how we enter it. Time is too valuable and --

MR. ANDERSON: We are not -- we are

certainly not eliminating alternatives from further consideration, but --

MR. PETTIT: This whole thing can be shut down legally into this year ahead of us because we didn't follow the right process or we limited ourselves too restrictively; and, you know, I don't want to make -- I think that's a valid point that Will made, you know.

MR. ANDERSON: Yeah. I agree with you. I agree.

MR. YOUNG: Our concern is, too, because something isn't feasible to test in '92 doesn't mean it should be eliminated from further consideration. Because by correcting the problems associated with its being infeasible for testing in 1992, you may be able to do it in '93 or '94. So, in that respect, I would agree with Will.

MR. NASON: And that's basically what I was alluding to earlier. The more drastic the test, you might say, a four-reservoir drawdown for four months, for example, it is probably biologically easier to measure than something we can reach consensus on that's so benign that -- that you can't measure the difference. And I think that's my concern, is that the difference be measured. You know, that we measure that

it's going to help fish or not. And I think the thing to do is to go through this like you want to.

MR. ANDERSON: But, let's go through the alternatives; and we'll bring this back up by the end of the day and see where we are and how we want to present it to the group next week. I'm certainly -- I don't have any problem with going through the alternatives with them if we can't reach some -- some degree of satisfaction on a proposal. And that proposal can be framed fairly broadly, but I certainly would like to give them the benefit of all the discussions we have had about the good and the bad with each of these in the sense of at least -- at least experimental design. Okay?

Okay. We will just start going through the alternatives.

MS. WIK: Everybody got their handout?

(No response was made.)

MR. JOHNSON: You're looking at the matrix or the text?

MS. WIK: Well, what I would like to do is, maybe we want to take the two matrix pages off the back and kinD of set them aside. What I would like to do is go through each of the alternatives, describe what's on the brief description page and then walk through the

matrix associated with it. So, it might be easiest just to -- anybody else need a copy?

(No response was made.)

MR. YOUNG: Are you sure you have enough copies?

MS. WIK: Better safe than sorry, Frank.

MR. ANDERSON: Sarah, can I get one thing back up. I should have done this first.

We have set a goal to shorten in-river migration time.

MR. YOUNG: Wonderful.

MR. ANDERSON: Okay.

MS. WIK: That answers Dale's question.

Okay. Looking at Test Alternative No. 1, four reservoirs, we threw out the idea of -- or we tossed into Corps discussion lowering all four Lower Snake River pools to nearest spillway crest elevation. In other words, the maximum possible that could be done in '92.

Looked for a maximum time frame for this from April 15 through August 15. That allowed for fall chinook going through the system, again, depending upon which stocks were proposed for testing. Also suggested that this time frame could be broken down into April through June and then June through August.

With that in mind, the brief type of study plan that we discussed was that we would tag juvenile fish to be released at Lewiston and then recovered at McNary Dam to estimate travel time through the entire Lower Snake system under a drawdown. We did discuss the possible use of radio tags. I talked to Lowell Sternberg (phonetic) from National Marine Fisheries Service at length about that, and he said that he would highly recommend against using those in juvenile chinook. He said any fish less than a hundred seventy-five millimeters, there was concern about impact to the fish. Problems in bouyancy, et cetera, so that they would not be -- they wouldn't respond as a fish normally would. So, he, in essence, suggested that we not consider using radio tags.

Under this study plan, all fish would have to be collected at the McNary juvenile fish facility; and, you know, we can then get into the concerns.

The only -- the only issues that I have really outlined on those descriptive pages were the major ones; such as, the elimination of adult fish passage. So, we have to go back to the matrix just to walk through.

For those of you who weren't here last time, we took this alternative and we outlined all the

potential issues and concerns with it. Then, rather than going forward with the other alternatives and doing the same thing, we agreed, you know, that some would be applicable and some wouldn't; and that was what I was tasked with, was to at least draw out a strawman of what -- what concerns would fall out on the other alternatives. So, I would just like to walk through that.

So, as I note here, again, adult fish passage at three of the four projects would be eliminated if we went below minimum operating pool.

MR. ANDERSON: Question on that, would we not also lose passage at Lower Granite?

MS. WIK: That's what I was going to say.

MR. ANDERSON: Okay.

MS. WIK: One of the things we talked about was, well, maybe we wouldn't want to go all the way to spillway crest elevation at all four. Adult passage would be still functional at Lower Granite to the elevation of seven ten, which is twenty-three feet below minimum pool. So, that's -- I note that here, that if we did go below that, if we did go clear to the spillway crest at Granite as well --

MR. ANDERSON: Right. But the other exception is if Goose is drawn down below the criteria

at the adult fishway entrance on Granite, you put Granite out, so --

MS. WIK: Right. Which -- yeah.

MR. ANDERSON: I didn't --

MR. CRASE: Is the -- a question would be, is there anything that could be done by the spring of 1992 that would make the ladders operable to some elevation?

MR. NASON: I don't think that's possible, engineeringwise.

MR. CRASE: Well, I don't think any of us really know that; and that's one problem we have with setting a definite proposal.

MS. WIK: Okay. Let me throw out one thing on that, Fred. And that is, we don't know what would have to be done; but, with our existing facilities, we have undergone many years of testing to develop those to pass fishways as effectively as possible; and we are still undergoing that test. Ted is out there on the Lower Snake this year to look at ways to improve that, but is it --

MR. CRASE: At minimum operating pool. Have you looked at ways to go below that.

MS. WIK: Okay. Let me follow that thought through. In other words, it's taken us a long time to get where we want to go at minimum operating pool.

Would it be safe to assume that between now and the spring of 1992, we could design some modifications that we would be comfortable in assuming that those fish could find those when we are still working on the existing facilities. I mean that's just --

MR. CRASE: I don't know.

MS. WIK: Well, yeah. I'm not negating. I'm just throwing that out for discussion.

MR. ANDERSON: There's two things here. It's the major construction that will be required; and I can tell you, as Dick said, I mean, you can't do those kinds of modifications in that time frame.

MR. CRASE: Well, look at to get down to spillway; but what kind of modification would be required to get down three feet more?

MR. ANDERSON: But, if you're -- I guess, let's start with the fact that you are spilling all your water and you need to discuss the problems of just getting the fish to a -- a fishway, to an adult ladder. I would like Ted or Frank or someone else to comment on that. I mean, that's -- that's --

MR. CRASE: I guess I was trying --

MR. ANDERSON: Never mind getting to the point of what you would do structurally.

MR. CRASE: I guess I'm trying to make a

point more in that it has to do with a lack of information. I don't think anybody here thinks you could probably lower all four pools down to spillway crest, but there's some people, I know, that think that you might go somewhere between minimum operating pool and spillway crest. And how far down you might go would be determined on what kind of impacts you run into and what kind of impacts can be mitigated. In the time frame that we're talking about, you might be able to do some of it by '92 and something further by '93. And I know I don't have the knowledge to say at what level we can protect adult fish migration, plus a whole lot of other uses: Navigation, irrigation. What kind of modifications can be done reasonably at a reasonable cost to keep those functions working. And that might have a whole lot to do in your final proposed test. Because those kinds of things are going to lay constraints on what you can do. You're not going to wipe out navigation for the entire season.

MR. NASH: The Corps during the -- Fred, during the Salmon Summit and the Mainstem Passage Committee, which you were on, I believe put together a list of impacts at what reservoir elevation the impacts occurred, if I'm not mistaken.

MS. WIK: Uh-huh.

MR. ANDERSON: Yeah, I did that. I presented it.

I guess, Fred, when you're talking about the major modifications that would be required, we know physically it can't be done. I mean, you can't develop the designs and get out there and construct it in the time frame we are talking about. But, beyond that, just the -- just the design that you would have to to come up with to get fish into a fishway when you're spilling all the water, you don't have the water coming through the powerhouse.

MR. CRASE: Well, you keep going down to spilling. What if you didn't spill?

MR. ANDERSON: Okay. But --

MR. CRASE: What if you went down one foot below minimum operating pool, what happens?

MR. ANDERSON: Okay. Let's start with the juvenile bypass facilities. And the premise is -- I don't think anyone has changed this -- that if you can't bypass the fish efficiently from the powerhouse that we have to shut down the powerhouse, which means you're spilling all your water, which means you have conditions in the tailrace that are certainly not conducive to the present adult fishway.

MR. CRASE: And there's nothing that can be

done between '92 and '93 that would allow you to go one foot below minimum operating pool at Ice Harbor?

MS. WIK: I guess one question on that, what is the purpose of one-foot below minimum operating pool? What does that really gain you?

MR. CRASE: I don't know. I'm just using one foot -- I just pulled it out of thin air.

MR. ANDERSON: What --

MR. CRASE: The point is, I guess, I don't feel -- and I know a lot of other folks don't feel -- that we have the information to come out and say, Okay, without a doubt, this possibility is totally eliminated. Some people don't feel comfortable doing that at this time.

MR. ANDERSON: Well, one of the suggestions Frank made to me on the way over here from the airport today was one of the physical tests you might want to do is an observational thing where, when there's not fish in the river, you spill all the water and you look at the circulation patterns and whether you're meeting criteria in your adult fishway entrances.

I stole that from you, Frank. Maybe you want to comment on that.

But that's one thing that could be done at some point in time.

The other thing that was discussed in the Salmon Summit, and we even talked about it last week, was maybe the only thing you're talking about is trapping fish at one of the lower river projects and hauling the adults upstream, and there's lots of problems with that that we discussed last week.

MS. WIK: I guess I would like to focus back on what we can do in '92, and this gets back to the discussion we had earlier. That it doesn't mean that we're not going to get to go forward looking at other alternatives for '93 and beyond. But that we -- you know, we are here to focus on what we can do in '92, and we keep getting in -- in -- into discussions of, Well, if we did -- if you modified it this way, you could do something else besides that. But, is that reasonable to try to cover between now and when we are looking at reaching closure on this? And I guess --

MR. WHELAN: Have you looked at what type of fish ladder extensions might be possible between now and '92?

MR. ANDERSON: We haven't.

MR. WHELAN: Until that's done, doesn't it make sense to keep this on the table and take a close look at what type of extension might be possible?

MS. WIK: What do you mean by "extension"?

MR. WHELAN: I mean, isn't it a problem that your reservoir -- your ladders are not effective because your reservoir pool is lower than the ladder entrance or exit?

MS. WIK: Right.

MR. WHELAN: So, it might even be possible to try to get some -- some -- pump water into the tops of the ladder and extend the ladder --

MS. WIK: But -- but --

MR. ANDERSON: That's one problem.

MS. WIK: Yeah.

MR. WHELAN: One problem.

MS. WIK: But it's not just the ladder. It's a whole series of collection canal and entrances.

MR. WHELAN: Yeah, I understand. But the problem is to sit here in April and say these are all problems that should take an alternative off the table before we have tried hard and sat down with pin and paper and tried to solve some of these problems.

MR. NASON: I think that you're minimizing the complexity of a fish ladder system. People should go out -- Frank is sitting over there laughing because he knows I'm right on this thing. They are a complex item. They are hundreds of millions of dollars when they are constructed, you know, with the dam; and it

has to put up with head differentials and everything else, the hydrologic situations, and still be able to be in the right spot to attract the fish to it. You couldn't take -- right now, I would be willing to bet money -- and have a design and out for bid and the bid awarded between now and the spring of '92, let alone construction.

If you wanted to modify the fish ladders, if we had some design, you're probably talking about '94, the spring of '94 before it would be completed if we are really lucky. You're talking hundreds of millions -- tens of millions of dollars.

MR. SATTERWHITE: I think there's a point to be made here that's getting passed over. We have got to deal with adult fish migration problems. It seems reasonable that somebody within the Corps and with the assistance of cooperating agencies have a work group with -- an internal work group right now brainstorming and addressing exactly that issue and not leaving it to a long-term planning process to start some time farther down the road. Because this adult fish passage issue is, apparently, the primary impediment -- one of the primary impediments of any kind of a drawdown scenario. Are we going to go through a conventional process and take four years to get to -- to get -- to come up with

a conventional design? Is somebody within responsible agencies brainstorming and trying to identify all the problems and any short-term fixes that might be usable in 1992, which is what I think is a reasonable expectation. Are there some short-term fixes that are creatible by March of 1982. And, if they are not, then, someone should have at least spent a little time discussing those possibilities. If you can say there's nothing we can identify to do for 1992, then the adult upstream migration short-term solution is a valid point.

Now, if we -- if we have -- if we get past that process, then we have to go to the long-term planning; and we can say, Yeah, we do have a long-term adult passage problem that we can maybe fix; and we are going to have to do that. But I think it's -- it's reasonable to expect one to seriously look at the short-term solution by March of 1992 which might give us a wider range in which to operate the test. If that can't be done, then, we need to know that. I mean, if you can't -- if nobody -- has somebody done that yet? Last week we talked a little bit about modifications. We said there was a ladder problem at Lower Granite between seven twenty-three and seven ten.

MS. WIK: And I covered that and said that

that could be taken care of.

MR. SATTERWHITE: Yeah. That could be taken care of.

MS. WIK: That's a modification that could be taken care of.

MR. SATTERWHITE: At Lower Granite?

MS. WIK: Right.

MR. SATTERWHITE: That's something that's all ready in place and presumably had -- there might have been some reasonable solution to that suggested at some previous time.

MS. WIK: Uh-huh.

MR. ANDERSON: Uh-huh.

MR. SATTERWHITE: But we've got the other problems in the other projects. Now, is anybody in the Corps doing any brainstorming right now to see what kind of Band-aids we can put on for 1992?

MR. ANDERSON: We're going to take a look in a holistic sense, Mike, not only adult fishways; but that is a major problem with the fish. But you have got all kinds of other issues as well.

MR. SATTERWHITE: Uh-huh.

MR. ANDERSON: In powerhouse operations and --

MR. SATTERWHITE: Right.

MR. ANDERSON: -- in navigation and in recreation areas and --

MR. SATTERWHITE: I agree with that.

MR. ANDERSON: -- all of those things that have to be looked at in the sense of a long-term change in the system.

MR. SATTERWHITE: Right. But you do have a single problem with it.

MR. ANDERSON: Okay. What you're doing here is you're saying, Okay, now we have said here's one problem; let's go take a look at that. Well, there's literally dozens of problems like that that have to be looked at. And to go back to Frank's idea, we have got to look at that in a holistic sense.

MR. SATTERWHITE: Yeah.

MR. ANDERSON: And we will be doing that in terms of kind of a recon look at what this means --

MR. SATTERWHITE: Right.

MR. ANDERSON: -- to the whole system.

MR. SATTERWHITE: What I'm trying to point out here is that there is a single, well-defined problem that can be looked at immediately through the same kind of process that goes on here internally within the Corps. They can say, Okay, if we wanted to get fish from Point A to Point B, what do we have to

do. And somebody should be doing that now. That's what I'm trying to say. Somebody should be doing that right now. Because that's engineering and construction, and I don't know what the engineering considerations are. That's something that you guys have to do to address that one single thing about the whole issue of adult transport. That appears to be a limiting factor in what we're going to do in a drawdown test.

MS. WIK: Let me back up one more step. For 1992, again, as I said in this matrix and we have all discussed, there is no questions in people's minds that reducing the travel time by increasing the velocities will benefit fish survival. But what has to be looked at is, you know, what benefit does that give and that benefit has to be weighed against some of the other potential negative impacts. And so, what we need to do is find a way to identify at least a range of what that benefit might be. Now, for example, with this drawdown test of all four reservoirs --

MR. SATTERWHITE: Uh-huh.

MS. WIK: -- do we have a way to identify the benefit? And my answer is no. Because we have no existing data, that I'm aware of -- and somebody can correct me if I'm wrong -- but that describes what the

existing travel time is from, say, for example, Lewiston down to McNary to which we then could compare and say, Okay, by doing this, by lowering it ten feet or lowering it down forty feet, we gain a week, we gain two days. Whatever. We don't have anything to balance that against.

MR. YOUNG: We do have travel time information over that reach, but I think your point is it's over a range of flows. You would have also under this condition a range of flows that would occur during the time that you performed this test, but it would be almost impossible to make any kind of a statistically valid comparison between the two conditions. But about the best you could do is look at the theoretical change in water particle travel time and compare that to a relationship we have between water particle travel time and fish movement. And I think from a practical sense, that's all you can do. Otherwise, you would just be pretending to get information that you really weren't getting.

MS. WIK: Well, how would you -- how would you look at theoretical water particle travel time? I guess, Mike, I'm asking specifically, are we talking theoretical in terms of modeling?

MR. YOUNG: Right, just modeling.

MS. WIK: And, if we do that, which average water particle travel times do you use? I mean, you've got a range from the confluence on down; and that water particle travel time is changing constantly. You know, it get's -- it's faster up in the confluence and --

MR. YOUNG: Well, for our purposes, I think that's something that the engineers would have to know before they could tell us what needed to be done; but I suspect what we need to know isn't very precise. And we could make some assumptions about changes that occur in other than cross-sectional areas and just go with it. Because we are looking for a large change --

MR. ANDERSON: Uh-huh.

MR. YOUNG: -- in order to get the kind of response we need.

MR. ANDERSON: We have that information. We have done that.

MR. YOUNG: Yeah. I mean --

MS. WIK: We have got that on modeling.

MR. YOUNG: Right. So, I really don't see any additional studies that are needed. All you need to know is what the flow is during a period of time and the average flow and roughly the average change in cross-sectional areas; and you get an average water particle movement difference. And you would look at

the point on the relationship between the water particle movement and fish travel time, and that's what you would have. That's probably the best you can do from a practical standpoint. You know, from a --

MR. NASON: To get -- I didn't mean to interpret you. But to get that information you don't need to pull any reservoirs down; am I correct on that?

MR. YOUNG: Right, yeah. That's true.

MR. NASON: Yeah.

MR. YOUNG: But, I don't know how much time we are going to spend debating these different alternatives. I guess I have a concern, like I said earlier, of making sure that nothing is eliminated for the long term because we determine that it is impractical or infeasible for '92. And, as far as our agency is concerned, there's probably only one of these that we could support for '92 because of concerns mostly about an impact on adults.

MR. ANDERSON: And -- excuse me, I don't want to interupt you.

MR. NASON: Which one is that?

MR. ANDERSON: But that really was our mission in these two meetings. What can we do in '92. We can look at the long term. We can continue to look at the long term. But, if we are going to conclude

that we're not going to do anything in '92 but continue to look at the whole system and what it requires to change, that can be done; but it's -- we are not going to have that answer by '92.

MR. YOUNG: I think Mike had a good point. There's one overriding constraint, from at least the fishery interest point of view, in any kind of a reservoir drawdown scenario; and that's the concern about adult passage; and what kind of modifications would be needed in order to allow it. I think that it might be useful if the Corps took just kind of a general look at that, not look too deeply into it. Because I think there are probably individuals within the Corps that probably off the top of their head could give us the kind of information we need, both schedule and various conceptual ideas of what would need to be accomplished in order to do this.

MR. ANDERSON: Okay.

MR. YOUNG: And they would probably give us some feedback on time required and that kind of detail.

MR. ANDERSON: I'm willing to do that. Can we set, though, some -- some framework or some boundaries for what the proposal is?

MR. YOUNG: I don't -- I think it would not be very useful to look at increments, you know, just

off the top of my head. I think if we are going to have the impact of total powerhouse shut down, we want to maximize the benefits from that impact. We are also shutting down navigation completely. So, the impacts are all going to be real heavy on one side once you get past minimum pool, so we might as well maximize the biological benefits. So, let's go down as far as you can go and then look at what you would have to do to the adult passage facilities to make them function at that level. So, I guess I wouldn't stage it once you got past minimum pool and powerhouse shut down. I will make that recommendation.

MR. NASON: If you go to powerhouse shut down and go down to spill crest or something there --

MR. YOUNG: Right.

MR. NASON: -- are you going to have to do something on the downstream side of the spillgates to, you know, try and reduce supersaturation?

MR. YOUNG: Well, that's something we don't know. We don't know what -- what kind of problems you're going to have, you know, reducing the head when that water is spilled from about forty feet. So, we don't know what that effect is going to have on nitrogen. We probably know that it is going -- that heavy of spill may cause undercutting below the

spillway and impact the integrity of the project and those kinds of things.

There's all kinds of things that the Corps can give us feedback on without actually doing them, probably, at least the concerns.

MR. ANDERSON: That's right.

MR. SATTERWHITE: The operating range of the Lower Snake, I was told yesterday, has been between about ten thousand five hundred cfs and four hundred and five thousand cfs. I seriously doubt whether a flow of four hundred -- four hundred and five thousand cfs was a design criteria. I don't think we are going to have problems with dealing with it, the spillway.

MR. YOUNG: I think, Mike, your concern is that the projects were designed -- I sound like the Corps now.

MR. SATTERWHITE: Yes.

MR. YOUNG: The project was designed to spill into a tailrace, something of a pool.

MR. ANDERSON: Yes.

MR. YOUNG: And, if you remove that, the energy dissipation goes to digging back under the spillway.

MS. WIK: Uh-huh.

MR. SATTERWHITE: That's a good thought.

MR. YOUNG: Anyway, I guess I would prefer focusing on Alternative 3 with some modifications; and that's the Lower Granite drawdown to seven ten.

MS. WIK: I guess I want to get a feel if others want to go through all the alternatives or --

MR. YOUNG: I don't have any problem either way. It's just that I wanted you to know because of the concerns we have with the adult passage issue that we could not support any other alternatives, and we support this one conditionally.

MR. NASON: I'm wondering, does this Proposal 3, does it disrupt transportation?

MS. WIK: Yes.

MR. ANDERSON: Yes.

MR. SCHLUETER: Anything below seven thirty-three.

MR. LOVELIN: What's normal operating level?

MS. WIK: Seven thirty-five.

MR. LOVELIN: Seven thirty-five, seven thirty-eight.

MS. WIK: Well, seven thirty-three to seven thirty-eight is the normal operating range.

MR. YOUNG: Even with this proposal, we would want to see some kind of test of powerhouse -- of total powerhouse shut down when fish -- adult fish are not

present in order to observe just visually and probably videotape the entrance conditions for the adult fishways and the kinds of eddies that form in front of the powerhouse collection system before we could determine whether we wanted to go through with a full test with a drawdown.

MS. WIK: Okay. Frank, I guess one question along those lines, if we were to do that, assuming we would do that in the winter when no fish were there, how would the fact that our flows could be considerably less than they might be in the spring affect your --

MR. YOUNG: The flow would be whatever you wanted it to be.

MS. WIK: By augmenting from --

MR. YOUNG: By how far down you pull the gates. You can have any flow you want.

MS. WIK: Okay. But that would affect -- I mean, it might be different under a normal scenario in terms of --

MR. YOUNG: Well, I guess that what I would do is have, say, three flow levels you would look at.

MS. WIK: Okay.

MR. YOUNG: And you might be able to do this over a few hours.

MS. WIK: Okay.

MR. PETTIT: Yeah. You could augment if the region got behind the test.

MR. ANDERSON: Yeah.

MS. WIK: Yeah.

MR. ANDERSON: You could augment with Dworshak.

MS. WIK: Yeah. I just -- I mean, you know, I want that --

MR. YOUNG: But, you know, we have done this kind of thing before, not with a total powerhouse shut down, but with modifying the spill and observing entrance conditions for adult fishway. You know, we may find that after that there's no sense pursuing a further test. Or we may find that there is a particular spill pattern that would provide conditions that we thought adult passage may be feasible, and then we could procedure on from there. But we would be opposed to any kind of test during the time that adult fish were there without some kind of a preliminary workup.

MR. BJORNN: You're talking about a combination of two and three, then?

MR. YOUNG: Right.

MR. JOHNSON: Yeah. I would say that Proposal 3, jumping ahead here, I would recommend that

the Corps' evaluation the risk of -- of forfeiting transportation.

MR. ANDERSON: Say that again, Dale.

MR. JOHNSON: I would recommend that you evaluate the risk associated with, let's say, survival of the fish by forfeiting or disrupting any transportation activity. That, in itself, is going to have a degree of detriment.

MS. WIK: Well, the fish would still -- if we do lower Granite only, the fish could still be collected and transported from Little Goose, and that's....

MR. YOUNG: Yeah.

MS. WIK: I mean, I think you're right. That's got to be looked at.

MR. NASON: I have a question, You talked about on your Alternative 1 about PIT tag fish would be released in Lewiston and then in Alternative 3 you said PIT tag fish at Lewiston. Is there a smolt trap at Lewiston?

MR. SATTERWHITE: Yes. There's two of them.

MS. WIK: Yes.

MR. SATTERWHITE: One on the Clearwater and one on the Snake.

MR. YOUNG: I don't think that you can

evaluate this Alternative 3 using PIT tagged fish. I guess what you would do in order to get a control group is release a group below Granite which would have been transported some distance would be comparable to the group that you released in the river at Lewiston unless you transported those an equal distance and put them back in the water up there. Then I -- I suspect that because of the small difference you would expect to get that you still wouldn't be able to show any difference.

MR. PETTIT: What are you trying to show there, Frank, survival?

MR. YOUNG: Yeah. I'm just going from under Alternative 3, No. 1, it says, PIT tag fish at Lewiston, recover at Little Goose. If you did that, you wouldn't be able to sort out the effect of variability in the passage through Goose Reservoir. So, what I was saying is, then you need some kind of a control group. But, if you did, then your control group would be transported to the Goose site below Granite, so that it wouldn't be comparable to the group that was released at Lewiston. Unless you transport those also. But, then, you have the problem that overall you're trying to measure a small difference.

MS. WIK: Well, Frank, what would you be comparing it to? You're talking about the control

group transported below Lower Granite, but what's the group that you are comparing that to?

MR. YOUNG: Well, all you would get, then, is travel time through Granite pool.

MS. WIK: But where would you -- I guess the big question I have is there's no place to read those fish at. You have no place to recover the data of travel time from Lewiston to Lower Granite.

MR. BJORNN: Yeah, there is.

MR. YOUNG: No, I mean Little Goose.

MS. WIK: Oh, I see what you're saying.

MR. BJORNN: You're going to collect at Goose --

MS. WIK: Okay.

MR. BJORNN: -- in both ways.

MS. WIK: Okay. Plus --

MR. YOUNG: But the problem is you have the "so what problem" when you get the answer. What do you compare it to?

MS. WIK: Yeah.

MR. BJORNN: I think the Frank's earlier comment is really a germane one. I would almost concede that if you create suitable water velocities you're going to create suitable migration, but then resolves down to a question of what other kinds of

impacts are there going to be; and can we live with those. Can we make the project operate in a way that is still going to be suitable.

And I'm not sure that it's even necessary to measure, for example, that travel time. I would almost give you that and say, if you drawdown to a certain level and create a certain velocity through Lower Granite pool, you're going to increase the velocity -- the travel time of the fish. I'll give you that.

The question becomes one, can we live with the other things that are going to be associated with that.

MS. WIK: And I guess that's a question that ties back into Dale, and I know this issue is somewhat sensitive. But, depending upon how far you want to go with that, if you're going to assume an increased -- or a reduction in travel time through Lower Granite but then that's the only one you're going to look at, and then they go into Little Goose and instead of only one pool they have traveled through, they are now traveling through two reservoirs, they're not -- a majority of them won't be removed at the system at Lower Granite. And is the increase or the reduction in travel time really benefiting them overall and that's --

MR. BJORNN: That's one of the conditions you

have to decide that you can live with.

MS. WIK: You know, that becomes the question.

MR. YOUNG: Uh-huh.

MS. WIK: And that's why, I guess, we were trying to get at, can you measure that reduction in travel time and benefit to weigh against all these other factors.

MR. YOUNG: Well, let's say, even if you did, if you got a perfect estimate, then, you still -- I think it's pretty much a judgment call.

MR. BJORNN: It's still -- you would still have to go to the paperwork exercise that says, What if I put them in a barge or if I let them go on down.

MS. WIK: Yeah.

MR. BJORNN: You still have to go through that paperwork exercise to make a judgment as to whether or not you should have given up the opportunity to put them in a barge or let them go on down.

MS. WIK: Well, then, we're back to, what do we want to do for a test in '92. Do -- you know, you're saying you guys would only support No. 3, but --

MR. PETTIT: Actually, wouldn't you support 2, also, the physical test, just for an example? We're not eliminating it.

MR. YOUNG: My only problem with 2, I saw no purposes in your doing the ten-foot increment. I think once you -- we wouldn't implement it that way. We would want to maximize the benefit. As I said earlier, once you put the powerhouse out of operation and impact navigation, you might as well maximize benefits. So you would go to seven ten.

MR. NASON: Of course, the thing is, Frank, if you went in ten-foot increments on that Item 2 here, then you could actually tell, are you maximizing the benefits. Because you know, yourself, that the particle travel time is not a good indication of what the -- you know, what a smolted fish is actually doing. He's going to look for the faster moving water. And by doing it in ten-foot increments -- and I was talking to Fred about this earlier -- maybe do slices in the reservoir and actually do current meter tests to where you're actually getting what the velocity profile is.

MR. YOUNG: Well, I understand. But, once you go below minimum pool, the adult fishway doesn't function again until you get at least to seven twenty-one.

MS. WIK: No. We threw that out, Frank. We would be able to make the facilities function from seven ten through -- all the way up through the normal

operating range, so....

MR. YOUNG: Okay. Well, I still feel you will not be able to measure the biological differences or perhaps not even go out there and physically measure the changes in average water particle movement by drawing down in ten-foot increments.

MR. BJORNN: My recollection was that the ten-foot drawdown increment was the time for people to look at what was going on with railroads and roads and that kind of thing.

MR. YOUNG: Well, that's a different sort of thing.

MS. WIK: Yeah. That was one, but the other was --

MR. BJORNN: Not the biological question.

MS. WIK: The other one was to get travel time, water particle travel time as well. But the main -- I think one of the main reasons was that, if you drop down ten feet and everything starts failing, you know, it's a --

MR. YOUNG: I guess, as a physical test, I wouldn't have a great problem with it. I don't see -- I guess I have a problem when you test something if you don't see actually implementing that condition as part of the solution. Though, I wonder why you would test

-- you know, a ten-foot drawdown probably isn't going to get you much.

MR. BJORNN: Frank, let me reiterate my perception of what the discussion was. That it would be drawn down; but, then, you might pause at ten feet to see what's going on --

MS. WIK: Right.

MR. BJORNN: -- before you go on down.

MR. YOUNG: Yeah.

MR. BJORNN: It's primarily exactly a physical test which we are interested in --

MR. YOUNG: Okay. You draw down --

MR. BJORNN: -- as to what will happen. Will the canyon walls and stuff hold up.

MR. YOUNG: You see where the pool level hits below the riprap on the levee, and assuming you have got wave action there or the bank storage, hydrologic pressure differences causing sloughing.

MR. BJORNN: Yeah.

MR. YOUNG: The trouble is, it seems to me, doing something like this, it's going to -- going to fail in the test or it's going to fail within the prototype.

MS. WIK: Yeah. Correct me if I'm --

MR. YOUNG: What's the difference in failing

in the test and failing in the prototype?

MS. WIK: I see your point, Frank. But, correct me if I'm wrong, Steve, we did talk about trying to measure velocities at each of those --

MR. PETTIT: Yeah. We threw that out because --

MS. WIK: Yeah.

MR. PETTIT: -- we wanted to cover all options.

MS. WIK: Yeah.

MR. PETTIT: And I'm not even sure we have the technology to do it. But I mentioned, if we did, it would probably be beneficial to try to measure it.

MR. BJORNN: Measure water velocity?

MS. WIK: Yeah.

MR. BJORNN: That could be done.

MR. NASON: I agree with Steve that it would be interesting -- I mean it would be nice data to have, but I would also have to agree with Frank. I don't think we should be testing anything that wouldn't be implemented. That's been our policy --

MR. YOUNG: Yeah.

MR. NASON: -- on the Columbia.

MR. YOUNG: I guess what Ted was saying, though, in testing a lower level, maybe you would pull

it down in stages and evaluate given time to stabilize and see what the impact is. I guess I would have characterized it differently than the way it's written here, if that was the intent.

MR. NASON: I guess I have to ask a question. If you pull it down -- and Ted made the comment that it's a given that when you pull the reservoir down to the bottom that there will be a reduced travel time. And, if it's possible -- and I don't know if it is to measure that reduced travel time -- say, you get precise and the reduced travel time is two days. I guess I have to ask the question, is the reason this reservoir is being pulled down to benefit the fish; and are those two days, are they of benefit. That much of a benefit. You know, did it -- did it -- did a two day -- and I'm just using that off the top of my head. Did a two-day reduced travel time increase the survival? It's probably not even measurable for what it's going to do to the region. I don't know. I was just asking. Because we have -- as we're getting back here, it's not -- we're doing this to benefit the fish.

MR. SATTERWHITE: No.

MR. NASON: No, we're not?

MR. SATTERWHITE: We're doing this as a test to answer concerns brought up by the Corps initially at

the Salmon Summit. We want to see what effect a drawdown will have on the -- on the system. We are talking about erosion. We're talking about --

MR. ANDERSON: No.

MS. WIK: No, no.

MR. SATTERWHITE: That's -- that's one way --

MR. ANDERSON: No. If we're not doing it to benefit the fish, then, we're wasting our time being here.

MR. SATTERWHITE: No --

THE REPORTER: Excuse me, I need everyone to speak one at a time.

MR. ANDERSON: Let me respond to that. Just the opposite, Mike. We said we can -- we can determine a lot of things about physical effects without implementing a drawdown.

MR. SATTERWHITE: Okay.

MR. ANDERSON: We want to see the biological benefit to the best extent we can. We had Objective 3 up there, I think it was, determining survival. And I think it was said, it was said this morning, that in one year you're not going to have the answer to that. But, certainly, something that's got to be rolled into the equation in the long run if we're going to change the system.

MR. NASON: I have to re-evaluate -- may have to re-evaluate my position if I'm in agreement with Frank. But it -- but I hear Frank saying you can't measure -- probably cannot measure the biological benefit, and that's -- that's the only reason I'm here today.

MR. PETTIT: I thought he said you couldn't directly measure the test.

MR. YOUNG: Yeah. You can't measure them directly. You have to accept some assumption about the relationship between -- a relationsihp between, first of all, survival and travel time. Then fish travel time and water particle movment and water particle movement appear to be large leap of faith.

MR. PETTIT: But, at the first --

MR. YOUNG: But you guys have --

MR. PETTIT: -- meeting, we had several other engineer-types there that said what we were measuring wasn't linear. You know, there was differences in the canyon as you exposed it.

MR. YOUNG: Sure.

MR. PETTIT: And, for that reason, it would be difficult to model travel time. So, I think one of the reasons that I said, or somebody else suggested, you could drop it down in intervals in an attempt to

measure those two was to get at that point. How does re-exposing this canyon relate to real time particle movement.

MR. WHELAN: I take it that people agree with Mike's point, that part of the purpose of the test as well as to assess the extent of the obstacles or the impediments to doing this as well. So, things like bank stability and so on would have to be part of the physical test.

MR. ANDERSON: Certainly, others have that objective. The Corps does not have that objective in the Salmon Summit, not to say that you would -- you wouldn't gain some information. But we -- we -- know where we would have problems, that there will likely be problems. We have indicated we can see a lot of use in just drawing down to see which location the railroad fill sloughs into the river. But you can gain some information, and I think the state of Idaho, in fact, was pushing for that. But --

MR. WHELAN: We should get some information on those issues.

MR. ANDERSON: Yeah. Or that would be the objective of the test. Right. We do have that here as one of the alternatives, but it was more directed to the physical effects in terms of the environmental

condition -- conditions affecting the fish. Certainly, we gain other types of physical information.

MR. WHELAN: There would be an attempt intentionally to go out and gather that information about some of these these -- these drawbacks --

MR. ANDERSON: Sure.

MR. WHELAN: -- impediments of --

MR. ANDERSON: Sure. If we implement anything drawing down below minimum pool, we would develop a program to go out and monitor and gain every bit of information we could.

MR. JOHNSON: Witt, I would hope that would include the chemical aspects, especially in sediment. I noticed in the notes from last meeting that you talked about contaminated sediment release. And I would -- I would suggest that we expand this proposal to physical and chemical testing and not just limit it to physical. When Grand Teton Dam blew up, there were fifteen hundred or eighteen hundred barrels of fifty-five gallon drums of DDT that are spilled in the Snake River. There's a lot of phosphorus, nitrous, pesticides and herbicides; and it would be interesting to at least --

MR. YOUNG: Do you think those will work their way down to Granite pool?

MR. JOHNSON: The Idaho Department of Health and Welfare has done some testing in the early '80s with Jim State, and there's some further information supporting that, yes, regarding DDT.

But it seems to me that we should look at -- in more depth look at the water quality aspects and maybe some sediments cores and relate that to some baseline fish tissue analysis; and, then, relate that to adult fish tissue analysis as fish return and form some type of a relationship between what toxic chemicals are in the sediments, and what their ambient levels are in the fishes, both juveniles and as returning adults. So, I would recommend expanding this to your physical and chemical environmental aspects.

MR. NASON: Has anybody, either Ted or Steve, done any work on numbers of fish you would be needing -- Has it progressed that far? -- for a control or test or number of replicates? Are we -- I realize it varies. Are we talking PIT tag or --

MR. PETTIT: For observation?

MR. NASON: Yeah. I know I realize it is tremendously different whether it's PIT tagging or whether it's just branded or whatever. I'm just curious.

MR. SATTERWHITE: I thought we had deferred

that as a detail of the experiment.

MS. WIK: Yeah.

MR. SATTERWHITE: I think we deferred to a later phase in the design and the experiment. So, we don't have a particular --

MR. NASON: Well, the more fish we have, though, the more precise your estimate is going to be. And I was just curious, are we -- are there enough fish? I mean, are these traps good enough to catch the amount of fish that we need?

MR. YOUNG: I doubt it.

MS. WIK: Yeah. We've discussed the one thing; and I guess we ought to consider this as maybe a given for next year, is looking at how we could either improve existing traps or build new ones to get more fish no matter what we --

MR. NASON: Because I would hate to see a study done next year with only half the number of fish that were required to where, you know, the -- you really couldn't tell, you know, what you had.

MR. PETTIT: The present traps are certainly limiting, especially the Clearwater trap, because it becomes unfishable at flows over twenty-five thousand cfs; and we would certainly see that during the normal adult migration.

MR. YOUNG: I question the value of any test at all --

MS. WIK: Which --

MR. YOUNG: -- if your objective is to produce useful information.

MR. NASON: I agree.

MR. YOUNG: You know, less anyone be misled about this drawdown of Granite, say, to seven ten, we were talking -- Dick mentioned a little earlier about the benefit being maybe two days; I think he was fairly close. We -- I don't think anyone should think that this is what we regard as a long-term solution to the problem in the Snake. It may be a part of an interim -- may be part of an interim solution. Long term is going to require something substantially more than two days difference in travel time.

MR. ANDERSON: So, are you --

MR. YOUNG: So, this is just kind of a first step in testing the concept of reservoir drawdowns as improving travel time.

MR. ANDERSON: Are you suggesting, then, that we really should be doing a feasibility analysis of all required changes and making some assumptions about fish travel time to water particle travel time with some major changes in the system and the survival

relationship?

MR. YOUNG: Well, that's kind of how I --

MR. ANDERSON: Rather than doing a test?

MR. YOUNG: -- how I --

MR. ANDERSON: Well, see, we have gone full circle on that. You know, we have talked about that at the Salmon Summit. And then there were those saying, No, absolutely you have got to do something in 1991. You have got to lower those reservoirs below minimum in '91. We concluded that we shouldn't be doing that in '91. We can facilitate the discussion in the region to try to come to that in '92. And are we coming to the conclusion that we can't get any information in a test in '92; and, really, what we ought to do is concentrate on the feasibility analysis?

MR. SATTERWHITE: No. I don't think it's -- it's -- a no information conclusion is a reasonable conclusion at all. The mere fact that you have drawn down a reservoir will reveal a multitude of new things to you. Number one, the fact that it can be even done. Number two, that it may have some impacts on other things. We know some of the other things that are going to happen already. We don't need any test to show us that. We probably -- and Ted has already conceded we are going to get some increase in travel

time. The point is, in the context of immediate, near-term or short-term measures to help the fish, this may be the only real solution we have got to getting them down the river faster. We are going to learn a lot by testing something in '92.

I don't think its value should be minimized at all. What are we going to do between now and the year 2000? If we don't do anything, we are not going to have no fish left; and it will no longer be a problem.

MS. WIK: Mike, assuming --

MR. SATTERWHITE: Yeah.

MS. WIK: -- like we are doing here --

MR. SATTERWHITE: Yeah.

MS. WIK: -- that increasing velocities reduces travel time, fine. We can improve that.

MR. SATTERWHITE: Uh-huh.

MS. WIK: But how do you weigh that against all the other negatives? You're saying we want to go out and to do that, but we've -- I mean, there's got to be -- whether it's a paper exercise, like Frank was saying or what, but it seems to me that if we are talking about doing that when fish are in the river, we're talking about negative impacts; and somehow we need to weigh against the positive.

MR. SATTERWHITE: Let's -- let's -- let's let the policy people make that decision. Let's do what you came -- you called us together for, which is to design the drawdown experiment and not to get into the philosophical decision of whether it's worth the effort. Because we have already decided we are going to let the policy people make that decision.

MS. WIK: Right.

MR. ANDERSON: Yeah.

MR. SATTERWHITE: Well, the Salmon Summit clearly commissioned the Corps to conduct a test hopefully in '92; and that's reflected in the document that came out recently in the summary of PNUCC. So, you're following through on that?

MR. ANDERSON: Yes. Well, let's go back. I agree with you. We were commissioned to develop a test and an environmental design that would give us some information. Let's continue going through the alternatives.

We just have to keep pushing ahead because, obviously, we all don't agree on much here. So, shall we go on?

MS. WIK: Let's take a quick break.

MR. ANDERSON: Let's go until lunch.

MS. WIK: She needs a break.

(Dicsussion held off the record.)

(Brief recess was had.)

MR. JOHNSON: I would like to offer another suggestion; that is, that we press on with Alternative 2. And with caution regarding the July 16th through August 15th aspect to work throughout caution there, that we don't lose the transportation of fall chinook and look at the impacts on adult fish again. But press on with Proposal 2 and wait until subsequent years -- wait until a Lo Mo, Lower Monumental bypass transportation has been installed to check there. Then in '93, '94, after we have gotten some information on No. 2, you can try lowering your Lower Granite and your Little Goose pools. Try different scenarios like that. And you will still have your collector sites and your PIT tag sites. Your PIT tag sites are variable in that they'll increase the quality of your research results.

MS. WIK: Okay. I guess one thing there, Dale, I'm not sure I'm clear on what you're saying. But, if we were to lower Lower Granite and Little Goose Reservoirs, we would lose the collection facilities at those two locations.

MR. JOHNSON: At Granite.

MS. WIK: And Goose.

MR. JOHNSON: And Goose.

MS. WIK: If we lower the reservoirs, we lose the collection facilities.

MR. JOHNSON: At least -- at least you have PIT detectors --

MS. WIK: No, we would not.

MR. JOHNSON: -- at Lo Mo.

MS. WIK: You would have it at Lo Mo.

MR. JOHNSON: Otherwise, you have lost PIT detectors at Granite and Goose. At least at a minimum you have it at Lo Mo and then down at McNary also.

MS. WIK: That's what Alternative 3 does, is it lowers the PIT tag at Little Goose. You're saying essentially the same thing, but you're adding one more reservoir.

Any thoughts on that one? Do we want to include that as a potential alternative?

MR. PETTIT: I'm a little unclear what the real alternative was.

MS. WIK: Well, I guess the bottom line is that really it wouldn't be a alternative for '92 and would have to be considered under some of these other methods mitigation analysis and so forth.

MR. SATTERWHITE: If I understand what he said correctly, was basically to combine two or three tests and move into the '93, '94 period.

MS. WIK: I guess what I understood --

MR. JOHNSON: Conceptually after '92, yeah.

MS. WIK: Okay. That's something, I guess, looking down the road seeing how other things fall together, but other than proceeding like Dale's recommending with a No. 2 for '92, your other testing would not kick in, in '92; is that fair?

MR. JOHNSON: Right.

MS. WIK: I guess what I would like to do is just so we get through all this, is to go back to looking at each of the alternatives in sequence, keeping in mind what we have already discussed and if there's any other concerns with what we have got on the matrix, let's talk about it. But let's try and walk through the whole thing with things -- identifying things that need to be evaluated. Things that aren't on here that need to be considered -- and, you know, we have heard Frank, for example, his basic recommendations already -- to kind of get a feel for where people are.

Mike?

MR. SATTERWHITE: I have a question about -- I agree with you, we probably should go through them all; but we have already identified some fairly broad windows for spring and summer test ranges. Wouldn't it

be appropriate to deal with the length and duration of your test before we go on to looking at....

MS. WIK: Well, that's going to vary under each alternative; and, as we go through each alternative, we can discuss --

MR. SATTERWHITE: Right. Because I think the windows or the time frames are identified, are windows when a test could occur, not necessarily the duration of the test.

MS. WIK: Correct.

MR. SATTERWHITE: Or the length of time the test takes. That's the point I'm trying to make.

MS. WIK: We have identified the outside --

MR. SATTERWHITE: Yes.

MS. WIK: Let's do that under each test.

MR. SATTERWHITE: That's relatively important when you're discussing sacrafices such as juvenile bypass. We're talking a time period in which adult fish ladders are only inoperable for a week; that's quite a bit different that an adult fish ladder that's not operable for sixty days. I don't think anybody here has the idea of going necessarily for a four-month test or anything like that. But, that puts the sacrafice of juvenile transportation and a sacrafice of adult passage in a realistic context to evaluate.

MS. WIK: Let's look it my alternative.

MR. SATTERWHITE: Okay.

MS. WIK: What you're saying there, Mike, is reducing, for example, let's start with Altenative No. 1. You're saying you wouldn't necessarily see us going the full time frame?

MR. SATTERWHITE: I mean, if you're talking about designing a test here, right?

MS. WIK: Right.

MR. SATTERWHITE: Okay. We should set a criteria on it, that the test should try to be done within a certain time. We have a range of time we want it to occur in, but the length of time that we want to shoot for, that seems like a logical objective step, am I wrong?

MS. WIK: No, you're right. But that is -- that can't necessarily be set by whether or not it just would take out the adult fish ladder for only a week, but that has to be looked at in terms of, if you were only looking at a one-week test, would it give you any information at all. That's why we threw out the boundary. Am I -- I think I'm understanding what you're saying.

We need to look at more alternatives than just that full time frame; but, we also have to look at

it in terms of what information can be gained within a shorter time frame.

MR. NASON: Speaking of gaining information, it appears to me unless I'm mistaken that of these six alternatives the only one that's possible for '92 is No. 2 because of the lack of smolt capturing capability in the Lewiston area.

MS. WIK: Well, now, I disagree. I certainly wouldn't think that with all our technology that we might not be able to come up with a more efficient trap.

MR. NASON: I'm not saying we couldn't come up with a more efficient trap.

MR. SATTERWHITE: There are other ways to trap fish other than relying on adult transportation. We can still do with wire tags.

MS. WIK: No, no. He's talking about the fish released from Lewiston, getting sufficient numbers for recovery. Well, let's ask --

MR. NASON: Maybe that should be one of the first questions. Do we have the capability right now to capture enough fish for testing control and a proper amount of replications that would be needed with the equipment that's currently operational -- in operation. I heard the answer is probably no.

MS. WIK: But, could we --

MR. PETTIT: With the current devices we have now, it's questionable whether we could do it. But, with a year's lead time, we could purchase twenty-foot screw traps and probably relocate those traps. You know, if the goal is different, it's a smolt monitoring program now; and they are there in a certain site for a certain reason. If it's just to get your hands on a maximum number of fish through a longer duration of time so that we can get enough replicates tagged over time, then -- why then you might just briefly move the traps to a different location. It's my understanding also that the Fish and Game was considering seining this year.

MR. JOHNSON: And the Fish and Wildlife Service is seining this year.

MR. PETTIT: We have our own seine, too, but you pay for it.

MR. ANDERSON: Is that adequate?

MR. NASON: The thing, Mike, is that you capture "X" number of smolts over the whole year. We have -- we have a small monitoring place at Rock Island Dam. We capture an average of a hundred and twenty, thirty thousand fish a year. You're looking at a very short window in which to chapter these fish, mark them

and release them because of the test. And so that's why I'm asking, you know, do you have the capability of capturing enough fish. And I don't know. I don't know the answer to that. I have never seen the trap

MR. SATTERWHITE: Well, I would agree with Steve. Given the right lead time, we could increase the numbers we are currently trapping.

MR. BJORNN: It depends on what you're trying to do.

MR. NASON: I don't know what we're trying to do really.

MR. BJORNN: Yeah. I think for travel time and maybe even percentage of fish through Lower Granite Dam or the Little Goose, we could probably collect enough fish. I think we could add the kind of things that Steve was talking about, or we can actually have scheduled releases from Dworshak. Instead of releasing everything at once, we could hold back some test groups and release them every three days throughout the season and use those.

MR. PETTIT: Certainly allowances can be anticipated before for different reasons or another.

MR. BJORNN: I think you could do that. Some of the other types of things which you may try to evaluate may not be able to be done, but I think those

kinds of fish you probably could.

MS. WIK: Well, I guess at this point, let's say that getting the numbers of fish at Lewiston is potentially not eliminating factors that we need to consider, in that we think a year's time would be enough led time to purchase --

MR. PETTIT: You would certainly have to expand the present program.

MS. WIK: Correct. But, you think that could be done within a year, if that's what we decided we needed to do?

MR. ANDERSON: What's critical -- is it a year lead time?

MR. PETTIT: No. I think we have the technology to collect fish. The first thing to cover is the most realistic technigue.

MR. ANDERSON: Okay.

MR. PETTIT: Or like, maybe, Steve said cordoning off a certain portion of your production at one hatchery or another. I'm not saying that would be easy because it would take some resistance to turning over, you know, a hatchery production to research. Don't get me wrong, it would not come easy. You're asking somebody to -- we're all familiar with this problem. We have visited every year, the Bonnevile and

everyplace else. It is a big sacrafice for a production program.

MR. YOUNG: The key, again, is the objective. If the objective is to tag fish, we can sure do that. If it's to measure travel time, we can probably do that. If it's to determine the benefit of what you're doing, then you probably can't do that.

MR. SATTERWHITE: Not in one year anyway.

MR. BJORNN: Unless we could measure it in terms of percentage of fish getting through Granite or Goose, for example.

MR. SATTERWHITE: Right.

MR. BJORNN: If you are talking an overall long-term survival, then a one-year test is not going to tell you anything. Multi-year tests are going to be necessary.

MR. YOUNG: But, even if you have a percentage of fish to Goose or to Granite, what would you do with that? I mean, what would that mean?

MR. BJORNN: What that does is better define what kind of flows you need to be able to get the fish down to the point where you decide to either put them in a barge or spill them down the river.

MR. YOUNG: You would do it under different range of flows? You would compare one flow with

another?

MR. BJORNN: Right.

MR. YOUNG: Okay. It's still going to be real tough to get a sample.

MR. BJORNN: It is. It may take you two or three years of doing that test to get enough data points to average itself out.

MR. PETTIT: There's so few tags that have been recovered at Goose because we are moving the bulk of the population at the clutching system above there. So, you know, if you go into some program in '92, you have to compare it to a head of pooled releases, recovery at Goose, and there's not very many data points there.

MS. WIK: I'm not sure what you're talking about in terms of -- are you throwing out another alternative, Ted, in that we wouldn't compare it to the past data; but we would compare within a year? Because if you are just looking at percentage of fish that reach Little Goose under different flows, is that really going to tell you what we're looking for?

MR. BJORNN: It seems to me that's one of the critical pieces of information that tells you how much water you need to be able to get the fish down to a point where you do something with them.

MR. YOUNG: You're just looking at response to Granite pool?

MR. CRASE: Right, yeah.

MR. YOUNG: What kind of juvenile response are you --

MR. JOHNSON: Overall response.

MR. BJORNN: The response would probably be the same on the other pools if we spilled them on down the river.

MR. JOHNSON: The problem is you don't know what caused them to respond, right?

MR. NASON: Right. You would have to do some physiological work with it.

MR. BJORNN: You can tie that pretty closely to the flow.

MR. ANDERSON: Just flow augmentation, not drawdowns?

MR. BJORNN: You can't use drawdown because you're using -- you're going to lose your collection facility.

MS. WIK: Well, he's asking to Lower Granite Reservoir, just flow augmentation or drawdown?

MR. BJORNN: Every year we have a wide range of flows that occur from anywhere from thirty thousand cfs, like it is right now, or up to a hundred and

twenty or a hundred and fifty thousand cfs. You have a release group coming down influenced primarily by a particular flow range, why that's the kind of information you need. We can make an estimate of how many of them are getting down to Lower Granite Dam and to Little Goose and provide us with that relationship.

MS. WIK: Well, that's an alternative. Yeah. that's Alternative 6.

MR. BJORNN: Right.

MR. JOHNSON: But, there are other components, such as predation. I feel if you want to draw a relationship between all of those variables, you not -- I believe travel time is a subcomponent of the distribution studies. You should really focus on where those fish in the long term are distributed throughout that reservoir. Do a massive sampling program. Where are they distributed? Evaluate that information spacially and sequorially. And out of that you will get your travel time. And out of that you can also relate the distribution of your juvenile migration with your environmental variables, predation and the physiological variables. So, I'm looking at more of a distribution study; not only a part of that what you're talking about is the travel time study.

MR. NASON: If you're not using radio tags,

that's almost impossible to do.

MR. JOHNSON: In numerous sites they used hand wands to interrogate the PIT tag fish. It's maybe possible.

MS. WIK: So, wouldn't that, by the very nature of what you're doing, affect their --

MR. NASON: The movement would be an artifact of the study.

MS. WIK: Yeah.

MR. WHELAN: Well, yes. That's -- anything would be. That's a catch twenty-two.

MR. SATTERWHITE: I think the details of those kind of experiments are something that need to be peer reviewed rather than something that needs to be discussed at this table.

MR. JOHNSON: The dams are artifacts to studies. You need to begin somewhere.

MS. WIK: Dale, why don't you put together a write up of what you're proposing there.

MR. JOHNSON: It's in my office; but, okay, I'll write it down.

MS. WIK: Let's go back to Alternative 1 and try to -- are there less than the two-month or four-month time frames suggested here? I guess -- or -- well, I'm not sure how to proceed. Do we -- do we

look at adult fish passage as essentially a limiting factor for '92, keeping in mind that we would be looking at what would have to be done to do something like this?

I guess what I see as two limiting factors for this one, are adult fish passage. We are going to look at what might have to be done, and the other is, if you really want to see if there's a benefit, there are no data at this point to -- well, Frank is saying maybe there are -- to compare to.

MR. YOUNG: At McNary.

MR. WHELAN: Passage to McNary, that's useful information

MR. PETTIT: We have the --

MR. WHELAN: We have it under the drawdown.

MS. WIK: Okay.

MR. PETTIT: The same concern with Little Goose applies; but, at least, there are some -- you know, if somebody asks you what the travel time through that reach is under various flow conditions, we can give you the best answer our data provides.

MS. WIK: Okay. So, I guess, two things on this one, then, would be look at ways for adult fish passage. If there are ways to do it in '92. The second thing is to get somebody like Lyle involved in

looking at the information that we do have on passage time at McNary and see if we can pick out a difference in the drawdown scenario.

MR. SATTERWHITE: Go ahead and finish.

MS. WIK: Well, those are essentially the two things I see as --

MR. SATTERWHITE: That's certainly two reasonable points. Another point might be that you can set a minimum time period over which the experiment would have to occur. The first limitation would be set by the two-foot drawdown rate. We are talking about a fifty-foot drawdown, a four-reservoir drawdown near spillway -- near the spillway crest as the objective. We are talking a fifty-foot drawdown at two feet per day necessarily would take about twenty-five days to get it to that point. That's the concept of the test.

MS. WIK: Well, I guess, I'm assuming that on each of these we would be at that point at the start of the experiment. I mean, that would be included in the review of that, that the reservoir starts drawing down twenty-four or twenty-five days or however many our engineers finally agree is the maximum per day that would have to take place ahead of time to accommodate the experiment

MR. SATTERWHITE: Okay.

MS. WIK: It's then a question, again, of again statisticians being involved, how many days minimum would you have to be releasing groups of fish over to get information; is that a fair assessment?

MR. WHELAN: The one issue -- I guess, we have gotten close to it a couple of times, and that is the usefulness of information when you can't use fish passage time. That is what is basically the water particle travel time. Don't you get useful information from a drawdown in terms of just finding out what water particle time is?

MS. WIK: I guess what we decided, Will, is we have modeling that can do it probably as well as going out measuring the current meters, knowing where in the reservoirs to measure and so forth. Correct me if I'm wrong on that.

MR. WHELAN: In asking that -- I'm trying to figure out -- I don't know if you have seen curves like that that shows velocity --

MS. WIK: I have a whole notebook full.

MR. WHELAN: Is there agreement on these? Are there questions as to the validity of these terms of the predicted velocity?

MS. WIK: I don't think so.

MR. ANDERSON: No. The question is, so you

have data at various cross sections, what you need to know is the travel time through the reservoir. That's going to change because your cross section changes at different points in the reservoir. You can get an indication. We have done that with models already for Lower Granite. We know that. And we also have a pretty good feel for average water particle travel time, but you don't know where the fish are in the water column in relation to changes in the cross-sectional velocities. So, it's --

MR. YOUNG: We are interested in relative differences. So, I don't think that that's a big deal.

MR. ANDERSON: Yeah. I guess I would have to agree.

MR. YOUNG: I guess whatever it -- to do an average water particle test in the reservoir, I don't think we want to go through that.

MR. BJORNN: I don't -- I don't have any problem with the estimates, assuming that they have been reasonably well put together. I don't have any problem with those estimates, and I don't think if we went out and measured things that we would find that they would be much different. I think the relationship is between average water travel -- particle time and travel time of fish. And so, I don't -- that's why I

say, I'm not sure we're going to gain a lot by drawing down the reservoir just to measure that.

MR. PETTIT: I don't think we have the capability of measuring with any more precision than those models reflect.

MR. YOUNG: Well, you probably could, and you would wonder why you went through all of that.

MS. WIK: Is anybody in disagreement with that because that effects some of the others? Basically, that type of information we can get what we need out of modeling efforts.

MR. YOUNG: Even if it's wrong, it doesn't matter as long as --

MS. WIK: It's relative.

MS. WIK: -- if relatively it gives you some indication of the change.

MS. WIK: Okay. I guess then, summing up No. 1, as Witt said, we are going to look at things -- the type of things that would need to be done and right now not to encourage anybody that they could be done by '92.

MR. PETTIT: Could you go to the second page of the matrix.

MS. WIK: Okay.

MR. PETTIT: Item 7, can valuable information

be gained.

MS. WIK: Change that to a question mark.

MR. PETTIT: Instead of --

MS. WIK: Yeah. I was not aware that we had it to McNary; and, again, I guess the statiticians can look at that. A question mark. Is everybody in agreement that that is an acceptable change? And the one underneath it as well?

MR. PETTIT: Right.

MR. WHELAN: Sarah, just to be sure I heard you had right, you said you were going to go ahead and look at what type of adult passage may be possible under a full pool drawdown.

MS. WIK: We are going to look at what it would take to get adult passage under a drawdown scenario.

MR. WHELAN: My concern is this, is your only full pool alternative, it's a fairly extreme alternative in that it really takes it all the way down to the spillway sill. There's a full pool drawdown scenario that may be capable of passing adults or making some provision for adult passage above into the spawning grounds, whether that be trap or haul or whatever, then it might be worth keeping a full pool drawdown that doesn't include as a draft. I didn't put

that well. Did you follow that?

MS. WIK: I followed.

MR. ANDERSON: Less than a full --

MS. WIK: Okay. We need to evaluate that because one of the things that came up, we had talked last time about the potential well loss. You know, we could get the fish at each project and haul them around; but, then we are back to if the collection ladder is functional, we have no way of getting the fish and then haul them around. We would have to look at what could be done at least, for example, the collection channel to get fish into a point that maybe we could haul them around. And they are --

MR. ANDERSON: Maybe we can look at the agency, if we could physically do it, collecting adults at Ice Harbor and transport them by truck.

MS. WIK: Well, it would have -- the fish have to be in the -- to be in the forebay of each project.

MR. YOUNG: Right.

MS. WIK: You couldn't go more than that because you don't know where -- whether the ones that go on through and go back or to a tributary or whatever. So, I guess that becomes another question whether or not that would be acceptable to handle the

fish that much.

MR. WHELAN: It could all be that this is rejected during the EIS. To try to keep on the table for the moment the four-pool scenario, the main problem you have with that is the spillway crest.

MS. WIK: Well, alternatives in terms of either actually passing at the facility or at least a place or point at which they could be collected, and we could manually -- again, not ideal.

MR. NASON: I'm putting you on the spot, Frank, would agree to adult transportation?

MR. YOUNG: Only if you could tell by looking in their eyes where they are headed.

MS. WIK: Well, I want to make that clear, Dick, that we would only be talking in terms of transportation just around the dam and back in the forebay. We wouldn't be talking about transporting any further than that.

MR. NASON: Okay.

MS. WIK: I don't see how you could even entertain the thought of --

MR. PETTIT: That means handling every fish that's bound for Sawtooth four times.

MS. WIK: That's right. Any other comments on Alternative 1 at this point, either from the matrix

or things that need to be at least pursued?

(No response was made.)

MS. WIK: Okay. Alternative 2, I would like to note one thing on here, one of the things that was thrown out, and this is a physical test lowering, at this point, just one reservoir down. And I'm hearing that it's -- other than -- other than seeing what happens in terms of failure incrementally, we wouldn't need to stop at each ten foot and try to gather velocity data. So, that's out. Is that a fair assessment of what I have heard?

(No response was made.)

MS. WIK: Okay.

We talked about last time in terms of doing this, reservoir drawdown to gather physical information, that we would do it within the current in-water work windows. This is a rough estimate of time frames for the summer and winter. We noted that the winter work window would be the preferred time.

Witt and Bill can correct me if I'm wrong; but, in terms of a winter work window, the first window we would be talking about would be '91-'92; but, because of the NEPA process, it would -- essentially, if we wanted to stick with a winter work window for a good physical impact test, it would have to be '92-'93.

MR. WHELAN: Can a window be changed?

MS. WIK: Can a window --

MR. PETTIT: Now, the -- what he's referring to, no, I don't think so because those windows have been agreed on after years of evaluation, and our knowledge of how to reduce impact on salmonids in the river system. Secondly, I hadn't really thought about that, that if you don't expect this process to be done at its earliest until mid March of '92, you have eliminated the winter window opportunity.

MS. WIK: In other words, one of the options we talked about was doing this first and then going forward using that information with a biological test. But, I did want to point that out.

MR. ANDERSON: Yeah. If we are serious about trying to do this by 1 January, I mean, that's something, Will, that, quite frankly, we have got to get squared on if we have any chance to get something done. I know that the people that are going to have to work up this document are going to say it's absolutely impossible.

MR. SATTERWHITE: I would.

MR. ANDERSON: The Corps is going to do everything it can to get through the process; but, if it takes three months out of our ability to get through

the procedure, I'm certainly not going to promise you it's going to be done.

MR. PETTIT: I wouldn't want to eliminate the possibility, though, the fact that you're even entertaining doing this in a nine-month period.

MR. ANDERSON: I agree with you; we won't eliminate it today.

MR. PETTIT: I think you had gathered it for the January '92 possibility.

MR. ANDERSON: I agree with that, but I guess I'm just emphasizing that we're going to have to reach some understanding about that fairly early on. That we can't drag on in regional debates about that very far, or we will miss the opportunity. We certainly won't eliminate it at this point.

MS. WIK: Okay. Adding to the possible information to be added -- Dale is gone, but of course the chemical information -- he does have a good point as to one of the considerations would be some sediment testing ahead of time to determine maybe some potential hot spots; and so, we would have to look at adding that.

MR. YOUNG: Is there any chemical testing that occurs when the Corps dredges up around Lewiston?

MS. WIK: We have tested in the confluence

area, Frank. But we are -- at this point, our testing has been limited to areas that we dredge. One thing that we talked about last week under that was those sediments right there in the confluence area are fairly coarse and, therefore, do not retain a lot of the contaminants that you might find in the quieter areas. Where the finer materils is, of course, will be resuspended in the water column as the reservoir comes down. So, while we do have good information on the confluence, we don't have any information on those areas that really would be of a higher concern.

MR. YOUNG: This information, would it give some kind of an indication, though, of what you might expect? If you're finding heavy metals in the finer sediment, but if you're finding it not at all....

MS. WIK: Well, off the top of my head, we found, you know -- and, again, we found some of the different concentrations of dioxin, for example. We found some PCBs, things like that. So, you know, at that place with the limited organic content of those sediments, it was not considered to be a problem by all the agencies involved. But, again, that is -- a critical factor is the organic content of those sediments. And that changes very much when you're looking at other areas of the reservoir that may be

exposed.

MR. SATTERWHITE: That testing should be initiated immediately.

MS. WIK: There's no question on that.

MR. SATTERWHITE: Starting right now the --

MS. WIK: All I said, Mike, is I just needed to note, addressing Dale's comment here, that that would be -- that would have to do with that.

MR. SATTERWHITE: Right. She was correct; that there's been some considerable testing already done in the Lewiston area looking at those gravels. Also, the EPA has been looking at dioxin levels in the river, in the Columbia already, as you're probably already aware of that. And the University of Idaho has some plans for some testing of resident fish at some time in the future.

MR. BJORNN: For dioxin levels?

MR. SATTERWHITE: For dioxin and other kinds of particles.

MR. BJORNN: They talked to us at one time, but I haven't heard any recent stuff, Mike. Maybe you're aware of something I'm not.

MR. SATTERWHITE: I was under the impression that was supposed to take place fairly soon, if it's not all ready underway. It might have been Jim

Konklton (phonetic) or somebody involved in collecting samples or analysis, but I don't know what the details were. But those would be probably the fish samples, not sediment samples.

MR. SCHLUETER: I have a question about sedimentation that I didn't think was appropriate to raise last week because I thought it was more of an economic concern for the barge shippers than I did as an environmental impact for the fish. That is, with the redistribution of the sedimentation, stirring up the mud when we draw these reservoirs down by fifty-foot increments, what is going to be the redistribution of the sedimentation below these dams; and what is that going to do with the channel and, therefore, the fish recovery in the direction to the upriver ladders for the returning adults? Is there any concern about changing the path or the access to the ladders itself by changing the channel below the dams?

MS. WIK: I wouldn't really think so, but we haven't talked about that.

MR. SATTERWHITE: The velocity -- there should be a critical velocity that the silt continues to move even below that velocity and will drop out.

MR. SCHLUETER: Yeah. But, whether it's below the reservoir we're testing or the reservoirs

that are not effected, McNary or John Day, that sediment has got to go someplace.

MS. WIK: I don't think it would settle in areas that would block effective passage below, though, if that's the question that you are asking.

MR. YOUNG: It will probably improve velocity wherever it settles by reducing the cross-sectional area of the reservoir.

MR. SATTERWHITE: I like that. That's good.

MR. NASON: Always looking for a bright spot.

MR. SCHLUETER: That will create some economic concerns that we will have to address.

MR. YOUNG: As a matter of fact, that may be an alternative, just fill the reservoir with sediment and just have a channel going through it.

MR. LOVELIN: Sandbag them.

MS. WIK: I guess, any other comments on Alternative No. 2? We have talked about a lot of these things already.

MR. ANDERSON: Let's just do a check of process here. Do you people want to trek on and get through these and reach the conclusions that we can reach today about next week and be done, or do you want to break for lunch and come back? I guess maybe we could press on and get through these, discuss how we

want to present this next week; and that's what we will accomplish today.

MR. SATTERWHITE: I would prefer to press on.

(Discussion held off the record.)

MR. ANDERSON: Let's press on and get through the alternatives. If we're not going to make it, we will break.

MS. WIK: Anyway, let's move on to Alternative 3. I didn't hear any more under Alternative 2.

Any comments under Alternative 3 that we haven't discussed already?

(No response was made.)

MS. WIK: Assuming Frank's suggestion of using a control by hauling fish down below Lower Granite to compare to versus comparing past data at Little Goose as an option, is that -- Steve, is that what you heard?

MR. PETTIT: Yeah, that's his goal, is to try to that.

MR. NASON: I would like to say that this wasn't really even necessary. The fact that it's a given, if you pull the pool down, one pool down, you're going to reduce your travel time. And, if you want to take and measure the biological benefits for the fish,

you probably can't do it.

MS. WIK: That's true.

MR. NASON: A lot of these --

MS. WIK: That's true for a lot of these. I guess we include that. And, again, I guess that's for a statitician to take a look at.

MR. PETTIT: I'm not quite sure when you would -- when the fine details of testing protocol that he has in mind are. When you would release the controls versus similar experimental groups at the head of the reservoir. Do you know what he has in mind?

MR. BJORNN: It would probably have to be a continuous thing, Steve.

MS. PETTIT: Uh-huh. It would relate --

MR. BJORNN: To the flow at that time.

MS. WIK: So, that again --

MR. BJORNN: One of the things that Sarah mentioned in the first page of her handout down at the bottom is a note, maybe it's a good thing to bring up and make sure how we are thinking about that, is the question of, when we talk about a drawdown, are we talking about a drawdown throughout the whole season regardless of what happens; or are you really talking about a variable drawdown, related to the amount of water coming down the river. And, for example, right

now, you may want to draw it down to spillway level in order to get the velocities you want down through Lower Granite pool; but four weeks from now, when you have got a hundred thousand cfs in the river, what do you do? Do you keep it down at that level, or do you raise it back up because you have enough velocity?

MS. WIK: Well, I guess, there's two thoughts related to that, Ted. And one is, if for some miracle we actually have an above-average flow year next year, do we want to do one of these tests that actually propose a drawdown on the reservoir? And the other related thought is, I guess, as part of a test protocol, I would think we would want to include and need some decisions on if we are -- if we are spilling and the levels start coming up, we are measuring dissolved gas levels, is there some point at which we decide that's a critical level and maybe we don't want to continue? You know, dissolved gas levels, because of our operations, reach a hundred and thirty, a hundred and forty, I guess we need some sort of a safety mechanism in there that we would want to have worked out ahead of time.

MR. PETTIT: Yeah.

MS. WIK: And that's what you're talking about, is that at some point that we would want to

have --

MR. PETTIT: I don't think we have to detail that out right at this point; but, obviously, that's a major concern. And not only that, but what do you do with the excess water in real time? Do you discontinue to spill it and take the hit on nitrogen, or do you start to divert some of it through the powerhouse, which is also a line -- in line when you talk about fish survival?

MR. BJORNN: I think it's the kind of thing that people need to understand. We are probably not talking about a constant drawdown for two months. I don't think any of us would probably buy that as being saleable. If we tried to put a hundred and twenty thousand cfs down through the spillway, we would be in trouble.

MR. SATTERWHITE: I think it's appropriate, since we know so very little about the operation under a variety of conditions, including the standard conditions we operate under, that we ought to build in the design the intent to take the opportunity to monitor any condition over the spillway under any condition of flow so that we can start collecting that data if we are concerned with the operation of a spillway.

MR. NASON: There comes a time when monitoring that data that is deemed to be detrimental to fish health -- that's the point --

MR. BJORNN: I'm not sure what you were saying, Mike.

MR. SATTERWHITE: I'm not arguing with what you said. I'm just -- I'm just saying we should build into the experimental scheme the ability to adjust to changes in environmental conditions and monitor those changes so we can start building the data base of nitrogen concentration versus flow. We need to have a mechanism in place to do that.

MS. WIK: We have already been working on it. I think I mentioned last time we have a lot of years of data, for example, on dissolved gas in the forebays.

MR. SATTERWHITE: In all the projects we are concerned with?

MS. WIK: In all the projects we are concerned about. In the spring, we went in and we installed gas monitoring instruments immediately below the project as well. So, that's -- those types of things, yeah.

MR. SATTERWHITE: Okay.

MS. WIK: So, with those types of things, what we haven't already gotten in place, we are

assuming we would include as part of this.

MR. NASON: Do the units at the four projects on the Snake, do they have the capability of sluicing?

MS. WIK: With the gates open without operating, no, they do not.

MR. CRASE: No.

MS. WIK: So, you would be operating when the water is going through. Okay.

Any other thoughts on Alternative 3 or on the matrix or comments?

(No response was made.)

MS. WIK: Okay.

Alternative 4, when we originally talked about doing this alternative, which is lowering Lower Granite and Lower Monumental pools to approximately twenty-three feet from normal minimum, which allowed Lower Granite ladders to continue to operate, and retaining Little Goose and Ice Harbor pools at near maximum, when we originally talked about that, we were looking at using radio tags as the ability to measure the difference in travel time between pools. With Lowell's comment of recommending against radio tags, is there another alternative way to get information?

MR. NASON: You could have another release point, actually.

MS. WIK: But, how would you collect information?

MR. SATTERWHITE: Well, the idea behind the suggestion, if I understand it correctly, is to have two low reservoirs and two high reservoirs; and the idea is to collect data from all four reservoirs and compare those migratory times to get some more statistical infomation.

MS. WIK: Right.

MR. SATTERWHITE: Or values or numbers that you obtain

MS. WIK: Correct.

MR. SATTERWHITE: But, you have a problem.

MS. WIK: Yeah. I don't see any way to get the information at this point.

MR. SATTERWHITE: Not even by seining at the collection facility or anything?

MR. PETTIT: I don't think you could do that. You know, that's what allowed us to carry that option on was the possibility that you could use juvenile transport.

MR. SATTERWHITE: You don't think you could do that with marking and then netting or something in the lower end of the pool.

MR. NASON: I don't think that under the new

pool configurations of not actually having a pool, you would be able to net.

MR. SATTERWHITE: Oh.

MR. NASON: It would be a river. The reservoir wold be drawn down. It would be a river again.

MR. PETTIT: But, you're a long ways from the pool that you're currently purse seining into if you have a fifty-foot drawdown. That's the object. The velocities, in fact, are higher.

MR. ANDERSON: We are pursing right now at the confluence of the Snake and Clearwater with velocity we might entertain with a fifty-foot draft without any problem.

MR. CRASE: Could radio tag steelhead.

MR. PETTIT: It just goes with the flow.

MR. SATTERWHITE: But, you know, it may be less labor intensive just to seine, purse seine to collect fish and count your tags, count your marks.

MR. PETTIT: I don't think you would want to eliminate a critical species from the test environment by only marking steelhead.

MS. WIK: Is what Mike talking about an option?

MR. PETTIT: Netting in the forebays of

the.... I have real difficulty applying it to anything that we could compare it to. And the risks involved, it would --

MS. WIK: You would have to compare them between reservoirs is what -- but it would be -- I guess timing would be a problem in terms of being -- knowing when to be there at the right time.

MR. NASON: You would have to do it continually.

MR. PETTIT: You would have to do it continuously, twenty-four hours a day.

MS. WIK: Yeah.

MR. NASON: I have a lot of reservations about that collection method.

MS. WIK: Well, okay. I guess one thing here, since this option was put on the table assuming radio tags, is this one that we still want to carry forward? Given the other options that we are carrying forward, is this one that we still want to carry forward?

MR. PETTIT: I don't think it's really feasible, but I'm only one vote.

MS. WIK: Does anybody have any problem eliminating this option from carrying it forward?

(No response was made.)

MR. PETTIT: Just keep it in mind, we don't want to propose something that's going to be leathal to large populations. And purse seining to get real time continuous data is not advisable.

MR. SATTERWHITE: Is that due to injury?

MR. PETTIT: Yes.

MR. YOUNG: It tends to remove scales.

MR. SATTERWHITE: Yeah.

MR. WHELAN: There's sort of a more general question, taking this out. The question is, is there any other reservoir, any other single or multiple pool test that we would do other than Lower Granite because this is the only one that had a non-Lower Granite pool in it except for doing all four?

MS. WIK: Well, again, back to that one. The other single reservoir was because of the ability to gather the data at Little Goose. You know, some thought at one meeting talked about a desire for a Lower Monumental drawdown, but I don't know of a way to get the information from that except at McNary. And, again, your adult fish passage is affected.

MR. WHELAN: So, you thought about it; and there isn't any other reservoir that you could see pulling down other than Lower Granite unless -- except for all four alternatives.

MR. ANDERSON: Nobody's come up with any reasons why -- any merit in that. I mean, if there's merit --

MR. WHELAN: Just to flip the question around, is there any reason why the results from Lower Granite wouldn't be applicable to any of the other reservoirs? Would there be anything different among these reservoirs that would cause you to question Lower Granite results?

MS. WIK: Well, that's something that would have to be looked at in more detail because there are different conditions. But, at this point, people are assuming that a benefit obtained in lowering Lower Granite would be applicable.

MR. PETTIT: The pools are a lot more similar than they are dissimilar

MS. WIK: That's right.

MR. PETTIT: They are all approximately forty miles long.

MR. ANDERSON: Pretty similar volumes relatively. Now, does anyone an objection to taking this off our working list?

MR. SATTERWHITE: I just -- I would say that it might be worth pointing out from a statistical point of view, the data you might get on migration rates

through if you could do the experiment would be the most significance or more significant than on the one pool. Is that a fair statement? Maybe that's not a fair statement.

MR. PETTIT: The concept of treating one reservoir versus --

MR. SATTERWHITE: Yeah.

MR. PETTIT: Ideally, I guess you're right.

MR. SATTERWHITE: I mean, the more replicates of experiments you have, the better the experiment is; that's all I'm saying.

MR. NASON: This isn't a replicate. This is a -- this additional pool.

MR. SATTERWHITE: No. This is a replicate. Two low, two high.

MS. WIK: No. Well, I mean, the idea --

MR. SATTERWHITE: That's the intent.

MS. WIK: Yeah. The idea behind it was to be able to, with a method, compare travel time from a high to a low. The reason, you know, Lo Mo would kick in was because of the radio tags.

MR. SATTERWHITE: This came in shortly after the discussion about how reliable could you measure the movement rates through the pool, if it's a fairly small change with respect to a small change in elevation.

MS. WIK: Yeah. Well, one thing this did, again, is you would have to compare movement rates versus absolute travel time because you have different lengths and different conditions in the pools.

MR. SATTERWHITE: That makes it difficult. That's another level of complexity.

MS. WIK: Yeah. I don't know if you can make your point in a general manner for all of these. You know, ideally replicates and so forth are important; but I don't know that we want to keep that in. I am just asking.

MR. PETTIT: There was a caution mentioned at the beginning of this discussion that we should probably include as many alternatives that are realistic in the process. And perhaps six is, you know, a good healthy number. The next nine months you're going to be looking at all these, and you can throw them out then, but you probably should go into the process with them. Some will be eliminated rather quickly.

MR. SATTERWHITE: I don't think it's going to necessarily make it more difficult to evaluate in the evaluation process to keep No. 4 in.

MR. NASON: I have a problem keeping No. 4 in when you know it can't work. You know, I hear Steve

over here saying, I don't want to you collect twenty-four hours a day seven days a week if these scales (sic)injure the fish. So, why are we keeping a study in that we know is not feasible?

MS. WIK: Just for the sake of a number of alternatives.

MR. NASON: If that's the case, we could put another half a dozen, you know, off-the-wall ones in and say we have got twelve now. Wasn't Dale going to give us another alternative? Didn't he have one?

MS. WIK: He did.

MR. NASON: Well, we will still have six.

MS. WIK: Well, his wasn't an alternative for '92, though.

MR. ANDERSON: That's the magic number.

MR. SATTERWHITE: I think its's a minor point to be hung up on, to worry about it.

MR. ANDERSON: Well, we can certainly review it next week and say for these reasons we don't see it really as being feasible. Steve said that -- you know, I guess, we still today have to talk about how we want to present these next week.

MR. YOUNG: I think that's a good approach, just to point out the problems that were identified and associated with that alternative.

MR. ANDERSON: Okay.

MS. WIK: Okay. All right. No. 5, we really haven't talked about.

MR. YOUNG: I think we can probably eliminate that one, too.

MS. WIK: Okay. Chip did send me just a brief outline, and I got it too late to fax or even ditto out. What he was looking at doing was -- specifically, the protocol might be as follows: Period 1 of low velocity, say, a seven-day period, flow and elevation manipulated to obtain water velocity equivalent to eighty-five kcfs at normal pool elevations; and, then, alternating that with Period 2 of high velocity flow and pool elevation manipulated to obtain water velocity equivalent to the Period 1 average, plus two days. Repeat over the season.

MR. YOUNG: So, he wasn't identifying the length of period, then?

MS. WIK: Just a quick calculation here. If we are assuming the April 15th to June 15th and assuming what we know about the maximum drawdown rates and refill rates, thirty days of that two-month period would be taken up in drawdown and refill.

MR. YOUNG: I meant for the period here. It says seven days down, seven days full, which I didn't

think was worth doing.

MR. BJORNN: Did he modify that --

MS. WIK: No. He didn't modify that. This is still seven days; and, in calculating out what our best way of drawing down and refilling drops is, it's back to five days. We wouldn't be able to have them any longer than five days during that time frame. Travel time between Lewiston and Little Goose varies from three to fifty days.

MR. YOUNG: Uh-huh.

MR. SATTERWHITE: Yeah.

MS. WIK: So, I don't know how we would deal with -- we would have to have --

MR. YOUNG: I would hate to have to analyze the data.

MR. PETTIT: Me too.

MR. YOUNG: I would hate to be responsible to analyze the data that came out of this. I don't know what you would do.

MS. WIK: Okay.

MR. YOUNG: I see the idea. Idealistically it would be good; but pratically, I don't think it's possible.

MS. WIK: Well --

MR. SATTERWHITE: This is the old pulse flow

experiment that was described early on here. Not here, but early on in the summer.

MR. YOUNG: I'm not sure that's what Chip has in mind. I think he's just proposing this as a way to get information that's been useful. I don't think this is going to accomplish it

MS. WIK: I don't know how you would deal with the fish that were caught in between the rising and falling reservoirs and sorting all that out.

MR. YOUNG: Not with the sample sizes we have to deal with. I'd say it's not feasible.

MS. WIK: So, we leave it in, but we present the problems with it next week.

MR. YOUNG: Right.

MR. WHELAN: Give Chip an opportunity to explain his alternative.

MS. WIK: Well, I would like to talk to him some more just to see if I missed something he was talking about because it was a quick description.

MR. YOUNG: Yeah.

MS. WIK: Alternative 6, this assumes, as all of these do, assumes the purchase of equipment for trapping at Lewiston that is --

MR. YOUNG: A conspiracy has been born.

MR. WHELAN: There are some apples and

oranges in Alternative 6. It seems to me that this is a no action alternative in --

MS. WIK: I don't agree, Will. I wouldn't call it a no action because it's signicantly more information than we are currently getting.

MR. WHELAN: That's the orange. That's the research issue. If our proposed action is to draft in '92 and how much, then this is a no draft. And you need a no action alternative in there, and it seems to me Alternative 6 might as well be it.

MS. WIK: I guess, I don't --

MR. WHELAN: There's a second question, and that is this issue of the research project. That seems somewhat different than reservoir drafting. You can do this research project with no reservoir drafting. Maybe I'm screwed up.

MS. WIK: No you're --

MR. ANDERSON: No, that's right. I mean, it's just what you want to call this. We can call this "no action," "no drafting"; but we would propose that in that case we would do certain things differently than we are doing now or more intensively is all.

MR. NASON: If it comes to pass that due to physical constraints or whatever, that a reservoir drawdown test is not taken in '92, is not completed in

'92, I think that this would be -- if you were to perform this study, assuming the Lewiston traps were upgraded, then you would have baseline data if a test were to occur in '93 to compare it.

MR. WHELAN: Yeah. I'm not commenting on the validity of the research or anything like that. You have to have a no action alternative in the range of alternatives. This might as well be it, but I think it ought to be identified as a no action alternative in terms of a proposed action of reservoir drafting.

MR. ANDERSON: Well, the no action would be not drafting the reservoir. This is a no action with the something in there.

MR. WHELAN: Okay.

MS. WIK: Yeah. I guess, in terms of a 1992 test, this could be viewed more as a Phase 1 to drawdown test in the future, rather than no action at all. I guess, I'd just as soon see it as a no action phase. No reservoir drawdown and no increase of normal monitoring.

MR. WHELAN: You make Alternative 6 no drafting, and then maybe semicolon, travel time experiment.

MS. WIK: Okay. Just for ease of this, is why the name is short.

MR. WHELAN: This suggests that you're doing the draft since it's got a --

MS. WIK: I guess that's why I put on the note. This alternative assumes resevoirs are operated within normal operating ranges. So, I will make that more clear.

Any other comments on --

MR. SATTERWHITE: Could Alternative No. 6 get underway this year?

MS. WIK: Well, you mean for the '91 season?

MR. SATTERWHITE: Yes.

MR. NASON: Can they get their hands on enough fish?

MR. SATTERWHITE: It's a matter of collection.

MR. YOUNG: It's a design.

MR. BJORNN: It would take some planning.

MR. SATTERWHITE: You mean there isn't a yard full of traps just lying around.

MR. YOUNG: The hard part is getting agreement on the study design.

MR. NASON: That's true.

MR. WHELAN: By way of other comments, it seems that in thinking through some of this stuff, one of our major issues is the use of the spillway as the

sole means for passing fish through a drawndown -- a dam with a drawndown reservoir and causes problems with detraction flows potentially for adults. It causes potential nitrogen gas supersaturation issues. One of the things that we have been thinking about is how we can get safe juvenile fish passage through the turbine route, possibly by pulling a turbine. And I would like to put that on the table for purposes of analysis.

We can test reservoir drawdowns, but we also need to try to think of how to provide decision-makers with useful information. It seems to me, we're starting sooner, rather than later, a consideration of how we deal with that issue of providing alternative passage than sole reliance on spillway. Frankly, I don't have enough information of any sense whether it's possible to pull a turbine in '92. MK is taking a look at that through their contract.

Whether or not you actually pool one, though, it may make some sense to analyze the issue.

MR. NASON: I can maybe speak to that. At Rocky Reach Dam in 1984, Chelan proposed doing that to the Mid-Columbia Coordinating Committee, Frank is a member. We brought in Milo Bell as a consultant to look at that, and it was decided that the velocities and the sheers that would be encountered were great

enough to abandon that.

MR. SATTERWHITE: Assuming the full-pool operation?

MR. NASON: Assuming a full-pool operation of a hundred feet of head, that's correct. Ninety feet of head.

MR. WHELAN: Yeah. That's a type of thing that might at least be worth keeping on the table to consider doing it now. You have different types of sheer forces in drawn down reservoirs, and are there things that you can do by modification to reduce those sheer forces?

MS. WIK: I would like to mention one thing a little along those lines. We are working right now with Milo to evaluate juvenile mortality through the turbines under differing head conditions; and I guess I would like -- I just made a note to talk to him about also maybe looking at it with the turbine removed and seeing what it might be under varying heads. If we were to only be at fifty foot of head, what would the mortality, if any, be.

MR. YOUNG: There may be a way after putting an operating gate in there and drawing the water to lower the head to spill over the top of it. You know, something along those lines.

MR. WHELAN: And, again, the question is to try to come up with alternatives to sole reliance on the spillway as a means of passing fish.

MR. ANDERSON: And MK is looking at that.

MR. WHELAN: They are going to be looking at the question of pulling turbines. They designed a project in California where they could pull the turbine out in a matter of a couple days turnaround.

MR. ANDERSON: Okay.

MR. NASON: You may want to look at instead of pulling the turbines -- the problem you have when you have pulled the turbine, is you have -- there's nothing to remove the energy from the water. You may want to look at the speed no load or something along those lines to take and actually remove some of that energy from the water.

MR. PETTIT: There's also another benefit there from just arriving at an alternative route of passage for juveniles. Hypothetically, you might be able to operate the unit closer to the adult passage entrance to improve adult attraction, too.

MR. WHELAN: That's what I thought.

MR. ANDERSON: Any other comments.

(No response was made.)

MR. ANDERSON: Okay. Next Thursday we take

this to the policymakers. I guess the way to do it is to have Sarah go back and do some more work. Redo the good work she did here, based on the comments today; and we give this to everybody next week and walk through it.

MR. PETTIT: Who are the policy people, the Salmon Summit?

MR. ANDERSON: It's the Salmon Summit Coordinating Committee that is -- that is going to -- that is piggybacking the meeting at Bonneville on river operations and other Salmon Summit activities.

MR. WHELAN: So, that's going to be at the same meeting then?

MR. ANDERSON: Essentially. And I can't tell you, Will, precisely who's involved or invited to that -- the former meeting. But, I think it's largely the same group. That's why he said -- you know, we had them on the same day to begin with. And we said, Well, it makes sense to just join the two meetings, in essence.

MR. WHELAN: I take it, Bruce Lovelin and some of the nongovernmental entities are also invited; is that true?

MR. ANDERSON: To the discussion?

MR. WHELAN: To the policymaker --

MR. ANDERSON: Everybody -- the whole Salmon Summit participants list is invited to this meeting. Were they not at that previous meeting?

MR. WHELAN: They are not on the Mainstem Executive Committee. They are at the governmental work group and all of these other --

MR. ANDERSON: I guess I'm unclear on the governmental work group.

MR. WHELAN: Yeah. I'm not so clear on that either. I just wanted to be sure we are going beyond the government --

MS. WIK: We will send letters to the entire Salmon Summit.

MR. ANDERSON: Right.

MR. SATTERWHITE: What did you set as the time?

MS. WIK: 2:30.

MR. ANDERSON: Room 106 at Bonnevile.

Now, I mean, how we do this, I guess -- I guess we will do it, me and Sarah. And we will just have to do it; and anyone can add anybody that participated here -- for that matter, anyone can add what they want. I guess what I'm suggesting is I don't know that we can say, this group did narrow a group of alternatives down; although, we did identify many of

the pros and cons and actual questions of feasibility.

MR. YOUNG: I think they kind of narrowed themselves down after you expressed the concerns that were brought up.

MS. WIK: Well, I guess in one sense, would we want to at least, for example, for four and five that we as a group did not necessarily recommend pursuing looking at those, pursuing details; whereas, on some of these others we may not be sure on the -- where we are going forward, for example, and talking to the engineers, What would it take to get adult fish passage? So, at least semipursuing those. But, on four and five, I seem to hear that, you know, we weren't recommending detail pursual of those.

MR. ANDERSON: We will still identify them in the NEPA process.

MS. WIK: Right.

MR. ANDERSON: Regarding pursual, I'll make comments on Sarah's comment there. But, I guess it seems to me that we need to have a technical committee to define for some period of time into the future here, and get the right people on that and the right agencies and right organizations; and, I guess I would ask that any of you submit your ideas to the makeup of that group to Sarah in the next few days because I certainly

feel that's a recommendation we should make to the policymakers.

Does anyone have comments on that?

MR. PETTIT: Good idea.

MR. ANDERSON: We have had a great turnout and good people, but I think we suffer a little bit if we don't have all the right people. We haven't had in the last two meetings.

MS. WIK: I know everybody is busy, but I sure see this as critical, that we get that group together to look at the specifics of this -- some of this.

MR. YOUNG: Well, the alternative is that the wrong people will be debating the issues.

MS. WIK: That's right.

MR. ANDERSON: Well, that will be a recommendation that we make; and, if anyone has thoughts on who that should be -- and Mike made some suggestions also -- of anyone else, let us know.

Anything else, anyone?

(No response was made.)

MR. ANDERSON: Okay.

Thank you, Gloria.

(Whereupon, the proceedings were concluded at 11:53 a.m.)

CERTIFICATE

STATE OF IDAHO)
: ss.
County of Nez Perce)

I, Gloria J. McDougall, CP, RPR, CSR, Freelance Court Reporter and Notary Public for the States of Idaho and Washington, residing in Lewiston, Idaho, do hereby certify:

That I was duly authorized to and did report the above-foregoing meeting in the above-entitled cause;

That the foregoing pages of this transcript constitute a true and accurate transcription of my stenotype notes of the above-foregoing meeting of all audible proceedings had to the best of my ability.

I further certify that I am not an attorney nor counsel of any of the parties; nor a relative or employee of any attorney or counsel connected with the action, nor financially interested in the action.

IN WITNESS WHEREOF, I have hereunto set my hand and seal on this 16th day of April, 1991.

Gloria J. McDougall, CP, RPR, CSR
Freelance Court Reporter
Notary Public, States of Idaho
and Washington
Residing in Lewiston, Idaho
My Commission expires: 9/9/91, 8/24/91

1992 LOWER SNAKE RESERVOIR DRAWDOWN – EXPERIMENTAL DESIGN AND MONITORING PLANS

ALTERNATIVE	FISHERIES/AQUATICS	WATER QUALITY, etc.	WILDLIFE	CULTURAL RES.	PROJECTS
1. All 4 projects near spillway crest 15 April–15 August or 15 April–15 June	– juv. fish travel time & condition – adult fish – resident fish pops. – benthic organisms – macrophytes – algal productivity – zoopl. productivity – habitat	– diss. gas levels – turbidity levels – temperature – velocity – contaminants	– waterfowl – wetland/riparian habitat – furbearers	– archeological site – erosion and vandalism	– Lewiston levees – railroad embankments – highway embankments – hatcheries – spillways – stilling basins – earthen fill – bridge abut. & piers – recreation – safety hazards – irrigation – navigation
2. Lower Granite near spillway crest non–fisheries window	– benthic organisms – macrophytes – algal productivity – zoopl. productivity – resident fish pops. – habitat	– diss. gas levels – turbidity levels – temperature – velocity – contaminants	– waterfowl – wetland/riparian habitat – furbearers	– archeological site – erosion and vandalism	– Lewiston levees – railroad embankments – highway embankments – hatcheries – spillways – stilling basins – earthen fill – bridge abut. & piers – recreation – safety hazards – irrigation – navigation

1992 LOWER SNAKE RESERVOIR DRAWDOWN – EXPERIMENTAL DESIGN AND MONITORING PLANS

ALTERNATIVE	FISHERIES/AQUATICS	WATER QUALITY, etc.	WILDLIFE	CULTURAL RES.	PROJECTS
3. Lower Granite 23' below MOP 15 April–15 June (once or more than)	– juv. fish travel time – adult fish passage – resident fish pops. – benthic organisms – macrophytes – algal productivity – zoopl. productivity – orifice psg. effic. (LGO) – habitat	– diss. gas levels – turbidity levels – temperature – velocity – contaminants	– waterfowl – wetland/riparian habitat – furbearers	– archeological site – erosion and vandalism	– Lewiston levees – railroad embankments – highway embankments – spillway – stilling basin – earthen fill – bridge abut. & piers – recreation – safety hazards – irrigation – navigation
4. Lower Granite Lower Monumental 23' below MOP 15 April–15 June	– juv. fish travel time & condition – adult fish – resident fish pops. – benthic organisms – macrophytes – algal productivity – zoopl. productivity – orifice psg. effic. (LGO) – habitat	– diss. gas levels – turbidity levels – temperature – velocity – contaminants	– waterfowl – wetland/riparian habitat – furbearers	– archeological site – erosion and vandalism	– Lewiston levees – railroad embankments – highway embankments – hatcheries – spillways – stilling basins – earthen fill – bridge abut. & piers – recreation – safety hazards – irrigation – navigation

1992 LOWER SNAKE RESERVOIR DRAWDOWN – EXPERIMENTAL DESIGN AND MONITORING PLANS

ALTERNATIVE	FISHERIES/AQUATICS	WATER QUALITY, etc.	WILDLIFE	CULTURAL RES.	PROJECTS
5. All four projects MOP	– juv. fish travel time & condition – adult fish passage – resident fish pops. – benthic organisms – macrophytes – algal productivity – zoopl. productivity – juv. fish staging areas – orifice psg effic. – habitat	– diss. gas levels – turbidity levels – temperature – velocity	– waterfowl – wetland/riparian habitat – furbearers		

COLUMBIA RIVER SALMON MITIGATION ANALYSIS
MAILING LIST

NAME	AGENCY	PHONE	FAX
Applegate, Rick	NPPC	(503) 222-5161	(503) 795-3370
Athearn, Jim	COE, Portland	(503) 326-2835	(503) 326-7328
Baker, Jim	NW Conservation Act Coalition	(206) 633-1661	(206) 633-1935
Bakke, Bill	Oregon Trout	(503) 246-7870	(503) 245-7169
Bennett, David	University of Idaho	(208) 885-6337	(208) 885-6226
Berggren, Tom	Fish Passage Center	(503) 230-4288	(503) 230-7554
Benert, Robert	Bernert Barge Lines	(503) 656-8288	
Bjornn, Ted	University of Idhao	(208) 885-7617	(208) 885-6226
Bottinger, Ted	NPPC	(503) 222-5161	(503) 795-3370
Bowler, Bert	Idaho Dept. of Fish and Game	(208) 334-2646	(208) 334-2114
Braun, Rick	Oregon Trout	(503) 635-3289	(503) 635-3876
Brendon, John	Office of Governor Stephens	(406) 444-3952	(406) 444-4339
Brigham, Kathy	Confederated Tribes of the Umatilla	(503) 238-0667	(503) 235-4228
Broderick, Susan	Shoshone-Bannock Tribes	(208) 237-0797	(208) 238-3900
Brunelle, Andy	Office of Governor Andrus	(208) 334-2100	(208) 334-2175
Brunoe, Bruce	Confederated Tribes of Warm Springs	(503) 553-1161	(503) 553-1924
Buettner, Ed	Idaho Dept. of Fish and Game		
Carr, John	Direct Service Industries	(503) 233-4445	(503) 238-5514
Chaney, Ed	Idaho Salmon & Steelhead Unlimited	(208) 939-0714	(208) 939-7263
Chapman, Sherl	Idaho Water Users Association	(208) 344-6690	(208) 344-6034
Cochnauer, Tim	Idaho Dept. of Fish and Game	(208) 743-6502	(208) 743-4314
Collingwood, James	Idaho Power Company	(208) 383-2425	
Copp, Gerry	Chelan PUD	(509) 663-8121	(509) 663-1023
Crase, Fred	Bureau of Reclamation	(208) 334-1550	(208) 334-1341
Curtis, Jeff	Oregon Dept. of Fish and Wildlife	(503) 229-5400	(503) 229-6134

COLUMBIA RIVER SALMON MITIGATION ANALYSIS
MAILING LIST

NAME	AGENCY	PHONE	FAX
Davis, Rick	Port of Clarkston	(509) 758-5272	(509) 758-1746
Dehart, Michelle	Fish Passage Center	(503) 230-4288	(503) 230-7554
Dickinson, Jerry	Resident, Spokane		
Duncan, Angus	Office of Governor		
	Goldschmidt	(503) 229-5171	
Eaton, Bob	Columbia River Ocean		
	Commercial Fishing	(503) 325-3831	(503) 325-2725
Fisher, Richard	FERC	(503) 326-5857	(503) 326-5846
Flack, Carroll	Private Resident		
Ford, Pat	Idaho Conservation and		
	Environmental Groups	(208) 345-9067	(208) 343-8184
Fuhrman, Roger	Idaho Power Company	(208) 383-2424	
Gilchrist, Bob	Red Wolf Marina	(509) 758-6563	
Goeller, Jim	NPPC	(208) 334-2956	(208) 334-2112
Grace, Stan	Office of Governor Stephens	(406) 444-3952	(406) 444-4339
Greene, Eugene	Confederated Tribes of Warm		
	Springs	(503) 553-1161	(503) 553-1924
Grist, Charlie	Department of Engery	(503) 378-8328	
Haas, Wayne	Idaho Dept. of Water Resources	(208) 327-7866	(208) 327-7910
Hagman, Bob	Central Ferry Terminal	(509) 549-3595	(509) 549-3335
	Association		
Haugen, Gordon	USDA Forest Service	(503) 326-4929	(503) 326-2469
Hayes, Charles	Nez Perce Tribe	(208) 843-2253	(208) 843-2036)
Herndon, Steve	Idaho Power Company	(208) 383-2692	(208) 383-2336
Holt, Virgil	Nez Perce Tribe	(208) 843-2253	(208) 843-2036
Hopkins, Steve	Brix Maritime Company	(208) 746-9637	
Jackson, Phil	Mid-Columbia PUD		
Jensen, Pat	Tidewater Barge Lines	(503) 281-0081	
Johnson, Dale	BPA	(503) 230-5209	(503) 230-3314

COLUMBIA RIVER SALMON MITIGATION ANALYSIS
MAILING LIST

NAME	AGENCY	PHONE	FAX
Kahl, Trish	Idaho Conservation League	(208) 345-6933	(208) 343-8184
Karr, Malcolm	Water Budget Center	(503) 238-0667	
Keys, John	BOR	(208) 334-1908	(208) 334-1341
Kindley, Ray	PNUCC	(503) 223-9343	
Kinnear, Brian	USFWS	(206) 696-7605	FTS 8-422-7605
Knaster, Alana		(818) 702-9256	(818) 702-0980
Kronemann, Loren	Nez Perce Tribe	(208) 843-2253	(208) 843-2036
Latham, Ramon	Nez Perce Tribe	(208) 843-5501	(208) 843-2036
Lawson, Chris	EBASCO	(206) 451-4608	
Lezak, Sidney		(503) 228-8446	(503) 228-5472
Loftus, Bill	Lewiston Tribune	(208) 743-9411	
Lovelin, Bruce	NW Irrigation Utilities	(503) 233-5823	(503) 233-3076
Lucas, James	Idaho Rep.		
McConnaha, Chip	NPPC	(503) 222-5161	
McMahon, Gerald	American Waterways Operators	(206) 764-1321	(206) 764-1723
Meyers, Dave	Idaho Power Comp.	(208) 383-2728	(208) 383-2208
Montgomery, Martin	NPPC	(208) 334-2843	
Nason, Dick	Chelan PUD	(509) 863-8121	(509) 663-1446
Olney, Fred	USFWS	(206) 696-7888	(206) 696-7968
Olson, Whit	Brix Maritime	(503) 286-0631	
Osborn, Jeff	BPA	(206) 690-2161	
Palensky, John	BPA	(503) 230-4981	
Patawa, Elwood	Conf. Tribes of the Umatillas	(503) 276-3165	(503) 276-9060

COLUMBIA RIVER SALMON MITIGATION ANALYSIS
MAILING LIST

NAME	AGENCY	PHONE	FAX
Pavletich, Jerry	Trout Unlimited	(206) 754-2131	(206) 754-4240
Pedde, Ken	BOR	(208) 334-1908	(208) 334-1340
Penny, Sam	Nez Perce Tribe	(208) 843-2253	(208) 843-2036
Pettit, Steve	IDFG	(208) 743-6502	(208) 743-4314
Poolman, Pete	COE, WW	(509) 522-6619	(509) 522-6433
Proctor, Steve	Tri-Cities Industrial Devel. Council	(509) 735-1000	(509) 735-6009
Randolph, Chris	Idaho Power	(208) 383-2922	(208) 383-2208
Reimann, Ron	T&R Farms	(509) 547-2855	(509) 547-0583
Relleu, Mark	Office of Governor Stephens	(406) 444-3952	(406) 444-4339
Rike, Michael	Columbia River Towboat Assoc.	(503) 228-8850	(503) 274-7098
Riley, Bob	BOR	(208) 334-1773	
Riley, David	Office of Governor Goldschmidt	(503) 378-3548	(503) 378-6075
Robertson, Jack	BPA	(503) 230-5103	(503) 230-4018
Robinson, Tom	Oregon Salmon Commission	(503) 265-5241	
Rohr, Dennis	Mid-Columbia PUD	(503) 222-3317	(503) 222-5718
Rowe, Mike	Shoshone-Bannock Tribe	(206) 238-3900	(208) 237-0797
Sanchotena, Mitch	Idaho Salmon & Steelhead Unlimted	(208) 345-4438	(208) 334-2526
Sanders, Jim	Benton PUD	(509) 582-2175	
Satterwhite, Mike	Trout Unlimited	(208) 746-7288	(509) 335-7643
Schlueter, John	Pacific NW Grain & Feed	(503) 227-0234	
Schuster, Elmer	Yakima Indian Nation	(509) 865-5121	(509) 865-5528
Shake, William	USFWS	(503) 230-5967	(503) 231-2062
Sienkiewicz, Ed	BPA	(503) 230-5151	(503) 230-4018
Silver, Dan	Office of Governor Gardner	(206) 753-1948	(206) 586-8380
Smiskin, Harry	Yakima Indian Nation	(509) 865-5121	(509) 865-5528
Smith, Eldon		(503) 447-4066	

COLUMBIA RIVER SALMON MITIGATION ANALYSIS
MAILING LIST

NAME	AGENCY	PHONE	FAX
Smith, R.Z.	NMFS	(503) 230-5409	(503) 230-5435
Stahman, R.W.	Idaho Power	(208) 383-2676	(208) 383-2336
Staudacher, Randy	TRIDEC	(509) 547-1000	(509) 735-6609
Stedman, Kristy	Office of Senator Larry Craig	(208) 743-0792	
Stegner, Joe	Stegner Grain Company	(208) 746-8000	
Strong, Clive	Idaho Attorny General	(208) 334-2400	(208) 334-2690
Strong, Ted	Columbia River Inter-Tribal Fish Comm.	(503) 238-0667	(503) 235-4228
Thomas, Jim		(509) 965-2198	
Tice, Ty		(206) 624-2699	(206) 343-8864
Turner, Bob	Office of Governor Gardner	(206) 586-5156	(206) 586-8380
Tuss, Craig	Vancouver, WA		
Vanselow, Glenn	Pacific NW Waterway Association	(206) 699-4666	(206) 699-5121
VanZander, Pieter	BLM	(208) 334-1401	(208) 334-1800
Velehradsky, John	COE, Portland	(503) 326-5367	(503) 326-5367
Vetterick, Paul	BLM	(503) 280-7025	(503) 280-7390
Wallulatum, Nelson	Chief, Conf. Tribes of Warm Springs	(503) 553-1161	(503) 553-1924
Watts, Dick		(509) 967-2785	(509) 376-3111
Welsh, James			
Whelan, Will	Idaho Conservation League	(208) 334-2400	(208) 334-2690
Whittich, Art	Office of Governor Stephens	(406) 444-3952	(406) 444-4339
Woehler, Bob	Tri-city Herald	(509) 582-1535	
Wright, Bob	PNUCC	(503) 223-9343	(503) 294-1250
Yallup, Wilfred	Yakima Indian Nation	(509) 865-5121	(509) 865-5528
Yost, Jim	Idaho Farm Bureau	(208) 342-2685	(208) 342-8585
Young, Frank	ODFW	(503) 229-5410	(503) 229-5602
Yribar, Dan	BOR	(208) 334-1296	

APPENDIX U-3

Correspondence for, and
Minutes and Overheads from the April 18, 1991 Meeting

of the

Reservoir Drawdown Test Design Team

02

DEPARTMENT OF THE A
WALLA WALLA DISTRICT, CORPS OF E
WALLA WALLA, WASHINGTON 9936

April 17, 1991

letter that went out on 4/92 test of the drawdown concept (prior to addition of other alternatives such as Dworshak, lower Columbia)

REPLY TO
ATTENTION OF:

Planning Division

Please reference the enclosed letter dated March 27, 1991. Representatives from our North Pacific Division and Walla Walla District offices met with members of the Salmon Summit and representatives from various State and Federal agencies on April 5th and 12th, to discuss possible plans for a 1992 test of reservoir lowering on the lower Snake River. Six test plan alternatives were proposed at the April 5th meeting. Issues and concerns regarding biological aspects and experimental design of each of the test plans were outlined and discussed at the April 12th meeting.

The third meeting was scheduled for 9:30 a.m., on April 18, 1991. The date for the meeting remains April 18, but the time has been changed to 2:30 p.m. The meeting will be held in Room 106, Bonneville Power Administration, Portland, Oregon. At this meeting, we seek agreement on which test plan alternative(s) should be considered for implementation in 1992. In order that we can reach an understanding of regional views on a 1992 plan, your participation will be appreciated.

Please contact Mrs. Sarah Wik of my staff, at (509) 522-6629, if you have any questions.

Sincerely,

for Robert D. Volz
Lieutenant Colonel, Corps of Engineers
District Engineer

Enclosure

Faxed

DEPARTMENT OF THE ARMY
WALLA WALLA DISTRICT, CORPS OF ENGINEERS
WALLA WALLA, WASHINGTON 99362-9265
March 27, 1991

REPLY TO
ATTENTION OF:
Planning Division

This letter is a follow-up to Mr. John Velehradsky's March 13, 1991, letter to Mr. Bob Turner, State of Washington, (enclosed) concerning a test of reservoir lowering on the lower Snake River. Our North Pacific Division office has tasked Walla Walla District to facilitate development of a regionally supported test and complete any documentation required by the National Environmental Policy Act (NEPA). We are determined to try to implement a test in 1992. In order to do so, we must expedite development of the test plan. To do this, we have scheduled meetings as follows:

Date	Time	Place*
5 April	9:30	Lewiston, Idaho
12 April	9:30	Tri-Cities, Washington
18 April	9:30	Portland, Oregon

*We will notify you of specific locations.

In the meetings we will focus on the following critical elements:

a. Establish test objectives.

b. Identify which reservoirs would be lowered.

c. Determine the level of drawdown.

d. Identify a time frame for the test, including test duration.

e. Develop a preliminary experimental design that will determine benefits to juvenile fish.

f. Identify a cooperative effort to monitor impacts to the fish and other aquatic resources, physical structures, etc.

The first meeting will focus on the purpose of the test, objectives, experimental elements, and required schedule. The second meeting will be for follow-up after participants have had the opportunity for their respective constituencies to review the initial plan.

The third meeting is scheduled to approve essential elements of the plan, as outlined above. It will include policy-level representatives from the Salmon Summit Coordinating Committee.

Once the test framework is established, we envision continuing to meet to work out details, particularly for the biological monitoring efforts, and to discuss measures to assist impacted parties. Because these meetings will be of a technical nature, we request that members of your technical staff attend.

Again, I emphasize the need to **quickly** determine the nature of, and reach regional consensus on, a viable test plan. The regionally approved test plan must be defined by the end of the April 18, 1991, meeting, so a notice of intent to prepare an Environmental Impact Statement can be published by April 26, 1991. Your cooperation in this effort is appreciated and we look forward to working with you in the coming weeks.

Please contact Mrs. Sarah Wik of my staff at (509) 522-6629 if you have any questions.

Sincerely,

Robert D. Volz
Lieutenant Colonel, Corps of Engineers
District Engineer

Enclosure

12 April
Development of 1992 Test Protocol

Name	Agency	Phone #	Fax #
FRED CRASE	USBR, BOISE	(208) 334-1566	(208) 334-1341
Dick NASON	CHELAN PUD	(502) 6638121	(509) 6631446
DALE JOHNSON	BPA	503-230-5209	503-230-3314
DICK WATTS	FFF	503 367-2785	503 376 3111
Mike Satterwhite	Trout Unlimited	208-746-7288	509-335-7643
Frank Young	ODFW	503-229 5410 x352	503 229 5602
Will Whelan	I.A.G.O.	208-334-2400	208-334-2690
Steve Pettis	IDFG	208-743-6502	208-743-4314
Bob Woellle	Tri City HERALD	509-582-1535	509-582-1510
Bruce Lovelin	N.W. Irrigation Util	503-2335823	503-233-3026
Jonathan Schlueter	Pacific NW Grain + Feed	(503)227-0234	503 227-0059
Ted Bjornn	ID Coop Fish + Wild Res Unit	208-885-7417	208-885-6226
Will Anderson	CoE	503-326-5179	503-326-3572
Bill MacDonald	CoE	509-522-6625	
Pete Poolman	CoE	509-522-6619	
Ron Reimann	T&R FARMS INC	509-547-2455	509-547-0583
Bob Gilchrist	Redwolf marine (Clarkston, Wa.)	509-758-6563	
Randy Staudacher	TRIDEC	509-7351000	509 7356609
Steve Proctor	TRIDEC	509-735-1000	509-735-6609
Jim Sandas	Benton PUD	509-582-2175	
Bob HAGMAN	CENTRAL FERRY TERMINAL ASSN	509 549-3595	509 549-3335
Michael Rine	Shaver TRANS/ Columbia River Towboat	503-228-8850	503-274-7098
Chris Randolph	Idaho Power Company	(208) 383-2922	(208) 383-2208

COPY

1992 RESERVOIR DRAWDOWN
SECOND TEST PROTOCOL DEVELOPMENT MEETING

Taken at the BPA Building
Portland, Oregon
Thursday, April 18, 1991 - 2:30 p.m.

CLEAR WATER REPORTING

LEWISTON, IDAHO 83501
Post Office Box 696
(208) 743-2748

Serving Northern Idaho and Eastern Washington
(800) 247-2748

1992 Lower Snake River Experimental Drawdown

18 Apr 91
mtg
BPA Rm 106
Portland

Jim Athearn	COE	(503) 326-2835
Russ George	Corps	~ 326-3745
CHARLIE GRIST	OREGON DOE	503 378 8328
Angela Passmore	COE	509-522-6624
RICK DAVIS	port of clarkston	509-758-5272
John Velchradsky	Corps of Engrs	503-326-3820
Dave Riley	Gov office, Oregon	503/378-3548
ANGUS DUNCAN	Governor's Office, Oregon	503-229-5171
Dale Johnson	BPA	503-230-5209
JEFF OSBORN	BPA	(206) 690-2161
Jonathan Schlueter	Pacific NW Grain + Feed Assn	(503) 227-0234
Steve Herndon	Idaho Power	(208) 383-2692
Bruce Lovelin	NW Irrigation Utilities	(503) 233-5823
Sheri L. Chapman	Id Water Users Assn - Boise	(208) 344-6690
Malcolm Karr	CRITFC	(503) 238-0667
Michael Rine	Shaver / Columbia River Towboat	503-228-8850
Bob Woehler	TRI-CITY HERALD	(509) 582-1535
Chris Lawson	Ebasco Environmental	(206) 451-4608
Bill MacDonald	COE,	(509) 522-6625
Chris Randolph	Idaho Power	(208) 383-2922
DAVE MEYERS	"	(208) 383-2728
James Collingwood	"	(208) 383-2425
ROGER FUHRMAN	"	(208) 383-2424
VIC ARMACOST	Corps of Engrs	509-522-6588
Rick Applegate	NPPC	503-222-5161
John R Palensky	BPA	503-230-4981
Chip McConnaha	NPPC	503-222-5161
Bob Flanagan	USACE	(503) 326-3871
JOHN KEYS	U.S.B.R.	(208) 334-1908

* Ray Kindley	PNUCC	503 223-9343
✓ Will Whelan ✓	State of Idaho	208-334-2400
✓ Bert Bowler	" " "	208-334-2646
✓ Ed Chaney	NPPC	208-939-0714
* Frank Young	ODFW	503 229 5410
* Robert Bennett	Bernert Barge Line	503-656-8288
* R. K. (Skip) Hunt	Tidewater Barge Lines	503-281-0081
* Fred Olney	U.S. Fish & Wildlife Service	206-696-7605
* Walt Olson	Brix Maritime	503-286-0631
✓ Fred Crase	USBR-Boise	(208) 334-1550
* Bob Riley	Bureau of Reclamation	208 334-1773
* Dan Yribar	" "	208-334-1296
✓ Marty Montgomery ✓	NPPC	208 334-2843

Chris Randolph
Aquatic Programs Supervisor

FAX(208)383-2285

(208) 383-2922

Idaho Power

P.O. Box 70
Boise, Idaho 83707

minutes

NEZ PERCE WATER
RESOURCES DEVELOPMENT

RAMON LATHAM
Water Analyst

NEZ PERCE TRIBE
P.O. Box 365
Lapwai, Idaho 83540

Bus.: (208) 843-5501

As soon as you know your new address, mail this card to all of the people, businesses, and publications who send you mail.

For publications, tape an old address label over name and old address sections and complete new address.

Your Name (Print or type. Last name, first name, middle initial.)

your mg. 5035 → re: Salmon Summit

Old Address

Mr. Will Whelan
P.O. Box 844
Boise, Idaho 83702

Apt./Suite No. | PO Box | RR No. | Rural Box No.

State | ZIP + 4

New Address

Please change the following on your mailing labels:
WILL WHELAN
Idaho Conservation League.
P.O. Box 844
Boise, ID 83701

Rural Box No.

No. (If any)

Sign

new contact is **TRISH KLAHR**, rather than Will Whelan.

PS Form 3575, August 1985 ... new address.

I N D E X

PAGE:

CORPS OF ENGINEERS PERSONNEL PRESENT

Witt Anderson
Sarah Wik
John Velehradsky
Vic Armacost
Jim Athearn

Reported by Dennis Misener, Jr., CSR, Freelance Court Reporter and Notary Public for the State of Idaho, residing in Lewiston, Idaho.

STIPULATIONS

It was stipulated by and between counsel for the respective parties that the meeting may be taken by Dennis Misener, Jr., CSR, Freelance Court Reporter and Notary Public for the State of Idaho, residing in Lewiston, Idaho.

THURSDAY, APRIL 18, 1991

MR. VELEHRADSKY: My name is John Velehradsky, I'm the director of programs and project management. At the 4 March Salmon Summit meeting which was held here in Portland, there was a petition that was circulated around the room that was signed by some fifteen members of the summit group requesting the Corps to initiate a 1991 drawdown of the Snake River reservoirs and to begin NEPA action on the 1992 potential drawdown of the Snake River reservoirs.

Following that meeting, there was a meeting on the 7th of March in Spokane. We talked about Lower Granite drawdown, and there was eventually a decision made not to make a drawdown test in 1991 because the benefits would not justify the impacts that would be caused by such a drawdown during that period.

We then set up three meetings on the 5th of April, the 12th of April, and the 18th of April to discuss the scope, duration, and protocol for potential tests in 1992.

The purpose of this meeting is to seek agreement among the various participants in the region on a potential proposal or concept for a drawdown test in 1992 at the Lower Snake -- four Lower Snake River reservoirs and to start the environmental impact

process for the -- for that process.

We also want to discuss the relationship of the 1992 drawdown to the potential consideration of long term changes in the Lower Snake system. Witt Anderson will begin by reviewing some of the alternatives that were discussed and some of the issues that were discussed at the 5 and 12 April meetings, Witt.

MR. ANDERSON: I have copies here of the overheads that I'm going to talk from. Let me just circulate it. I'm going to quickly go through the alternatives that we developed in the first two meetings that John said. Sarah Wik, from our Walla Walla District Officer and Jim Athearn are here also to talk on any technical biological issues because they can address those better than I can. But just to back up a little bit and reiterate what John said, our intent in these three meetings was to see if we can't focus on a proposal for 1992, recognizing there's a great deal of controversy about this proposal -- or this concept and recognizing that there really is a limited amount of time for the Corps to get through the environmental review process and environmental impact statement that needs to be prepared for implementing any dramatic changes in the operation of the Snake

project that is going below normal minimal operating pool. So, we felt it made sense to start with two meetings at the technical level to discuss the biological aspects of the proposal and the experimental design that would go along with it, and that's what we discussed in the two previous meetings. We have not gotten into any discussion of issues and concerns and impacts on other river uses from any kind of a drawdown plan that's implemented. I want to be clear about that that discussion will occur as we get into the environmental review. There's lots of other issues than just the biological aspects and the experimental design.

We went into the first meeting two weeks ago with the intent of framing up a proposal, hoping that in the second technical meeting we could refine that such that we had a pretty clear proposal that we could bring to this group, the policymakers, and get your views on the feasibility of this proposal -- or proposal for implementation in 1992. Where we got after those two meetings was development of a series of six alternatives with discussion of methodolgy that you would employ to develop an experiment; and, then, a discussion of the pros and cons from the biological perspective of these alternatives.

As John said, we really would like to seek some understanding of what kind of consensus we might have or degree of consensus regarding these proposals. I can't emphasize enough that that will assist our ability to get through the environmental review and decision process so we can actually implement something in '92.

The goal we identified in the first meeting was obvious to shorten the in-river migration time and thereby increase juvenile fish survival. We talked about several objectives, and we actually came up with three objectives initially in the first meeting. The first one being: Determine the change in water velocity with pool lowering and/or flow manipulation. That's the experimental objective. I think after the last meeting last week, my sense is that there's general agreement among the fishery biologists and some of the researchers out there that we have a pretty good handle on what happens to average velocities in the reservoirs when you draw them down based on the information that the Corps provided to the Salmon Summit and based on, I think, the Fish Passage Center observations over the years. I think -- I think there's at least a group of feeling that that information is probably good enough to make some

decisions regarding velocity benefits and that becomes a discussion we'll talk about, just a physical test to look at velocity changes.

A second objective we identified, or potential objective, was to determine juvenile fish migration rate relative to water movement, and we also listed a third potential objective was to determine survival relationship with respect to decreased travel time. This third one, I think, everyone pretty much agrees really, really requires a multi-year experiment. It's not something that we would have an answer to based on a one-year implementation.

There was a fourth objective suggested last week by Frank Young from Oregon. Unfortunately, he's not here to make sure I present this properly. But he said, Hey, I have an objective. It's to reduce downstream migrant travel time. And I said, Hey, that's our goal. Basically, flashed the goal up there. And he said, Okay. But I think really what Frank was saying was that -- that we need to be looking at the bigger picture of how you achieve this, and he suggested three options. We could be looking at reservoir drawdown. We could be looking at flow augmentation, and we could be looking at major changes, i.e. dam removal, which maybe is associated with

drawdown. And his point was that let's not get so focused on just a test that we miss the bigger picture. And if we can check that with him when he comes back in to make sure I described that properly.

We identified six alternatives in the first meeting, laid those out, the parameters, the methodolgy associated; and, then, in the last meeting, we talked about the pros and cons, tried to get to the experiemental design. We had some of the researchers at some of the meetings which provided a lot of help on how you would implement some of these ranging from four reservoirs drawn down rather dramatically throughout the migration period to an alternative, which wouldn't even require a drawdown. And I want to walk through those quickly and then get some discussion from you all about your views.

The first alternative to -- or would entail dropping all four Snake projects rather dramatically down to spillway crest elevation in the time frame we set; and, obviously, this is a variable, would be April 15th through August, the full migration period in the Snake. The study plan for this would be to PIT tag fish at Lewiston and recover at McNary. On the positive side, assuming that there is a direct positive relationship, this would have the most effect in

reducing travel time. We would get the best velocity improvement for the migrating fish, juvenile fish. On the down side --

MR. KARR: I wanted to ask if dropping the reservoir also has with it a change in level of flow?

MR. ANDERSON: Does the cue change as you're dropping or....

MR. KARR: Are you planning a change to say the purpose --

MR. ANDERSON: ....with flow augmentation or this pulsing concept?

MR. KARR: No. The idea is at a given level of flow you have faster water as the reservoir elevation is lower.

MR. ANDERSON: Correct.

MR. KARR: Okay. Is that what you're contemplating?

MR. ANDERSON: Yes. Yes.

MR. KARR: Not dropping it and changing the flow also?

MR. ANDERSON: Well, there would be a period a drawdown because we will have some limit on the drawdown rate. Right know we're looking at probably two feet per day in that range but --

MR. KARR: But you're contemplating some

given flow level when you're operating at a drawn down level, basically?

MR. ANDERSON: Yeah. And, of course, in all of these, one of the considerations is do you implement or not implement depending on what the natural flow for the region is in this particular year you're doing this. That's one of the things that has to be discussed, and we didn't get very far on that issue.

On the down side, of course, adult passage is eliminated, and we've had a lot of discussion about that. I think we need some more today from the policymakers, but we -- the Corps was asked to look at modifications that we might make to those facilities. We've agreed to that, and we're doing that, the Walla Walla District is doing that. Suffice it to say, with any kind of drawdown, we're talking major modifications to those facilities; and we certainly don't have enough time for M and K Construction to make those changes by 1992. So, that's a serious problem with this alternative. The ability to compare data that you gain in -- in this alternative with existing information such that you could derive what the benefit is in question because of the data that we have now. Of course, there's the physical affects to fish that we're concerned about in just about all of these

alternatives, increased gas levels, nitrogen, turbidity affects; and, then, of course, some other biological areas or aquatic organisms there's concern with a major drawdown of this nature. Again, we didn't get into impacts and other uses, okay.

A second alternative that was identified was to test or look at physical impacts only. This would be at Lower Granite, as we described this alternative. That would be a significant drawdown near spillway elevation and it would occur during the nonmigration period, which we have two work windows. One, a summer window, I think July 15th to August 15th. And the other is in the winter, which probably would be preferrable, January or February time frame. The study plan would be to operate the Granite reservoir down at this elevation. You could look at velocities. We could put meters in the river and look at velocity at particular points in the river. You could monitor water quality, physical impacts on the structures, such as the levies and fills and so on. You could look at spill patterns, dissolved gas and so on. On the plus side for this this approach, you're not -- you're not entailing any risk to adult or juvenile fish and your risk factor is limited to just one reservoir in terms of other kinds of impacts.

On the con side, there's the question of the data applicability to the migration season. Things such as water quality and turbidity and tempurature, which would be different if you conducted a test in the winter. Some concern was raised about impact on subsequent migrations. For example, if you had water quality affects, you disturb contaminated sediments in Lewiston, if we have them at any significant degree. We had bank sloughing problems, that was a concern. And another issue, of course, is to do this in the winter period by '92 January -- January or February time frame of '92 really puts a strain on our NEPA process. And rather than may not be possible to complete by '92, I guess I would be a little stronger than that to say, I think it's very unlikely that we would be able to complete the NEPA process on this, but we can see.

Okay. A third alternative would be a Lower Granite drawdown during the migration period, 15 April to 15 June is what we specified down to elevation 710, which is twenty-three feet below normal minimum pool. The reason being, we can operate the adult fishway at Granite exit in the forebay down to 710 in theory. It's designed to operate to that elevation. Of course, we still have the problem with adults getting in the

fishway and the tailrace because under a situation of high spill, no power house discharge, we're concerned about the attraction water. So, that's something that has to be looked at.

The study plan here would be to tag juvenile fish at Lewiston and recover at Little Goose fish facility. Okay. On the positive side, in theory, you can maintain adult passage. Again, the impacts are limited to one project. On the negative side, as with the other drawdown alternatives, the dissolved gas issue is a pretty significant certain. The data that you would get from this, we have some concern about it's -- about the ability to actually identify the benefit and travel time.

One thing that was suggested, I think by Frank, was you could use a controlled group of fish in Little Goose reservoir to compare with. So, you had a travel time through Goose to compare with travel time through Granite and Goose and that would give you some idea of the benefit of drawing down Lower Granite. Again, the physical impacts and the impacts on other aquatic organisms is a concern.

MR. LOVELIN: Didn't you say, though, in your description of alternatives, that alternative, that we may have a problem with the adult passage?

MR. ANDERSON: Well, as I said, the -- in the exit in the forebay?

MR. LOVELIN: Yeah. Because of the -- your spilling and the fish attraction flows.

MR. ANDERSON: Yes. As I just said, I think that there's concern for the ability of fish to get into the fishway because of the circulation pattern and the lack of attraction water in the power house operation. Now, at the end here, I'm going to suggest something that was brought up in the last meeting about how we might look at that as a first step in a study approach to this alternative.

MR. LOVELIN: The only reason why I brought that up, I don't see that in the pros and cons, and I would list that as a con. We have a pro as it maintains adult passage but on the con side there would be a problem -- potential problem there; right?

MR. ANDERSON: Okay. Trust me, I said it and --

MR. LOVELIN: No, I understand.

MR. ANDERSON: And we can put it down here, but you're right, that's correct.

MR. LOVELIN: I wanted to make sure I heard you right.

MR. ANDERSON: Let's not mislead ourselves.

Granted, in theory, the fishway exit can operate down to 710 under certain release conditions at the project. We are very concerned about the ability of adults to get in the ladder. And, again, I want to come back to that at the end here.

The next alternative was look at a Lower Granite combined with Lower Monumental drawdown. Both projects down about twenty-three feet. Little Goose and Ice Harbor maintained at their normal elevation again during the present water budget period 15th April to 15th June. On the positive side, in theory -- and the reason this came up was, in theory, we would be able to get some data on the fast pool travel time versus slow pool or normal elevation. On the con side, the technology to do that may not be at hand. We were talking about the possibility of using radio tags in juvenile fish and Sarah did some further investigation on that and the NMFS researchers strongly recommended that that's really not viable, it's not feasible. So, that really puts a crimp in this alternative with the experimental design, you know, you start right off the bat with basically no experimental design here. Again, we would eliminate adult passage at Monumental and the same physical concerns.

Based upon this experimental design, I guess

my feeling is I think the group in the previous meetings pretty much agreed that this is not something that really should remain on the table in terms of serious further consideration.

The fifth alternative was replicates at Lower Granite. It would be Granite project only down to 710, which would, in theory, provide adult passage and the concept with the replicates would be you would have the project in the normal range, drawdown to 710, perhaps take about twelve days, hold the pool at this lower elevation for five or six days so you could get some data on fish traveling at the lower elevation and then raise it back up and go through that for a series of perhaps three times during the season. You PIT tag fish at Lewiston and recover at Little Goose.

On the positive side, in theory, Bruce, we have adult passage impacts limited to one reservoir. On the negative side, the physical effects, gas levels, turbidity and impact to other organisms. And, then, the issue on the experimental design being fish. Now, we know it takes three to twenty days to get through Lower Granite. If you're only able to have the pool at say this low elevation for a week or so, it's very likely that you'll have fish moving through both the low pool condition and a transition pool or a high pool

condition. So, it's going to be very difficult to separate out or make the distinction of what the benefits are at the low pool. Again, this is -- this one, I think, presently is pretty well discarded on the experimental design basis.

Okay. The last one that we identified was that -- what we started calling a no action alternative. And I guess it's not really a no action alternative. It's meaning no action that we wouldn't have a drawdown with this. The frame work would be no lowering during the spring/summer period. We might look at flow augmentation. The study plan would be to increase the numbers of PIT tag fish at Lewiston above the present index process, recovery at Lower Granite, Little Goose, and McNary.

On the plus side, there's no risk to -- to anadramous fish here, either juveniles or adults. On the negative side -- and this is really just a hurdle to overcome -- is the travel facilities probably would have to be redesigned, would have to have some different facilities that can operate under low and high flow conditions. I think this alternative is something that everyone feels comfortable with doing regardless of the drawdowns. If we, for some reason, didn't do a drawdown, this is something that's

desirable to pursue.

MR. KARR: How does that differ from what we do nowadays other than additional monitoring?

MR. ANDERSON: Really, I'll let Sarah or Jim speak to that. But, really it's just a higher degree. It's a more intensified program. Sarah, do you want to comment?

MS. WIK: We talked about looking at designing a specific travel time experiment where we would increase the numbers and really try to design it as an experiment versus just the standard monitoring that goes on now, and maybe someone else wants to add. But that was, you know, basically what was said.

MR. KINDLEY: Are you going to also vary your flows or keep them constant during this period? We have the variability in there, could you actually test travel time on the various flows or are you taking whatever comes down the river?

MR. ANDERSON: Well, that would certainly be a parameter in the experimental design. We certainly haven't gotten as far in design development to answer those kinds of questions. We identified lots of those kinds of issues as things that would have to be further discussed and addressed for any of these alternatives.

Let me just -- let me just close here my

discussion. We would like to get some input from the policymakers here. As I said and John said, it certainly will help us get through this process by '92. Now, recognizing that in the NEPA process, we are going to look at these alternatives, perhaps other alternatives will be identified in the public scoping process. We certainly will do that. Our intent is to see if we can't get some agreement on what's really desirable to do in '92, and we heard some comments from some of the folk last week. Frank made a comment about what the State of Oregon might be willing to do. And I think there's others that made some comments. And I think it's useful to get some of that out on the table today so we can move ahead. I'm concerned that we're going to continue to talk following on the Salmon Summit and not get some closure on those issues, and it's going to be very difficult to get through the environmental review. And it's going to be difficult to make some decisions come next spring.

But let me just make some observations from my perspective. I think first of all, any alternative that's going to eliminate adult passage probably is not something that is feasible in 1992. As I said earlier, we've indicated we can look at minor modifications to the fishways, but I just can't stress enough that the

significant drawdowns, we're talking major modifications to those fishways. And it's just not something humanly possible to rectify by '92. I think Alternative 6, the intensified research or definitive research design on the indexing or monitoring we do now is pretty much a given, and we want to continue to explore that. That leaves -- leaves me looking at something involving a drawdown experiment at Lower Granite, and I think you might look at that in a two-phase process. I think it was Frank last week that expressed a great deal of concern about adult passage and mentioned the possibility of needing to observe the physical conditions in the tailrace under a nonfish movement period. And we've talked about that a little bit, Sarah and I and Ted Bjorn after the last meeting, perhaps others have talked about it. One thing that might be feasible is to do a limited observational test even before '92, perhaps even this year where we would -- we would go to a no power house discharge high spill so we can actually look at those conditions in the tailrace, look at the conditions in the ladder entrances and so on. Perhaps you might even want to do it with adult fish in the river to see their behavior, how they respond. That could be a first stop to confirm the adult passage capability at Lower Granite,

Bruce, at least on the ability of fish to get into the fishway.

Now, when we drawdown the project next year or whenever we do it, we know we're probably going to be looking at some minor modifications to the fishway exit, and we'll just have to deal with that as it comes. But if this group was indicating that a Lower Granite test really should be further explored, it might be one way to do it. We do it kind of in a step-wise process.

I think what we need to do from this point on, the Corps needs to begin its environmental process, but we need to have a defined group of the fishery representatives continue to discuss and develop the experimental design. We've got to get a handle on that. I don't think we got as far as we wanted to in the last two meetings, and I certainly would recommend that we identify a group. And perhaps a group; the Fish Facility Design Review Committee is the basic nucleous we can start with and maybe there's other interested parties that need to be involved in that. But I think we need to have the policymakers identify their people at that level to work with the Corps on the development of a study plan and a proposal.

I guess beyond that, I certainly would like

to hear some of the input from you all about the feasibility of some of these alternatives or other alternatives for that matter, Bruce.

MR. LOVELIN: Can you go over your last point again? You said a scientifically biological committee and, then, you talked about the policymakers involved in that?

MR. ANDERSON: I would like to see the policy folks say I have a certain person that's going to participate in this process. We've had good turn out in the last two meetings, but I don't think we had representatives from all the parties that needed to be there. And I guess I would like to -- I think it would be very helpful to enhance our ability to get to an implementation in '92 to get the right people together now early on.

MR. LOVELIN: Okay. And that group will further develop this --

MR. ANDERSON: Experimental design among one proposal or two proposals or six proposals, if that's what we need to do. Again, recognizing we would like to narrow our focus and intensify discussion on the reasonable plans that really have some some potential for it being implemented. I mean, it -- I'll ask Frank to say is the State of Oregon willing to look at

alternatives that are going to prevent adult passage, and I think he said last week there's no way. I guess are there other views out there? Again, recognizing that we'll need to consider a wide range of alternatives in the NEPA process, but I think it behooves us to get serious about a proposal. Again, we don't have a lot of time to get through the hoops we need to get through by 1992.

MR. CHANEY: Do you need to go through the NEPA process to make an adult fish ladder that will work at a lower reservoir elevation?

MR. ANDERSON: I guess I don't know the answer to that, Ed. It depends on the type of impact that would be incurred --

MR. CHANEY: Okay.

MR. ANDERSON: -- for that modification.

MR. CHANEY: I do have one question. I'm very concerned as what started out to be a test because we're concerned about structural problems, it appears to me to turn out to be another biology study of fish, you know, in terms of everything from one through four is we're going to study the affects of drawdowns on a juvenile migration at juvenile reservoirs. What happened when we're figuring out what we got to do to modify the fish ladders. What we have to do to worry

about what the 100 percent spill and lowered tailwaters for the dam. I mean those kind of things.

MR. ANDERSON: I hear two questions. One is the biological benefits. Now, I'm going to turn the tables on you a little bit. I heard you earlier say what's a benefit of these other measures we're taking about. And, certainly, I believe the region's got to get a handle on the benefits of this kind of an operation in the long term change if the region wasn't to make that long term change. At the same time, what you're asking for is the feasibility analysis, what does it take to make those modifications? What are the opportunities forgone in terms of power, our navigation? What are the economic factors, and I think that's a very good question. John, maybe you want to respond to that.

MR. CHANEY: John, let me just finish my question. You're telling me you can't do anything significant enough that's going to show biologically, but we're going to go out and try to measure them anyway. That's why I'm -- if you can't do anything significant because of constraints, why are you bothering measuring these marginal benefits?

MR. ANDERSON: Well, and that's frankly the discussion we've had for two weeks now, is there a

design that we can get some information. I think we are getting to the point of, Hey, the biologists are saying there may be no use here. And we've got to reach some conclusion on that. The bigger picture I think is another question. What are those changes that you would have to implement to just go ahead and do this. John do you want to....

MR. VELEHRADSKY: Yeah. I mentioned earlier that we're going to initiate the NEPA for the drawdown test in '92. We're also looking at the NEPA process for the Dworshak operations of '92, Lower Snake reservoir test in '92, and John Day drawdown in '92, below what we're proposing to drawdown in '91. So, there would be one NEPA action underway to cover all the 1992 actions.

In addition to that, an annual mitigation study would be intitiated where we would be looking in a constant scope fashion, the structural changes that would have to be made and costs and the impacts of those changes on -- to bring those reservoirs down to operate as suggested in some of the Salmon Summit discussions. So, the test's looking at a short term test in '92, but where will that test lead? I think you have to decide are you leaning toward major modifications in the reservoir. If you are, here's the

implication of that kind of modication. That kind of information needs to be put into the public discussion process over the next year.

MR. CHANEY: I would like to see us focus on that and then we'll say, Well, we can't do anything about that. I would like to see a test and say, Well, what would we have to do to pass the test? Not will water go past or go down or can we measure it in some marginal increase in travel time. I mean, that's something we can measure. You would have to do some tests to simultaneously pass adults and juveniles. You can't do it, but I would like to -- can we devise a test that will provide some insight as to what we would have to do? Things like pulling out some turbines and power houses adjacent to the adult fish ladder to address your problem of attraction flows to the entrance plus diminish nitrogen. Those are the kinds of things we would like to see us address a test to, the impediments to doing anything rather than studying the biological effects of incremental changes here that basically everybody's agreeing, Hey, we don't think it's going to do any good, then why study that. Let's study the known problem and use the test to get to that aspect.

MR. WHELAN: I think that was consistent with

some of our discussion in Kennewick last week. And at that time I think the group had a sense that what the real purpose of what this test, this EIS, was to provide information on the factors necessary to decide reservoir -- a reservoir drawdown strategy for the future. So, we ought to be looking at a broader range of issues than merely how fast the fish move through the reservoir, taking a look at a variety of issues we would have to take into account prior to a reservoir -- a drafting strategy being adopted. Bank stability -- I mean, you know the list.

MR. CHANEY: I really like your idea about doing something in '91 on a limited basis at Lower Granite right now and let's find out if the damn fish ladder works or doesn't. But, we don't have to study that too long. And I would also like to suggest that you look at -- I can't remember the configuration of the dam -- pulling a couple of turbines out and seeing whether or not we can structure some kind of a test to look at whether or not we can pass juveniles through those holes, whether or not we can provide adult attraction. I can't design this thing. I'm saying let's look at some things we can do with existing hardware, existing structures, and do something to see if it tells us anything. I don't think -- like you

say, we don't have to wait until '92 to do that. We can do that right now.

MR. ANDERSON: Well, I guess I feel we need the input from the responsible fisheries and tribes on some of those matters affecting fish. But I think you're right, those are the things that need to be explored; and, again, we need to be doing that quickly. Some of these things might not be implementable this year without getting through the NEPA process. It depends on the kind of impacts, but we need to get those up on the table, and I think that's what we tried to do on these last two meetings and today.

MR. RILEY: Let me see if I can capture what I think I heard again. Basically, are -- are you asking us -- I guess I'll ask a a question: Are you asking us to -- to in essence preselect the feasability of Alternatives 5 and 6, I guess, because that's what you view as doable in '92 rather than looking at all of the alternatives that you've arranged so far as would it -- it seems to me like the NEPA process, as I look at all those alternatives and let that decision as to whether something can or can't be done in '92 fall out of the process and you pick a preferred alternative for '92 at the end of the process not at the start.

MR. ANDERSON: I think you're right on the

later part. I wouldn't say preselect. I wouldn't use that term but recognize that if we are going to implement research, we've got to get -- make some headway on the study plan, what needs to be put in place. The whole experimental design. Now, we could do that on twenty alternatives. Is it time and money well spent? Probably not. Let's -- let's screen some of those alternatives at this point. If we can't -- if people can't sit in this room today and do some screening on reasonable alternatives to pursue, recognizing we will look at all of them in the NEPA process, and recognizing that we're trying to develop a proposal, then let us at least think about some of the screening criteria. Is adult passage a firm requirement? I think it is. A lot of people sit in these meetings, and we don't hear from some of the parties that have some responsibility there. I was glad to hear from Oregon last week.

MR. RILEY: You know, and I think that's legitimate. They're not going to ask -- you know, they're not going to bless something that clearly stops all adult passage upstream, nobody is. But, you know, is that clearly something we've established has to happen, that's my question.

MR. CHANEY: Why can't we try to figure out a

temporary way to do this and maybe somebody has, but I've never heard any discussion analytically that we simply -- there is no way physically we can pass adults and juveniles simultaneously. We've looked at it -- somebody has looked at it. There is simply no way to do it. I have not heard -- I mean, maybe that's true, and I hate to think it's true; but if it is, then we ought to know that somebody has exhausted all the alternatives, critically evaluated all the alternatives. Pumping water into the fish ladders, put tier shoots on them, I don't know. But it would be nice if someone had done a critical analysis in some kind of qualitative way at least subject to the peer review, because that's very helpful. That's very good knowledge. That's something that's nice to know, forget it folks. You can't do it. You're going to have to do something else, but we haven't even got that far in any analytical way.

MR. VELEHRADSKY: Well, your target was 1992, but it's conceivable that you would have some of those alternatives which would be '92 actions. And some because of the physical changes that are required are '93 type actions. So, it follows the logic that we ought to look at the alternatives and you might put them in the time frame '92 potential or '93 potential

and that would be part of the NEPA process. And along with that here's the cost of doing those kinds of things. In other words, physically here's what we have to do, here's the cost and here's the benefits that are going to be achieved in terms of biological benefits.

MR. WHELAN: Yeah, of course, what we're trying to do is test a process in terms of the final benefits of that strategy. You're not going to know that until you've got some of that work down. I hope, Witt, that through this process, you're getting some of the focusing you need, and I'll try to encapsulate some of it. I would say -- I would say that based on what I've heard, you've got a couple of front runner alternatives, Alternatives 2 and 3 and 6, the no action alternative. That Alternative 1, clearly has a problem with adult passage and that you're not hearing anybody say that we should adopt an alternative that would not provide for adult passage and do that during the adult passage season; but I think on Alternative 1, the four reservoir drawdown, it's not so much -- the question becomes how do you provide adult passage? Take a hard look at what the maximum drawdown you could do in those four pools during the migration season and still provide adult passage. So, we've retained a four pool drawdown and people take a hard look at that.

A couple of months ago on Lower Granite pool, the highest -- the most drawdown thought possible was 723. We are a couple months later and somebody was talking 710. Somethings happen and we want to just be sure that we're taking a careful look and we're identifying things like that and we're foreclosing that we don't have an option before we toss that alternative out.

MR. KINDLEY: Ed, is there any way that you can expand the physical impacts study which would address some of the concerns you have or would you rather see the test conducted while the fish are in the river? It sounded like a lot of the things that you were wanting to get done were mainly physical impacts.

MR. CHANEY: Yes. I guess I'm very concerned we're not getting into a juvenile -- another juvenile migration study. I mean, we have been doing this and my experience for twenty years, and I think, you know, it's time now to figure out how these projects -- if we were going to provide -- I would like to have one question as the objective. If we were going to provide simultaneous juvenile and adult passage at these projects, what would we have to do to accomplish that in the short term and, then, we're going to identify all these impacts. Well, is there -- I've never heard

anybody discuss, for example, removing some -- just removing the turbines and power houses to get rid of some these concerns. You know, I can't attend all the meetings so it makes me very nervous when I don't know that all the options have been exhausted because I've been in the business long enough I know that often we sit around and make a list of why things can't get done and, then, we just move on to something else. I would like to see A, let's exam what, if anything, we could do to mitigate the problems that prevent us from having simultaneous adult and juvenile passage in the short term. And while we're doing that, learn what we can about the long term operational and structural changes that might be out there if the policy is made ultimately. We need to know know what the consequences are and what we're going to have do in order get that.

MR. KINDLEY: Okay. But do you want it -- do you see that you have to have experiments conducted in rivers of fish or do you see any sort of expansion of the physical test here which would answer a lot of the questions that you have? For instance, you know, you mentioned removing dams. Obviously, that's not a very feasible test and maybe --

MR. CHANEY: No. Removing, pulling turbines.

MR. KINDLEY: -- even pulling turbine units

out. Is there any way that you could do that instead of actually yanking out a turbine?

MR. CHANEY: I don't know. Somebody needs to tell me. Is there a very high risk to juveniles or is there some chance it might help adult passage. I'm not sure how you're going to model it, what would that would do for adult attraction, if there were any adults there.

MS. WIK: Well, I'm not an artist, but I'll see if I can try to explain. Ed, as I understand it, you're talking about, say, for example, pulling Unit 1 so that there would be attraction flow and there's no power house operation?

MR. CHANEY: As an example of the kind of thinking. I'm not recommending that.

MS. WIK: Yeah. I guess one of the things that we run into trouble with is say this is Lower Granite at full pool, if your tailrace is at normal minimal pool, your elevation is about 633. The bottom of your adult fish collection channel, i.e. the entrances to the ladder, the very bottom of that sill is only about 628 or 629 and so -- and that allows for you to have some flow in the channel and some head going into the tailrace. So, if you drop below normal minimum operating pool, you lose that ability to

attract fish into the extrance. It's not just a matter of no water through the power house, but it's -- you know, if you drop it here and there's the bottom of your fishway right there at that black line and you drop much below that, it doesn't matter if you would have water flowing through a turbine. You wouldn't have enough flow in the actual collection channel.

MR. CHANEY: So, what I would do is not do that. I would draw it at the upstream reservoir.

MS. WIK: Okay. But if we're talking doing this for all reservoirs. I mean, we can do that for Granite. But if this is Lower Granite here, you can draw this one down and the ladder exit will function to 710, but you're stuck with if you draw Goose down, then the extrances into that system no longer function.

MR. CHANEY: So, then, one wouldn't do that then.

MS. WIK: Okay.

MR. CHANEY: One would do the other then.

MS. WIK: But that's what we're saying in terms of -- you know, we have -- granted, we don't have a packet that we can hand to you and give you all those specifics, but those are the problems we have looked at in terms of what could be done for next year. And you would be talking significant modification in trying to

find a way to extend that collection channel out. And, you know, that's a big unknown, I guess. And, Jim, if you have anything to add.... It's not just a matter of attraction up to the power house. it's a matter of once you drop below that minimum operating pool, then the collection system doesn't function.

MR. YOUNG: I think that going ahead with the Lower Granite drawdown experiment will probably provide some of the information you would need to determine whether it was feasible to go down further say to the spillway sill or even further and maybe even provide more information on the kind of modifications you would have to make to adult facilities. So, you aren't -- you know, if you would conclude that the limited drawdown of Lower Granite is not a long term fix, so, why are we looking into the feasibility of doing this. The answer is maybe, that it will give us some answers that we need to have from a practical sense.

MR. CHANEY: I'm for that. I just don't want to measure the biological benefits to juveniles of this tinkering that we're forcing here.

MR. YOUNG: No. I agree, there's no conceivable benefit of making that biological evaluation on such small incremental changes and their travel time.

MR. WHELAN: Why don't we take Objective 3 off. We don't anticipate getting it.

MR. ANDERSON: Yeah. And I didn't mean to imply that we settled on an objective. I think it was shown as possible objectives. We couldn't reach closure on the objectives, I guess is what I'm saying. Vic, do you have something --

MR. ARMACOST: Well, we do know what happens when we take the turbines out, because when we built the project, the turbines weren't in it and we had some really disastrous losses of juveniles in passing -- in trying to pass water in between those units. So, we do know what happens and it's disastrous.

MR. CHANEY: And nothing can be done about that?

MR. ARMACOST: Well, we certainly -- we certainly studied it in a lot of detail at that point in time when we're raising the water on those dams, and we couldn't find anything to do, Ed. You know, there maybe better newer idea; but it's been --

MR. CHANEY: That was under full pool, though; right?

MR. ARMACOST: It was bringing the pools up and at full pools, but it was during bringing them up too.

MR. CHANEY: But a lowered pool would have a fundamentally different situation.

MR. ARMACOST: You would have less problems, but you would still have the same pressure problems.

MR. CHANEY: I guess what I'm really trying to do is make sure we've exhausted all of our remedies, because once we get to the point that we agree there's nothing can be done out there, then we're looking at really draconian -- the public is going to go to congress and try to get this authorized. So, if you guys agree it's hopeless, nothing we can do, we have to go to congress and figure out something drastic. Are you guys really sure you have exhausted every conceivable thing because that's going to be important for me to go before congress and say they've agreed -- the experts have all agreed there's nothing we can do; and, then ,we're going to have to do something really drastic.

MR. LOVELIN: Maybe I can ask a question and explain a little bit. I attended off and on the last two meetings that the Corps had and appreciate the ability of the biologists coming together and start scoping this out and trying to develop these alternatives. It just seems like we haven't progressed as far as we wanted to, and I'm not sure that maybe

over the next -- over some time and maybe that's -- maybe that's not what people are looking forward for, but we would be able to get the biologists to come together with a couple of different alternatives and maybe -- and maybe consider more of the physical impacts of the reservoirs and the hydroelectric facilities first. Throw that out there just....

MR. KARR: Along that line, I would like to ask Frank: It wasn't clear to me from what you just said which of these alternatives you were expressing support for, if any?

MR. YOUNG: At the Kennewick meetings, I said that Oregon could not support any alternative that would result in the lack of passage for adult fish that I saw that Alternative 3 at the time. I don't know what order you presented them here, but it was the drawdown to 710 of Granite. That I thought that that test was worth pursuing conditioned upon a test when few or no adult fish were present to observe the physical conditions by fishway extrances after the powerhouse shut down hundred percent spill condition and if that looked there was some possibility that adults that -- if you could have a spill pattern that would allow some adult passage under that condition, then I would agree to a test during a time when there

are adults present.

MR. KARR: Do you still -- is that still your position?

MR. YOUNG: Yes.

MR. KARR: Okay. And the reason I'm asking is I haven't been at the earlier meetings, but I was instructed at this meeting here today to take the position that you just expressed, so you now have two.

MR. ANDERSON: And I think that's useful information for us to begin focus, and as Bruce suggested, I think it's a good idea get the right representatives from all the agencies and tribes to continue to find that test, the step wise fashion that Frank is suggesting and move ahead.

MR. KINDLEY: Could you also maybe in consideration of some of Ed's concerns here document the reasons why certain alternatives are not pursued. For instance, if there's a -- if you're lowering the forebay at one dam and it affects the attraction at another dam, you might want to document that. What the constraints are on there. Just in case those who have not been attending these meeting can figure out that there is physical constraints.

MR. ANDERSON: And I think Ray, we'll do that through the environmental process. Clearly, we are

going to look at alternatives, but at the same time we can develop a proposal even a preferred plan at some point. We, obviously, don't have a preferred plan to any extent now, but we want to head down that path. We don't have a lot of time. We don't have a lot of resources to waste. We want to -- we want to be focused on the right path is really what we're trying to achieve.

MR. RILEY: I might just ask a question of those that were at the other meeting: Was -- is it fair to say there was consensus that about -- regarding the positions we've just taken that the risks were too great to go beyond this sort of a -- I'm searching for a word other than meaningless experiment, but that -- like Ed just said, it was but it was just something that's not a fix. And if that's the case, then, given the limited resources you have, I guess I just would throw out should we be thinking in terms of a '93 action plan and use the EIS capability drafting time that you have to move into '93 and -- we couldn't do anything meaningful in '92 and that's what I'm hearing, then let's bag '92 and go on to '93 or whenever it is we think we can get the NEPA work done on something meaningful.

MR. ANDERSON: I guess I didn't hear there's

a consensus that there's nothing meaningful. Did you say that, Mal?

MR. KARR: No. I said I support Frank Young's position.

MR. ANDERSON: Yeah. And --

MR. RILEY: And I haven't discussed this with Frank, but we were discussing -- I thought I heard that as the lesser of two evils or something there that that was -- I understand Frank that you think there -- that you could do some study work that would have some meaning.

MR. YOUNG: Yeah. I guess if I thought that this was all leading to fine tuning a drawdown at Granite to 710 and that was going to be some kind of solution, I would agree. But I think that that is a step in gaining information that we need to go further.

MR. CHANEY: But not on juvenile survival.

MR. YOUNG: No. We don't need to assess juvenile survival because the incremental improvement of this drawdown is so small that it can't be measured with the techniques that we have. And it's also the reason that it's not the solution, but I think that to get to what people are suggesting of multiple drawdown to spillway sill or even further in the future that this is a step in finding out what we need to know to

make some kind of scoping of the magnitude of changes that would be needed to both pass adults successfully and provide some travel time benefits to juveniles. So, I see this as a step in the process or I wouldn't support it.

MR. WHELAN: A real concern of ours is that NEPA not be an obstacle to timely implementation, we get the most prompt use as possible on measures in 1993 and beyond. And in order to do that, I think it would be very useful to have the Corps explain how it's going to provide NEPA coverage for '93 actions and beyond. I understand the Corps is about to launch into a mitigation analysis of those actions at it's projects that are necessary to pass juvenile and adult fish. Could you give us some idea of that process and how it might provide some NEPA coverage for longer term action.

MR. VELEHRADSKY: We're looking at the '92 program. So, as far as the mitigation analysis, we're going to probably be doing reconnaissance level estimates of the impacts for the -- for the long term actions in that document. If we are leading toward a long term change, we're talking about the mitigation study having a -- becoming a feasability scope type change that would -- we will probably have to

supplement the environmental impact statement developed for '92 with another document. And whether that's the SOR or some other document, we haven't decided yet.

MR. WHELAN: It seems to me to be a decision that needs to be made soon. I mean, my concern is that we would follow up a '92 test with a decision say in October of '92 or something like that as, okay, well, the next step takes an EIS; and, therefore, we'll go to scoping and that EIS will probably be ready by the fall of '94 or something like that. I'm concerned that we get timely NEPA compliance from --

MR. VELEHRADSKY: I'm not sure that NEPA is your critical path here. I think that the physical changes that are going to be required are your critical paths.

MR. WHELAN: Well, I think that the decisions themselves are extremely difficult. The problems that comes on NEPA delays a decision that could otherwise be made and implemented and that's why I'm suggesting that perhaps it would be worthwhile considering scoping a NEPA process for those longer term actions sooner rather than later. Have the decision -- have the NEPA documents support the decisions when they're made but not delay those decisions.

MR. VELEHRADSKY: I haven't heard a regional

committtment to that long term change yet. Did I hear a commitment in the Salmon Summit process to a long term change? I mean, I've --

MR. CHANEY: Now we're looking for a NEPA analysis of how we're going to pass juvenile fish and adult fish simultaneously.

MR. VELEHRADSKY: We can do that.

MR. CHANEY: That's what we're trying to find out here. So, we can find out what the hell the answer is. We know the status quo is not the answer, because you've just told us we can't even do a test let alone pass them simultaneously. I mean, I'm not being argumentative.

MR. LOVELIN: Ed, if I understand this right, I think that was one of the concerns that we've expressed to the Corps was that -- and we had this little exchange with Will and I last week -- was what was the NEPA document going to do. We agree that it should look at a full range of alternatives. That's why we wanted to at this point, with our technical experts, to examine on a biological basis what is this experiment -- to scope out what is this experiment. Is it a '92 experiment, which is what we thought going into the -- and we still think -- or is it a transitional kind of a program heading for '93 and

beyond actions.

I mean, from the Salmon Summit, what I didn't understand we were talking about in terms of a drawdown. How many reservoirs is it going to impact, time frame? Is it going to be a physical impacts test, biological impacts? Is it going to be '93 and beyond? And that's why we want that to be scoped out now. And so that in addition -- I'll add on my other little point. We look at the other river uses and kind of bring them into the decision at the leading edge of the development of an experiment of a '92 test so that -- so that when we go through the EIS that is -- I mean, if an EIS is warranted, then that's subsequent process. Not delay the time frame; but, again, to resolve some of the issues on the front end of the discussion.

MR. CHANEY: Well, Will is expressing our concern as well is that we want NEPA compliance. What we're very concerned about is that we -- that we help the Corps in any way we can. I frankly am not looking for a consensus that will not allow you to not do an EIS plan. I mean, we can't get consensus, let alone when we walk outside. But to make sure that when we structure our NEPA compliance, we don't do it three times or it doesn't take three times longer than some other alternative that is available to us going in.

And I'm paranoid that that could happen because if we are talking about substantial change, that could get very complicated. Is there a way to forward or structure a NEPA compliance process that will -- whatever happens will express that amount of time to the maximum that is required to do NEPA compliance.

MR. VELEHRADSKY: I think we can only determine that after we go out and do scoping to determine that through the scoping process. I don't see how we could make that judgment now until we've -- actually have gone through that process. Our goal is to get it done in a certain amount of time. But if we're looking at a bigger universe, then our time is going to get protracted out.

MR. CHANEY: Is there a tiered process that you can go through that allows you to define the frame work of the universe is kind of fuzzy out here, but you're going to do a -- what the agencies used to do these all the time is try to get away from NEPA. What do they call them? They called them umbrella comprehensive --

MR. WHELAN: Programatic.

MR. CHANEY: Programatic. I mean, they were using that as kind of a technique to kind of dodge the NEPA bullet for years. I thought it -- well, maybe I'm

for that now. Maybe that sounds like a good idea. Again, I don't have the answer. I'm trying to describe the need from our perspective.

MR. WHELAN: John, we don't need an answer on this today. Let's keep the discussion point open. There's a concern that we provide compliance for that stuff and we should talk about how that might be done.

MR. VELEHRADSKY: Are there any other questions or comments? I think that's useful information. Sarah, did you have some?

MS. WIK: Well, I just -- I have a hand-out here that summarizes the discussions that we had the last two times and a matrix that we put together looking at all the issues and concerns in fisheries. And I guess if there are any questions or comments after that regarding this or our discussion today if you don't have my phone number from the letters that went out, I'll be glad to give it to you.

MR. VELEHRADSKY: Witt, do you have anything you want to add? Bruce?

MR. LOVELIN: Well, I'm just wondering what you're doing at this point. Is this the end of this discussion? Are we -- then what is the Corps going to be doing, because we haven't even gotten any of the impacts of other users and I'm not sure how that gets

stuck in the discussion now.

MR. VELEHRADSKY: The impacts on other users of any drawdown tests or any long term drawdown are going to have to be identified in this process.

MR. LOVELIN: Well, I guess the point I would make -- that I made consistently at the Salmon Summit is it's frankly much better for those users to have discussions right now with the Corps and other parties. And I thought this was the forum here to try to get some recognition of the importance of those users and try to work around their needs. And I'm not just talking about navigation and irrigation. I mean, obviously, we got resident fisheries and public safety issues and other things that -- you know, that we need to discuss. So, I guess I'm hopeful that we can have that discussion at some point before we go charging off into starting with some kind of an EIS process.

MR. VELEHRADSKY: What are you suggesting, Bruce?

MR. LOVELIN: Well, I guess I haven't heard the impacts of navigation expressed here in terms of how that's going to be rectified.

MR. VELEHRADSKY: That would be -- the impacts on navigation would be identified in the NEPA process. Then any mitigation required would also be

identified in the NEPA process. I mean, that would be part of the process that we're looking at.

MR. LOVELIN: Sure.

MR. VELEHRADSKY: Now to move to that step of a long term change, would probably require congressional authorization which would also probably imply that there would have to be some mitigation of the impacts to that change.

MR. LOVELIN: I guess the point I would make is that if there are desires of the region to conduct an experiment, I think it's incumbent upon the region to come together and work through these other users that have lead. I don't think you'll be able to work them through during the environmental impact statement process. You can't rely on that process. And, you know, bringing those folks in, I think that's what you're doing right now is really what I ask for and what others ask for. And, again, I just really -- the EIS is not the way to bring folks together, because I can tell you that if we have six alternatives and you have one or two alternatives which for my -- in my particular case a four dam drawdown which is one of the alternatives, there's going to be a lot of public concern from the irrigation community and the Ice Harbor pool relative to that proposal. And in my mind,

that's why I think it's beneficial to narrow this thing up to a preferred option and frankly not go through that public hysteria.

MR. VELEHRADSKY: Okay. Now as part of the mitigation study which is in the -- contained in the NEPA document, the Walla Walla district will be charged with developing a public involved process to do what you're asking them to do, okay. So, that -- that process is going to have to be developed. We don't have it developed yet and that's going to be a short-fuse thing that we're going to have six months to nine months.

MR. CHANEY: The mitigation study?

MR. ARMACOST: Well, I think we're all saying -- I'm hearing to the affect -- to the extent we can narrow and limit things that are unacceptable to a significant force to the region, we can do that. We can explain the reason for doing it. Yes, we're going to have a public involved process, but to the extent we can narrow that down, I think it makes much more easier, as you know, John, to do a more affective evaluation of those alternatives that are real to the extent --

MR. VELEHRADSKY: Well, my problem is I'm not hearing that narrowing occur.

MR. ARMACOST: Well, I think he's seeking to have it happen, and I agree with you. I'm not hearing it either.

MR. VELEHRADSKY: So, until that occurs, then we're stuck with the broad range of alternatives to deal with which is going to be a real task.

MR. LOVELIN: Again, I'll make a point I made earlier. I would -- I think there has been some good discussions that occured at the previous two meetings in Lewiston/Clarkston and Kennewick, and I would like to see those meetings continue in the next few weeks to try to narrow this field. And also I would like to see those discussions include other interests besides -- besides the objective of enhancing smolt survival. I think there's -- I mean, there's got to be some other objectives in here as trying to maintain river navigation, maintaining irrigation, maintaining other issues, residents fisheries. Again, I'll just make a point, this is the last time I'll make it, the EIS, in my mind, is not the right process.

MR. ANDERSON: Well, Bruce, again as I said earlier, we wanted comments today from the policymakers from the Salmon Summit, that's why we convened that group. I haven't heard much from anyone else today. I guess if you're suggesting that we continue to have

some meetings, that's fine. We can do that. But we have got to get on with the Notice of Intent and the NEPA process if we're going to do anything, and I do to, that inolves any test drawdown below normal minimum. I don't know if you're suggesting don't start that process until we have had further meetings and other input but that's going to put us --

MR. LOVELIN: Okay. What I'm suggesting, Witt, is don't make the NEPA process your primary tool for implementing this experiment, and I would suggest a parallel process that you continue with what you started here. But maybe that started at the Salmon Summit and just continued.

MR. ANDERSON: And maybe that's something we can do. I mean, we tried to do that through three meetings. We tried to set up the experiment, the design, get some understanding among the fishery experts, come today and get some understanding from those at the coordinator level of the Salmon Summit. I'm not hearing that. I mean, we don't have everyone here. If we don't hear that, we're still going to have to move ahead but. I'll look to Walla Walla. I mean, we can have some more meetings, if that's helpful.

MR. CHANEY: I would just like to say from the fish advocates point of view more meetings are

great, but we would like to see that notice published tomorrow.

MR. LOVELIN: Correct me if I'm wrong, John, but we're going to be moving ahead with the Notice of Intent on a series of actions, series of measures. There are a number of measures for 1992. One of which is this measure we talked about this afternoon.

MR. PASSMORE: Speaking for Walla Walla, as Witt has many times, the concern that he has reiterated several times here is that the time frame that we're dealing with. Now to do the NEPA process that we've talked about requires that we get into it very quickly. And very quickly we're talking about beginning serious analysis of alternatives by 1 May. Much of this is going to be done by contract. We have scopes of work put together, and we're trying to narrow those alternatives down such that we can focus on a couple of alternatives. We're assuming we're looking at a '92 action. When we extend this thing beyond '92, then we greatly expand potentials here because of the construction time involved. And when we do that, we're well beyond the scope of what this NEPA was intended to do. We have approximately two months from May 1 to meet the schedule for NEPA if we have full public involvement as NEPA requires. Now, I'm trying to put

the timing in perspective. We cannot continue to have weekly meetings for another two months to determine what the test is going to be, because we'll be at the point that we have a draft EIS on the street. And, Bruce, I totally agree with what you said about the narrowing of alternatives and that was what this meeting was intended to do.

MR. LOVELIN: Okay. Let me add on to my point then. I understand the NEPA constraints and the process you have, if you folks have to get started you just have to get started, that's okay. I guess what we wouldn't want to have happen is at the end of your record -- your decision based on the NEPA process, you can't implement the action or you find that you've got a couple years worth of legal construction or whatever constraints you have, but you can't run a test in '92 several years afterward. I'm suggesting that the region would be better off if during this interim time parallel to the NEPA process, you are working out any potential conflicts you have or otherwise you may come to that point in May of next year and be unable to implement it.

MR. PASSMORE: Exactly. And, again, we held these three meetings with that exact intent. In order to narrow the number of alternatives that we're

focusing on, we ask that we have the representatives from all of the user group areas in order to help us screen this as Witt mentioned. And we have the six or seven alternatives on the board. And if the preliminary information shows that the construction time is a constraint for implementing a full four pool drawdown, to continue to focus on that, it would appear to be a diversion of effort. Now, I'm -- I'm curious to see if we went around the table what the opinion was as a group, because I think that there is a near consensus in this room with regard to a '92 action. There are some things that can be done and others that cannot from a physical standpoint. If we walk through the NEPA process and by January, February, or March of next year decide that we can implement a drawdown action that requires significant construction, where is the time for that construction to take place; let alone, as Witt said, the E and D side of it. So, I think we have come to a conclusion on some of the those if they're looked at in that light. Now, we can continue to look at what the possibilities are for modifications in the long term. I'm not arguing that. And we will. And we will look at it through the mitigation analysis process in addition to many other types of actions that may be taken to improve the

resource, not neccessarily structural.

MR. LOVELIN: I didn't hear any objection from Ed to looking at the '92 action. He was asking us to look at some other things.

MR. CHANEY: Right. Now I guess, I'm just -- for '92 I want to -- hopefully we will focus on those things that we say prevent us from passing juveniles and adults simultaneously as opposed to trying to determine the biological benefits to juveniles of these marginal changes. I don't -- I agree with Frank, I don't think we can measure those things. So, why bother. Let's focus on what's preventing us from doing what we want to do and see what we can learn in '92 that will help us.

MR. PASSMORE: And most of the things that you just discussed are within that mitigation study that John was talking about.

MR. VELEHRADSKY: So, what I'm hearing is there's probably two viable alternatives for '92 and if we make the next leap to any of the other alternatives, we're probably looking at something as beyond '92; is there a consensus in that?

MR. RILEY: John, I'm afraid Oregon just has -- you know, from my perspective and it may be -- and I'm not trying to contradict Frank or Witt. Of couse,

we haven't had a chance to discuss at any of the other meetings. I'm not satisfied that's been demonstrated. From the beginning, we've taken the position that a minimum of one pool drawdown in the Snake in '92. We don't want to stop upstream passage, but it has not been demonstrated to us yet that that can't be done. And I'm just not willing to accept -- we're not willing to accept the two alternatives that seem to be left, and I -- I think it's back to what Ed said, you know, you may be able to convince us in very short order that you can't do a one or two or three pool drawdown without threatening upstream migrants. But after more than two weeks, but sixty days of going over this, it wasn't demonstrated during that period of the last sixty to ninety days of negotiations throughout the Summit that those were not possible. And it's hard for me to believe that in the last two weeks we've suddenly reached the conclusion that none of those things -- those meaningfull things that we've been discussing are simply not possible. So, we would completely change our position to say those Alternatives 6 and 7 or 5 and 6, whatever are all that's on the table for fiscal year '92 -- calendar year '92. It's also a little bit difficult for me to think that six alternatives -- or four alternatives with two subsets is more than you can

deal with in a NEPA process. You're not dealing with twenty, you're dealing with seven if you count tham all as full separate alternatives. I mean, I -- that's almost a minimum. If you didn't have five, somebody would ask you why you didn't have more alternatives, there must be more out there.

MR. VELEHRADSKY: Yeah. I think we'll take the information we got out of this meeting, which was beneficial for our use, even though we don't appear to have come to a closure. But we'll take your input and Bruce's and the other folks here and design the remainder of the NEPA process and the mitigation analysis and try to address the issues that were raised today. That's about the best we can do.

(Proceeding concluded at 4:00 p.m.)

CERTIFICATE

STATE OF IDAHO)
: ss.
County of Nez Perce)

I, Dennis Misener, Jr., CSR, Freelance Court Reporter and Notary Public for the State of Idaho, residing in Lewiston, Idaho, do hereby certify:

That I was duly authorized to and did report the above-foregoing meeting in the above-entitled cause;

That the foregoing pages of this transcript constitute a true and accurate transcription of my stenotype notes of the above-foregoing meeting of all audible proceedings had to the best of my ability.

I further certify that I am not an attorney nor counsel of any of the parties; nor a relative or employee of any attorney or counsel connected with the action, nor financially interested in the action.

IN WITNESS WHEREOF, I have hereunto set my hand and seal on this 15th day of May, 1991.

Dennis Misener, Jr., CSR
Freelance Court Reporter
Notary Public for the State of Idaho
Residing in Lewiston, Idaho
My Commission expires: 5/9/96

LOWER SNAKE RIVER

1992 EXPERIMENTAL DRAWDOWN

GOAL

SHORTEN IN-RIVER MIGRATION TIME -

RESULT IN INCREASED JUVENILE FISH SURVIVAL

POSSIBLE OBJECTIVES OF RESERVOIR DRAWDOWN TEST

1. DETERMINE CHANGE IN WATER VELOCITY WITH POOL LOWERING AND/OR FLOW MANIPULATION.

2. DETERMINE JUVENILE FISH MIGRATION RATE RELATIVE TO WATER MOVEMENT (VELOCITY).

3. DETERMINE SURVIVAL RELATIONSHIP WITH RESPECT TO DECREASED TRAVEL TIME.

4. REDUCED DOWNSTREAM MIGRANT TRAVEL TIME.

   a. RESERVOIR DRAWDOWN
   b. FLOW AUGMENTATION
   c. DAM REMOVAL

TEST PLAN ALTERNATIVES

1. FOUR RESERVOIRS
2. PHYSICAL IMPACTS
3. LOWER GRANITE
4. LOWER GRANITE AND LOWER MONUMENTAL
5. LOWER GRANITE REPLICATES
6. TRAVEL TIME EXPERIMENT (NO DRAWDOWN)

ALTERNATIVE 1 - FOUR RESERVOIRS

TEST DESIGN FRAMEWORK

- LOWER ALL FOUR LOWER SNAKE RIVER RESERVOIRS
- NEAR SPILLWAY CREST ELEVATION
- APRIL 15 - AUGUST 15

POSSIBLE STUDY PLAN

- PIT TAG JUVENILE FISH AT LEWISTON, RECOVER AT McNARY

ALTERNATIVE 1 - FOUR RESERVOIRS

PROS

- MOST EFFECT ON REDUCING TRAVEL TIME FOR IN-RIVER FISH

CONS

- ADULT PASSAGE ELIMINATED
- MAY NOT BE ABLE TO DETECT DECREASE IN TRAVEL TIME
- INCREASED DISSOLVED GAS LEVELS
- INCREASED TURBIDITY
- SIGNIFICANT IMPACTS ON RESIDENT FISHERIES, FOOD ORGANISMS, ETC.

ALTERNATIVE 2 - PHYSICAL IMPACTS

TEST FRAMEWORK

- o LOWER GRANITE RESERVOIR ONLY
- o NEAR SPILLWAY CREST ELEVATION
- o NON-FISH WORK WINDOW

POSSIBLE STUDY PLAN

- o LOWER RESERVOIR AND MONITOR WATER QUALITY, PHYSICAL IMPACTS ON STRUCTURES, WATER VELOCITIES, SPILL PATTERNS

ALTERNATIVE 2 - PHYSICAL IMPACTS

PROS

- o DOES NOT IMPACT SALMONIDS
- o ONLY ONE RESERVOIR

CONS

- o APPLICABILITY OF DATA TO MIGRATION PERIOD
- o MAY IMPACT FISH DURING SUBSEQUENT MIGRATIONS
- o MAY NOT BE POSSIBLE TO COMPLETE NEPA FOR 92 WINTER WINDOW

ALTERNATIVE 3 - LOWER GRANITE

TEST FRAMEWORK

- o LOWER GRANITE RESERVOIR ONLY
- o ELEVATION 710 (23' BELOW MINIMUM POOL)
- o APRIL 15 - JUNE 15

POSSIBLE STUDY PLAN

- o PIT TAG JUVENILE FISH AT LEWISTON
- o RECOVER AT LITTLE GOOSE DAM JUVENILE FISH FACILITY

ALTERNATIVE 3 - LOWER GRANITE

PROS

- MAINTAINS ADULT PASSAGE
- IMPACT TO ONLY ONE RESERVOIR

CONS

- INCREASED DISSOLVED GAS LEVELS
- MAY NOT BE ABLE TO DETECT REDUCED TRAVEL TIME
- INCREASED TURBIDITY
- SIGNIFICANT IMPACTS ON RESIDENT FISHERIES, FOOD ORGANISMS, ETC.

ALTERNATIVE 4 -
LOWER GRANITE AND LOWER MONUMENTAL

TEST FRAMEWORK

- LOWER GRANITE RESERVOIR LOWERED TO 710
- LOWER MONUMENTAL RESERVOIR LOWERED TO 509
- LITTLE GOOSE AND ICE HARBOR POOLS MAINTAINED AT NORMAL OPERATION
- APRIL 15 - JUNE 15

ALTERNATIVE 4 -
LOWER GRANITE AND LOWER MONUMENTAL

PROS

- COMPARISON BETWEEN TWO "FAST" POOLS AND TWO "SLOW" POOLS

CONS

- TECHNOLOGY NOT AVAILABLE
- ADULT PASSAGE AT LOWER MONUMENTAL ELIMINATED
- INCREASED DISSOLVED GAS LEVELS
- SIGNIFICANT IMPACTS ON RESIDENT FISHERIES, FOOD ORGANISMS, ETC.

ALTERNATIVE 5 - LOWER GRANITE REPLICATES

TEST FRAMEWORK

- o LOWER GRANITE RESERVOIR ONLY
- o ELEVATION 710 FOR LOWERED POOL
- o 3 PERIODS ALTERNATING BETWEEN LOWERED RESERVOIR AND NORMAL POOL ELEVATION

POSSIBLE STUDY PLAN

- o PIT TAG GROUPS OF FISH AT LEWISTON
- o RECOVER AT LITTLE GOOSE JUVENILE FISH FACILITY

ALTERNATIVE 5 - LOWER GRANITE REPLICATES

PROS

- o MAINTAINS ADULT FISH PASSAGE
- o IMPACT TO ONLY ONE RESERVOIR

CONS

- o INCREASED DISSOLVED GAS LEVELS
- o MAY NOT BE ABLE TO DETECT REDUCED TRAVEL TIME
- o INCREASED TURBIDITY
- o SIGNIFICANT IMPACTS ON RESIDENT FISHERIES, FOOD ORGANISMS, ETC.

ALTERNATIVE 6 - TRAVEL TIME EXPERIMENT

TEST FRAMEWORK

- o NO RESERVOIR LOWERING
- o 1 APRIL - 15 JULY
- o POSSIBLE FLOW AUGMENTATION

POSSIBLE STUDY PLAN

- o INCREASE NUMBERS OF JUVENILE FISH PIT-TAGGED AT LEWISTON
- o RECOVER DATA AT LOWER GRANITE, LITTLE GOOSE, McNARY

ALTERNATIVE 6 - TRAVEL TIME EXPERIMENT

PROS

- NO NEGATIVE IMPACTS TO FISH ASSOCIATED WITH RESERVOIR LOWERING

CONS

- CURRENT TRAPPING FACILITIES MAY BE INADEQUATE

RESERVOIR TEST DRAWDOWN - MATRIX OF ALTERNATIVES

See attached pages for descriptions of proposed test alternatives

FISHERIES ISSUES/CONCERNS	1. 4 RESERVOIRS				2. PHYSICAL IMPACTS				3. LGR ONLY				4. LGR & LMO				5. LGR - REPLICATES				6. TRAVEL TIME EXP.			
	IH	LMO	LGO	LGR	IH	LMO	LGO	LGR	IH	LMO	LGO	LGR	IH	LMO	LGO	LGR	IH	LMO	LGO	LGR	IH	LMO	LGO	LGR
5. Other																								
a. conc. of juv. at McNary coll		YES				NO				NO				YES				NO				NO		
b. wildlife-waterfowl	Y	Y	Y	Y	N	N	N	Y	N	N	N	Y	N	Y	N	Y	N	N	N	Y	N	N	N	N
-furbearers																								
c. impacts on research activities	Y	Y	Y	Y	?	?	?	Y	?	?	?	Y	?	Y	?	Y	N	N	N	Y	N	N	N	N
d. impacts on Little Goose JFF		NO				NO				YES				?				YES				NO		
6. Experimental Design Questions																								
a. Can valuable info. be gained?		?				?				?				?				?				YES		
1) data to compare with?		?				?				?				BTW POOLS				?				YES		
2) technology available?						?				?				NO				?				?		
3) sample size required possible?		?				N/A				?				?				?				?		
b. Will Dworshak operations affect test?		?				?				?				?				?				NO		

RESERVOIR TEST DRAWDOWN - MATRIX OF ALTERNATIVES

See attached pages for descriptions of proposed test alternatives

	1. 4 RESERVOIRS				2. PHYSICAL IMPACTS				3. LGR ONLY				4. LGR & LMO				5. LGR - REPLICATES				6. TRAVEL TIME EXP.			
FISHERIES ISSUES/CONCERNS	IH	LMO	LGO	LGR	IH	LMO	LGO	LGR	IH	LMO	LGO	LGR	IH	LMO	LGO	LGR	IH	LMO	LGO	LGR	IH	LMO	LGO	LGR
1. Adult Fish Passage-elimination of unless satisfactory solutions developed	Y	Y	Y	Y	N	N	N	N	N	N	N	?	N	Y	N	?	N	N	N	?	N	N	N	N
2. Spill																								
a. diss. gas increase	Y	Y	Y	Y	N	N	?	?	?	?	Y	Y	Y	Y	Y	Y	?	?	Y	Y	N	N	N	N
1) flip-lips ineffective (no flip-lips at IH)	N/A	?	?	?	N/A	N	N	?	N/A	N	N	?	N/A	?	N	?	N/A	N	N	?	N/A	N	N	N
b. energy dissipators	?	?	?	?	N	N	N	N	N	N	N	?	N	?	N	?	N	N	N	?	N	N	N	N
c. delay in adult fish passage	Y	Y	Y	Y	N	N	N	N	N	N	N	Y	N	Y	N	Y	N	N	N	Y	N	N	N	N
d. poss. injury to juveniles	Y	Y	Y	Y	N	N	N	?	N	N	N	Y	N	Y	N	Y	N	N	N	Y	N	N	N	N
3. Predation																								
a. higher conc. of predators	?	?	?	?	N	N	N	?	N	N	N	?	N	?	N	?	N	N	N	?	N	N	N	N
b. effect on squawfish mgt prog.	Y	Y	Y	Y	N	N	N	N	N	N	N	Y	N	Y	N	Y	N	N	N	Y	N	N	N	N
c. change in predator distribution	?	?	?	?	N	N	N	?	N	N	N	?	N	?	N	?	N	N	N	?	N	N	N	N
4. Water Quality																								
a. increase in turbidity	Y	Y	Y	Y	?	?	?	Y	?	?	?	Y	?	Y	?	Y	?	?	?	Y	N	N	N	N
b. contaminated sediment release (chemicals & disease)	?	?	?	?	N	N	N	?	N	N	N	?	N	?	N	?	N	N	N	?	N	N	N	N
c. temperature change	?	?	?	?	N	N	?	?	N	N	?	?	?	?	?	?	N	N	?	?	N	N	N	N
d. dissolved oxygen	?	?	?	?	N	N	N	?	N	N	N	?	N	?	N	?	N	N	N	?	N	N	N	N
5. Other Aquatic Organisms																								
a. food organisms (salmon & all)	Y	Y	Y	Y	N	N	N	Y	N	N	N	Y	N	Y	N	Y	N	N	N	Y	N	N	N	N
b. cover (salmon & all)	Y	Y	Y	Y	N	N	N	Y	N	N	N	Y	N	Y	N	Y	N	N	N	Y	N	N	N	N
c. resident fish spawning habitat	?	?	?	?	N	N	N	N	N	N	N	?	N	?	N	?	N	N	N	?	N	N	N	N
d. displacement of populations	?	?	?	?	N	N	N	?	N	N	N	?	N	?	N	?	N	N	N	?	N	N	N	N

APPENDIX U-4

Summary of the

April 5, 12, and 18, 1991 Meetings

of the

Reservoir Drawdown Test Design Team

02

C-5

CENPW-PL-ER (1165-2-26a)

19 June 1991

MEMORANDUM FOR Engineering Division Files

SUBJECT: Summary of Meetings to Develop Protocol for 1992 Test of the Reservoir Drawdown Concept

1. Walla Walla District was assigned responsibility to facilitate development of a plan to test the reservoir drawdown concept on the Lower Snake River in 1992. The governor of Idaho requested such a test in 1991, but the magnitude of impacts of a reservoir drawdown necessitate preparation of an Environmental Impact Statement, and this was not possible for 1991, given the short timeframe. In addition, there was no regional consensus on the governor's plan.

2. Although reservoir lowering is not an action proposed by the Corps, we will complete the National Environmental Policy Act (NEPA) process because we operate the Lower Snake River projects. An EIS for such a major action would normally require at least 18-24 months to complete, but we have been tasked to do so by March of 1992.

3. In an attempt to develop regional consensus on what the 1992 test should be and reduce the amount of effort needed in the EIS, we agreed to facilitate regional meetings. We invited Salmon Summit personnel and their technical staffs to attend three meetings. At the first meeting, we defined possible test objectives and developed six broad test plan alternatives (see enclosure 1). These six alternatives ranged from "worst case" (lowering all four reservoirs to spillway crest for 4 months) to eliminating drawdown and expanding the current travel time monitoring efforts into a research study. The group then "brainstormed" to outline all possible fisheries issues and concerns associated with the "worst case" test. Environmental Resources Branch staff then expanded this information into a matrix showing which of these issues and concerns apply to each of the six alternatives.

4. The second meeting, on 12 April, was spent discussing the matrix of issues and concerns and reporting information that was gathered after the first meeting. It was agreed by all present that a test design that eliminates adult fish passage was not acceptable. We agreed to provide information that clarifies why adult fish will not pass the projects when the reservoirs are drawn down below minimum pool. The group also agreed that

alternatives requiring technology that is not yet available should not be pursued. There was general consensus among the biologists that it is unlikely any information can be gained from doing a 1992 test of just one reservoir (Lower Granite), and since a lowering of all four would eliminate adult passage, further analysis should be done to determine feasibility of this concept prior to either testing or implementing. We explained that this type of analysis will be forthcoming under the Columbia River Salmon Mitigation Analysis, but we are still tasked to perform a 1992 test for which it would be advantageous to reach consensus on a test design.

5. Considerable discussion took place about NEPA requirements for such an action, and it was agreed that all six alternatives would be presented, along with issues and concerns associated with each, to the policy level representatives of the Salmon Summit at the final meeting.

6. We met with policy-level representatives in Portland on 18 April. All alternatives were presented, and significant concerns associated with each were discussed. Although the majority of the group agreed that three of the six alternatives were not feasible for 1992, no consensus was reached on eliminating them from the list to be pursued under NEPA.

7. As you know, the test of lowering the Snake River projects has now been incorporated into the package of alternatives to assist the salmon in 1992. Through the NEPA process, we will document the problems associated with each alternative. For those alternatives considered feasible, details of a test plan (such as numbers of fish and equipment required, appropriate agencies to perform, etc.) will be developed in cooperation with interested agencies.

8. If there are any questions, please call me at ext. 6629.

Sarah J. Wik

SARAH J. WIK
Environmental Resources Branch

Encl

CENPW-PL-ER
SUBJECT: Summary of Meetings to Develop Protocol for 1992 Test of the Reservoir Drawdown Concept

CF w/encl:
CENPW-PL-ER (Barila, MacDonald, Poolman, Shelin)
C, CENPW-PL-H
C, CENPW-PL-PF
CENPW-PL-PF (Graham)
CENPW-OP-PO (McKern, Hurson)
CENPW-OP-GG (Krahenbuhl, Hixson, Wik, Baxter)
CENPW-OP-IH (Voss, Cadwell)
CENPW-OP-MN (Gibson, Eby)
C, CENPW-EN-DB-HY

Reservoir Lowering
Development of Test Protocol

The following 6 alternatives for a 1992 test of the drawdown concept were outlined at the 5 April meeting. A preliminary test plan is presented for each alternative on the enclosed sheets, along with a summary of major issues/concerns. The enclosed matrix compares issues/concerns related to each of the alternatives.

1. Draw down all four lower Snake River reservoirs.
2. Draw down Lower Granite reservoir to test physical impacts of reservoir lowering.
3. Draw down Lower Granite reservoir.
4. Draw down Lower Granite and Lower Monumental reservoirs.
5. Draw down Lower Granite reservoir multiple times.
6. Maintain existing pool elevations and conduct expanded travel time research.

Although increased flow is desirable for fish survival, because of potential negative impacts to fish, a test of reservoir lowering must result in valuable information that cannot be gained from any other source, such as detailed nalysis of existing information, modelling of reservoir velocities, etc.

NOTE: For alternatives 1 and 3 - 5, serious consideration needs to be given to what the course of action would be during a average or above average water year. Although we could still gather some information early in the season, it may not be enough to be truly useful and could put a significant portion of the population at risk unnecessarily.

ALTERNATIVE NO. 1 - FOUR RESERVOIRS

Test Design Framework:

1. All four lower Snake River pools (Ice Harbor, Lower Monumental, Little Goose and Lower Granite) would be lowered to near spillway crest elevation.

2. Maximum time frame for this test would be April 15 through August 15, depending upon which stocks were proposed for testing. The time frame could be broken down into April 15-June 15 and June 15 - August 15 for spring and summer migrantss, respectively.

Possible Study Plan:

1. Juvenile fish would be PIT-tagged and released at Lewiston for recovered at McNary Dam to estimate travel time through the entire lower Snake system. Data would be compared to travel time data that has been collected under normal reservoir operations (Fish Passage Center). All fish would have to be collected at McNary (i.e. no bypass). Possible spilling at McNary would be a concern in the recovery of marked fish.

2. Additional data that would be collected during drawdown:

a. turbidity
b. water velocity patterns
c. physical impacts on structures
d. dissolved gas below project
e. dissolved oxygen levels within reservoir
f. spill patterns - tailrace formations, currents
g. chemical and disease organism concentrations

Major Issues/Concerns:

1. Adult fish passage would be eliminated at all four lower Snake River projects. Design and construction of alternative passage systems for operation below minimum pool is not feasible for 1992. (The Corps is exploring what it would take to allow adult fish passage, and if there are any elevations lower than minimum pool at which passage would not be blocked, but it should be emphasized that any new system would need considerable evaluation and modification before successful passage would occur.)

2. It may not be possible to measure an increase in fish travel time as compared to existing reservoir conditions. The

statistics would have to be reviewed.

3. The entire river flow would be passed over the spillway at each dam, resulting in increased dissolved gas levels and possible injury to juvenile fish.

4. Significant impacts on water quality are likely to occur throughout the system.

5. Reservoir lowering may result in a significant increase in predation.

6. Significant impacts on resident fisheries, food organisms and wildlife are likely to occur throughout the system.

ALTERNATIVE NO. 2 - PHYSICAL IMPACTS

Test Design Framework

1. Lower Granite reservoir would be drawn down (estimated maximum rate of 1' to 2' per day) to near spillway crest elevation.

2. Possible time frames for this test would be the current in-water work windows:

- summer - 15 July - 15 August
- winter - 1 January - 28 February (preferred time)

Possible Study Plan:

1. On 1 Jan begin lowering reservoir at maximum rate (up to 2' per day). As reservoir lowers, monitor impacts and gather data as listed below. Reservoir would be lowered to near spillway crest, provided no major problems occurred (such as levee failure, embankment failure, etc.).

2. Possible information to be gathered:

a. turbidity
b. water velocity patterns
c. physical impacts on structures
d. dissolved gas below project
e. dissolved oxygen levels within reservoir
f. spill patterns - tailrace formations, currents
g. chemical and disease organism concentrations

3. Augmentation of flows, and how it would fit into the study plan would need further examination. (Test may require flow augmentation since base flows would be less than 30,000 cfs at this time of year.)

Major Issues/Concerns:

1. Completion of the NEPA process prior to the winter work window of 91-91 may not be possible.
2. **Water quality information**, such as dissolved gas levels and turbidities, collected under reduced winter flows and temperatures **may not be applicable** to reservoir drawdowns during the fish migration season.
3. Consequences of this test **may result in harm to fish** populations during the subsequent spring migration, especially if structural failure should occur somewhere within the system.

4. Velocity data at lowered reservoir elevations is currently available through modelling and more accurate information may not be possible by lowering the reservoir.

ALTERNATIVE 3 - LOWER GRANITE

Test Design Framework:

1. Lower Granite reservoir would be drawn down to elevation 710 (emergency adult passage facilities functional), 15 April - 15 June. theoretically

Possible study plan:

1. PIT-tag juvenile fish at Lewiston and recover at Little Goose. Compare travel times to those obtained from existing monitoring efforts OR set up some type of control group.

2. Additional data that would be collected during drawdown:

a. turbidity
b. water velocity patterns
c. physical impacts on structures
d. dissolved gas below project
e. dissolved oxygen levels within reservoir
f. spill patterns - tailrace formations, currents
g. chemical and disease organism concentrations

Major Issues/Concerns:

1. If travel times during a reservoir drawdown were to be compared with those under existing condtions, the following issues would have to be analyzed.

a. There may not be enough past recoveries of PIT tag migrants at Little Goose to make a statistically sound comparison.

b. The potential reduction in travel time upon entry to Little Goose reservoir may mask any potential gain made in Lower Granite during the drawdown.

c. Past PIT tag recoveries at Little Goose have been fish that have gone underneath the STSs at Lower Granite, i.e. have not been highly smolted. Under this test scenario, we would have a mixture of fish: those that would have been guided at Lower Granite, and those that would not have been. This will affect our comparability.

d. If comparing to existing data is not statistically sound, a control group would have to be developed, which may prove to be difficult.

e. Increased turbidity under the test conditions may cause a decrease in travel time that would not be there once sediments have been flushed from the system.

2. A reduction in travel time through Lower Granite reservoir be overridden by the increase in mortality due to spill, Little Goose reservoir predation, and the overall increase in migration time incurred by those fish that under normal operating conditions would have been removed from the system at Lower Granite (particularly in a low flow year).

3. The entire river flow would be passed over the spillway at Lower Granite dam, resulting in increased dissolved gas levels and possible injury to juvenile fish.

4. Water quality is likely to be significantly impacted.

5. Reservoir lowering may result in a significant increase in predation in the Lower Granite pool.

6. Resident fisheries, food organisms and wildlife are likely to be significantly impacted.

ALTERNATIVE 4 - LOWER GRANITE AND LOWER MONUMENTAL

Test Framework:

1. Draw Lower Granite and Lower Monumental pools down approximately 23' from normal minimum (maintains adult fish passage facilities at Lower Granite), retain Little Goose and Ice Harbor pools near maximum. Maintain these conditions from 15 April through 15 June.

Possible study plan:

1. Juvenile fish travel rates through lowered reservoirs would have been compared to rates through reservoirs operated at normal pool elevations. The only method for obtaining travel rates would be with juvenile radio tags, and the National Marine Fisheries Service strongly recommended against using these tags on juvenile chinook. Therefore, it was agreed that this alternative was not feasible.

Major Issues/Concerns:

1. Adult fish passage at Lower Monumental would be eliminated.

2. The entire river flow would be passed over the spillway at Lower Granite and Lower Monumental dams, resulting in increased dissolved gas levels and possible injury to juvenile fish.

3. Water quality would likely be significantly impacted.

4. Reservoir lowering may result in a significant increase in predation in the Lower Granite and Lower Monumental pools.

5. Resident fisheries, food organisms and wildlife would be significantly impacted.

ALTERNATIVE 5 - LOWER GRANITE REPLICATES

Test Framework:

1. Draw Lower Granite reservoir down to elevation 710 and operate it at normal elevation on an alternating cycle (estimated 12 days to lower, maintain lowered elevation for 5 days, 2 days to refill and maintain at full for 5 days) during the 15 April through 15 June time frame. Maintain all other pools at normal elevation.

Possible study plan:

1. Release PIT tagged juveniles at Lewiston and recover at Little Goose. Compare juvenile fish travel times at normal operation with those at lowered pool.

2. Additional data that would be collected during drawdown:

   a. turbidity
   b. water velocity patterns
   c. physical impacts on structures
   d. dissolved gas below project
   e. dissolved oxygen levels within reservoir
   f. spill patterns - tailrace formations, currents
   g. chemical and disease organism concentrations

Major Issues/Concerns:

1. Variability of travel time, coupled with periods of reservoir lowering and refill periods, would result in an inability to distinguish differences in juvenile fish travel times. For example, fish may take anywhere from 3 - 20+ days to travel from Lewiston, Idaho to Lower Granite Dam. The test periods would be a maximum of 5 days long, thus fish could be travelling during more both normal and lowered pools, as well as the refill and lowering periods.

ALTERNATIVE 6 - TRAVEL TIME EXPERIMENT

Test Framework:

1. This alternative assumes reservoirs are operated within normal operating ranges throughout the fish migration season.

Possible study plan:

1. Juvenile fish would be PIT-tagged at Lewiston (or possibly elsewhere) and recaptured at Lower Granite, Little Goose and McNary. The number of fish would be significantly greater than the current marking program and would allow us to collect more information over a broader range of flow conditions.

2. Flow augmentation could be considered to increase the range of flows.

Major Issues/Concerns:

1. Limitations of existing trap equipment under low and high flows. A screw trap could be purchased for use in low flows, but a method of trapping fish in flows over approximately 100 kcfs would have to be developed.

General notes on matrix:

1. Dissolved gas levels **will increase**, even though flip-lips may still be functional. The effect of the increase on survival of fish is unknown, but must be considered.

2. We do have evidence that spill can be injurious to fish, and while may not be lethal, there is a concern with delayed mortality and cumulative impacts over several spillways in sequence.

3. A "Y" indicates the issue/concern applies to the drawdown test alternative. However, the severity of the effect may vary considerably. A "?" indicates either the issue/concern is applicable only under certain timing conditions (for example, in alternative 1, if all four reservoirs were refilled prior to resident fish spawning times, then it would not be a concern) or we do not know if it is a real concern.

ESERVOIR TEST DRAWDOWN - MATRIX OF ALTERNATIVES

ee attached pages for descriptions of proposed test alternatives

	1. 4 RESERVOIRS				2. PHYSICAL IMPACTS				3. LGR ONLY				4. LGR & LMO				5. LGR - REPLICATES				6. TRAVEL TIME EXP.			
ISHERIES ISSUES/CONCERNS	IH	LMO	LGO	LGR	IH	LMO	LGO	LGR	IH	LMO	LGO	LGR	IH	LMO	LGO	LGR	IH	LMO	LGO	LGR	IH	LMO	LGO	LGR
. Adult Fish Passage-elimination of unless satisfactory solutions developed	Y	Y	Y	Y	N	N	N	N	N	N	N	?	N	Y	N	?	N	N	N	?	N	N	N	N
. Spill																								
a. diss. gas increase	Y	Y	Y	Y	N	N	?	?	?	?	Y	Y	Y	Y	Y	Y	?	?	Y	Y	N	N	N	N
1) flip-lips ineffective (no flip-lips at IH)	N/A	?	?	?	N/A	N	N	?	N/A	N	N	?	N/A	?	N	?	N/A	N	N	?	N/A	N	N	N
b. energy dissipators	?	?	?	?	N	N	N	N	N	N	N	?	N	?	N	?	N	N	N	?	N	N	N	N
c. delay in adult fish passage	Y	Y	Y	Y	N	N	N	N	N	N	N	Y	N	Y	N	Y	N	N	N	Y	N	N	N	N
d. poss. injury to juveniles	Y	Y	Y	Y	N	N	N	?	N	N	N	Y	N	Y	N	Y	N	N	N	Y	N	N	N	N
. Predation																								
a. higher conc. of predators	?	?	?	?	N	N	N	?	N	N	N	?	N	?	N	?	N	N	N	?	N	N	N	N
b. effect on squawfish mgt prog.	Y	Y	Y	Y	N	N	N	N	N	N	N	Y	N	Y	N	Y	N	N	N	Y	N	N	N	N
c. change in predator distribution	?	?	?	?	N	N	N	?	N	N	N	?	N	?	N	?	N	N	N	?	N	N	N	N
. Water Quality																								
a. increase in turbidity	Y	Y	Y	Y	?	?	?	Y	?	?	?	Y	?	Y	?	Y	?	?	?	Y	N	N	N	N
b. contaminated sediment release (chemicals & disease)	?	?	?	?	N	N	N	?	N	N	N	?	N	?	N	?	N	N	N	?	N	N	N	N
c. temperature change	?	?	?	?	N	N	?	?	N	N	?	?	?	?	?	?	N	N	?	?	N	N	N	N
d. dissolved oxygen	?	?	?	?	N	N	N	?	N	N	N	?	N	?	N	?	N	N	N	?	N	N	N	N
. Other Aquatic Organisms																								
a. food organisms (salmon & all)	Y	Y	Y	Y	N	N	N	Y	N	N	N	Y	N	Y	N	Y	N	N	N	Y	N	N	N	N
b. cover (salmon & all)	Y	Y	Y	Y	N	N	N	Y	N	N	N	Y	N	Y	N	Y	N	N	N	Y	N	N	N	N
c. resident fish spawning habitat	?	?	?	?	N	N	N	N	N	N	N	?	N	?	N	?	N	N	N	?	N	N	N	N
d. displacement of populations	?	?	?	?	N	N	N	?	N	N	N	?	N	?	N	?	N	N	N	?	N	N	N	N

RESERVOIR TEST DRAWDOWN - MATRIX OF ALTERNATIVES

See attached pages for descriptions of proposed test alternatives

FISHERIES ISSUES/CONCERNS	1. 4 RESERVOIRS				2. PHYSICAL IMPACTS				3. LGR ONLY				4. LGR & LMO				5. LGR - REPLICATES				6. TRAVEL TIME EXP.			
	IH	LMO	LGO	LGR	IH	LMO	LGO	LGR	IH	LMO	LGO	LGR	IH	LMO	LGO	LGR	IH	LMO	LGO	LGR	IH	LMO	LGO	LGR
6. Other																								
a. conc. of juv. at McNary coll		YES				NO				NO				YES				NO				NO		
b. wildlife-waterfowl	Y	Y	Y	Y	N	N	N	Y	N	N	N	Y	N	Y	N	Y	N	N	N	Y	N	N	N	N
-furbearers																								
c. impacts on research activities	Y	Y	Y	Y	?	?	?	Y	?	?	?	Y	?	Y	?	Y	N	N	N	Y	N	N	N	N
d. impacts on Little Goose JFF		NO				NO				YES				?				YES				NO		
7. Experimental Design Questions																								
a. Can valuable info. be gained?		?				?				?				?				?				YES		
1) data to compare with?		?				?				?				BTW POOLS				?				YES		
2) technology available?						?				?				NO				?				?		
3) sample size required possible?		?				N/A				?				?				?				?		
b. Will Dworshak operations affect test?			?			?				?				?				?				NO		