ALASKA POWER AUTHORITY
SUSITNA HYDROELECTRIC PROJECT
SETTLEMENT PROCESS

POSITION PAPER DISCUSSION MEETING #7

May 17, 1985

Northern Lights Inn
598 W. Northern Lights Blvd.
Anchorage, Alaska

New Business: Position Papers S-7/8, F-10, F-11, AQ-1/2

A T T E N D E E S

Tom Arminski, APA
Don Beyer, HE
Bob Chlupach, ADF&G
Larry Gilbertson, HE
Alice Gordon, HE
Mike Granata, ADNR
Hank Hosking, FWS
Mark Kuwada, ADF&G
Leroy Latta, ADNR
Jeff Lowenfels, BHB
Dallas Owens, HE
Jack Robinson, HE
Dan Rosenberg, ADF&G
Phil Scordelis, HE
Brad Smith, NMFS
Jim Thrall, HE
Dave Tremont, ADCRA
Sharon Vaissiere, HE
Jim Wilder, HE

ALASKA POWER AUTHORITY

334 WEST 5th AVENUE - ANCHORAGE, ALASKA 99501

Phone: (907) 277-7641
(907) 276-0001

May 27, 1985
Susitna File No. 1.8.1/6.18.8.7/1.17.4.2

Mr. Dan Rosenberg
Alaska Department of Fish & Game
333 Raspberry Road
Anchorage, Alaska 99502

Subject: Susitna Hydroelectric Project
Transcript Transmittal

Dear Mr. Rosenberg:

Please find enclosed for your use one copy of the Seventh Position Paper Discussion Meeting Transcript.

Sincerely,

James B. Dischinger
Project Manager
Susitna Hydroelectric Project

sdw

Enc: as noted

cc w/o Enc:
T. Arminski, Power Authority
C. Curtis, VFS&C (DC)
J. Lowenfels, BHBP&A
W. Larson, HE

Susitna File # 6.188.7

ALASKA POWER AUTHORITY

SUSITNA HYDROELECTRIC PROJECT

SETTLEMENT PROCESS

POSITION PAPER DISCUSSION MEETING #7

8:30 a.m.
May 17, 1985
Alyeska Room
Northern Lights Inn
598 West Northern Lights Blvd.
Anchorage, Alaska

GEMINI
Reporting Services
943 West 6th, Suite 110
Anchorage, Alaska 99501
277-8691

PROCEEDINGS

MR. ARMINSKI: I guess I want to start off by saying that last week -- or, last meeting we talked about the staging proposal, and as of yet we don't have a definite schedule as to what this all is going to entail with respect to the licensing, and we're going to go down to FERC this week and talk to them about it. But as far as the issue papers go, we're going to have to make some revisions on the ones that are affected by staging, and Jack'll tell you a little bit about the process we're going to go through and then we'll get into the papers.

MR. ROBINSON: Well, as you know, the Power Authority had adopted the proposal to construct the project in three stages rather than two. And because of the change in the project proposal, essentially -- essentially all of the position papers will have to be updated to take account of the changes. Some position papers will require a rather extensive updating and others will require a moderate amount and still others very little. We intend to, as I said, update all of them and send them out again for all of the settlement participants to review. Then what we would do is to follow the same steps as we've already talked about in the settlement process, have a meeting on these updated papers, including staging, just like this one we're having here, listen to your review comments, incorporate those comments where appropriate and then reissue the papers with your comments ruled in. And then follow the subsequent steps as we've laid

out before. Negotiations, a settlement instrument, management endorsement and adoption of the settlement instrument as before.

The updated papers, which, as I mentioned, would take account of changes due to the staging proposal, will also include where appropriate your comments to date on the first round of papers. So that when you get the papers, these updated papers, all of the things that -- they will be, as the word "update" indicates, up to date, with your comments included and with the staging proposal changes included. We expect to be able to get out the first set of these papers by about the -- to you by about the middle of July. If it's possible to get some of them out a little bit earlier, well, we will. But right now it looks like that's about when the first distribution of the first set will be made. And then we'll carry on from there.

MR. ROSENBERG: Does that mean we're holding everything up, then, until the middle of July, or are we getting another batch and -- are we having another meeting in three weeks on --

MR. ROBINSON: I did -- I did forget to mention that. We are in the process right now of sending out a mailing, which will consist, the last I saw, of two papers, which should reach you, I believe, sometime the middle of next week. And as I recall, the tentative -- well, the meeting date is, I think, in the letter schedule for June 10th. Those in addition -- those two papers, we believe, will -- even though they do not

specifically take account of staging, will not have to go through any great deal of revision because of the staging concept. So we thought it best to try to get those out to you so you can look at them. And in addition, at that meeting on June the 10th we would have a much better idea of what the schedule looks like for the settlement process and the updated papers. And we would want to discuss that with you all on June the 10th as well. We'd like to keep them moving and get things out as expeditiously as possible.

MR. LATTA: Will you use some kind of a code, like a carat in the margin, to identify the changes?

MR. ROBINSON: What we thought we might do -- we considered that. In some of these papers there will be rather wholesale changes. And what we are thinking of doing is when the updated papers are distributed, have you take a look at them, and them comments that you have on those updated papers that we incorporate would be indicated by a carat. Because in many instances it's going to be rather difficult to indicate that a whole section of the paper, in those instances where a wholesale revision is required, to mark those things. So we thought we'd try it this other way and see how that worked out.

If a paper happens not to be much affected by staging, we would have some sort of paragraph to that effect pretty close up to the front of the papers so that it would be apparent to all that the paper was only minimally affected. And those would

most likely be the papers that we'd be getting out first in this update round.

MR. ARMINSKI: Any other comments or questions? Okay. First paper today is S-7 -- papers are S-7 and -8. S-7 is the feasibility and desirabilility of a specific mitigation plan, including worker transportation plan, worker housing plan, local, local hire plan. S-8 is the formulation and implementation of a construction and post-construction plan to monitor significant impacts and the efficacy of specific mitigation measures. And our position is that -- that the impacts of the project on area communities can be mitigated through the measures proposed in this paper. And the effectiveness of the measures would be monitored through the proposed monitoring plan. Let's see, who's going to take this? Sharon?

MS. VAISSIERE: This paper addresses the four plans that Tom just mentioned, the worker transportation plan, worker housing plan, local aid plan and local hire plan. The appropriateness of any one of these mitigation options depends on the extent to which any other is implemented. So there's not a whole lot of very specific information to provide about any one of these right now. The worker transportation plan is supported by the Power Authority, and as you know the worker housing plan, there is a plan for both a camp and a village at the site. And the local aid plan depends on the impacts in local communities, and therefore there will have to be some monitoring of the

situation there to see whether or not those develop. And with the local hire plan, those things will be decided at the time of hiring. And the follow-up on that is that there will simply be a monitoring plan to assess what kinds of impacts arise from these different -- from the project in the communities.

MR. ARMINSKI: Any comments or questions?

MR. ROSENBERG: Yes, the -- how did this -- earlier we talked about the air bus scenario, and it's absent, it's not even mentioned in here. Is this worker transportation plan we're talking about to the project area, right?

MR. ARMINSKI: Right.

MR. ROSENBERG: From wherever the workers may or may not live. And that air bus scenario was sort of a big deal not too long ago when we were talking about it, and all of a sudden it's sort of conspicuously absent from even being -- it's not even mentioned.

MR. ARMINSKI: I guess at the time that we began to develop it -- I should say that it is -- looks -- it appears to be feasible and cost effective to do this, but there hasn't been really any official endorsement of it. And I think that's really the reason it's not stressed in here because it's not been officially adopted.

MR. ROSENBERG: Official endorsement by?

MR. ARMINSKI: The Power Authority.

MR. ROSENBERG: By whom?

MR. ARMINSKI: By the Board.

MR. LOWENFELS: The Board.

MR. ROSENBERG: Oh, okay. Well, we have already commented on that. I think you have our -- You have input into that.

MR. HOSKINS: Do you anticipate that this village for staff families will resemble a military base complex? Would all the restrictions apply to these families that apply to the workers, like no pets, no firearms, the whole blooming thing? Is that how that would be set up?

MR. ARMINSKI: I don't think so. You know, I guess -- you're talking about the permanent village after construction, I would think that the -- you couldn't impose those kind of restrictions on those people.

MR. HOSKINS: So you have a group that could contribute to the impacts that the workers would not be contributing to during construction?

MR. ARMINSKI: Right. Of course, the numbers of people residing in the permanent village would be significantly fewer than the work force.

MR. THRALL: I think, Hank, the estimate -- last estimate I heard was that to operate the project you'd need about 50 people.

MR. HOSKINS: Yes, I think some -- that's what I was thinking, 45, something like that. Somewhere.

MR. ARMINSKI: Would you see that there would need to be some sort of restrictions on those people other than just, you know, hunting regulations and fishing regulations that were in place, and land use regulations for public lands that surround the project area?

MR. HOSKINS: Yes, thinking restrictions, perhaps use of ATV's, this type of thing, if there would be some sort of a monitoring or an enforcement of such provisions like that.

MR. ARMINSKI: In addition to what would be allowed by public land use laws or public use policy?

MR. HOSKINS: Yes, thinking that very likely there will be restrictions imposed, for example, by the Native groups, or the lack -- or, restricting ATV use. When the village and so forth is there during operations, will there be any Power Authority monitoring or anything like this that would be in effect during construction, say, to look after such details, would such details be looked after during the operations phase to make sure that all of these various restrictions are still in effect?

MR. ARMINSKI: I guess what I'm questioning is the need for these kind of restrictions.

MR. HOSKINS: Well, I guess if the restrictions are still there on the books, I wouldn't expect, for example for the Native group to say, "all right, construction is over, so we are going to dissolve restrictions on the use of ATV'S".

MR. ARMINSKI: Right.

MR. HOSKINS: During actual construction, I would expect a part of the monitoring program for the project for APA to -- well, it'd be their responsibility to pretty much enforce these. My question, I guess, would it still -- would APA still have any responsibility or would it just revert back to the Native landowners to say, "Okay, we've got the restrictions we enforce them"? I don't know how that would work.

MR. ARMINSKI: Yes, I think, you know, as a -- Jeff, you can probably tell me, but as some condition of employment, you -- I guess you wouldn't tell your employees that they -- that they were -- could disregard, you know, land use regulations and whatever constraints Natives put on their land.

MR. LOWENFELS: I think you'd do it the same way Alyeska does it, not that that's a perfect model, but Alyeska does contractually require -- let's not use Alyeska, it's a very bad example. The oil companies up on the North Slope require their employees to comply with certain regulations, and whether -- whether it be land use regulations or no drugs allowed or no alcohol allowed, there is a -- there is a mechanism to deal with violations. Now, whether they have a constant monitoring program or whether they come up and make inspections once a year, I'm not sure that that's the level of detail that we're able to work out here. What you're -- what you're saying is that you'd like some restrictions -- you'd like to make sure that restrictions

that are applicable are enforced. And I don't know whether the APA could do that.

MR. HOSKINS: Well, I guess I'm not even -- I'm not trying to make an advocacy position right here. I'm inquir -- I don't know what's going to happen, for example, if there are a bunch of restrictions that apply to workers, if you have a family group like this -- if you've got a restriction on the worker, okay, that says "Thou shalt not have a firearm, you can't hunt". If you've got a 12-year-old boy that wants to dink around something, do these sort of restrictions -- do they apply to him during operations? And this is why I asked about like is it going to be a military base complex where, boom, this is it, you can't have this, you can't have that, regardless of the situation?

MR. THRALL: I would think, just looking at projects that I visited, the permanent village is really a -- you know, it's people's homes --

MR. HOSKINS: -- Yes, exactly --

MR. THRALL: -- and it is permanent. And this is just, you know, supposition on my part, but you can -- the Power Authority probably could put some restrictions on those people about -- in the form of, you know, there are regulations here for land use and you as an employee of the Power Authority are certainly expected to adhere to those regulations. They could probably put some special conditions of employment about firearms.

The degree to which that would be practical and then being able to go out and hire people -- if you make it into a military-style post, you're not going to be able to hire the operators. As I understand, the people who make a living operating projects like this are a fairly small group, they are pretty employable. It's not hard for them to find work. And in order to get them to come to a project, you have to give them some inducements. I mean, these facilities usually are pretty nice, they try to have amenities, especially in a -- you know, where you're removed from cities and everything. So I would say that it probably will be not like a military post, but there will be some restrictions if possible. The other part is that certainly the monitoring program would look after, you know, ATV use, just incidentally, even. If you're out there monitoring the reservoir area for big game impacts or whatever, you're going to pick up that information. So I don't know if that answers your questions, but -- and again, this is my supposition based on what I've seen at some other projects both in the Lower 48 and overseas. And they tend to be pretty similar.

MR. HOSKINS: Yes, I think that my point was I'd like to see the situation addressed in the paper here.

MR. ROSENBERG: I guess it's a little unclear to me just what we're supposed to be discussing regarding this issue. I sort of originally -- when I first looked at it, I just thought this was an issue that's designed to alleviate any kind

of impacts to local communities. And then, of course, by doing that we're moving the workers over to another area within the project. But all those effects I somehow thought we were discussing in different issue papers. Haven't we?

MR. ARMINSKI: We are.

MR. ROSENBERG: Or are we not going to?

MR. ARMINSKI: We are.

MR. ROSENBERG: Is that -- I'm not trying to undercut what you're talking about, but I think it's real important, but I'm just wondering where that fits in --

MR. ARMINSKI: -- Yes, I got off on kind of a sideline here.

MR. LOWENFELS: You're right.

MR. ARMINSKI: You're right. Any other discussions?

Okay, let's go on to F-10. F-10 is the significance of disturbance effects of human instream activities on fish. We've proposed a number of mitigation measures in this paper, and it's our position that the implementation of these measures will prevent or minimize impacts to fish from instream activities. Phil?

MR. SCORDELIS: This papre was prepared utilizing information in license application and several reprints from the literature on construction activities in and around streams. It's somewhat of a catchall in that the issue isn't really discussed in length in the license application. And I

was at somewhat of a loss to think of activities during the construction of the project that would involve instream activities. And the five that I discussed in this paper may not be all the instream activities that could occur out there. And therefore request, if you can think of anything else that I've missed, please bring it up now so that I can address it.

MR. GRANATA: I have a few. One would be the downstream erosion or sedimentation that could result from this work, and addressing the hydrological regime after this based on that type of erosion downstream.

MR. SCORDELIS: As that direct -- as that relates to fish? This paper is directed at the effects on fish.

MR. GRANATA: I would imagine it would -- you could relate that to fish, yes.

MR. THRALL: Is this downstream of the project now? Are you talking about degredation, channel degredation below the dam?

MR. GRANATA: Yes, and slough degredation. I know it was addressed in another --

MR. SCORDELIS: Yes, it was F-4 that we talked about last week -- or last meeting.

MR. GRANATA: They sort of overlap.

MR. ARMINSKI: I guess when we -- last year when we came up with this issue we kind of envisioned this as being an issue where the impact was directly related to human

activity, you know, equipment or, you know, people mucking around in streams, as opposed --

MR. GRANATA: -- Right at that point?

MR. ARMINSKI: Yes. As opposed to kind of like the morphological changes in the stream that result from, you know, a changed flow regime. So I think that's what we're kind of what we're trying to hit on here. We recognize that there's a relationship between the two, but there's some specific measures that you can take with respect to instream activities that would decrease the impacts, and that's what we've tried to address in this paper.

MR. LATTA: Why don't we just give you a copy of the comments, and you can apply them as appropriate?

MR. ARMINSKI: Okay. Dan?

MR. ROSENBERG: I thought you might want to add oil spills to potential impacts on the top of ii, Page ii, "The potential impacts that could occur during these activities include:" and you've got a list, and I was thinking of oil spills, or oil into the streams, some -- you know, whether it's spills or however it gets in there. And also damage to the stream bank from use of equipment and altered -- repairing of habitat.

MR. SCORDELIS: I did discuss petroleum spills, I believe, in some of the ones -- the ones on crossing the stream or instream use by heavy equipment, but I didn't list it up front, so I'll go ahead and put another little circle and

list spillage of petroleum. And also the breakdown of stream banks.

MR. HOSKINS: Just the physical loss, not habitat, though?

MR. SCORDELIS: The stream banks? Is that what you're referring to?

MR. HOSKINS: Yes. And if you --

MR. SCORDELIS: Loss of undercut banks.

MR. HOSKINS: Putting in culverts, this sort of thing you do, it may have a physical loss of habitat, of a spawning bed or something along these lines.

MR. ROSENBERG: Another point to discuss is under the mitigation measures endorsed by the Power Authority. That first paragraph on Page ii says on line three, "Where this goal is not compatible with project objectives, other mitigation goals will be adopted". And we just need to identify a mechanism for having agency input into this whole process, which is not covered here.

MR. SCORDELIS: Is that discussed in the mitigation issue paper, the mechanism?

MR. ROSENBERG: Well, we were -- we talked about implementing one and I don't know where we -- where it's been --

MR. BEYER: Yes, it's partially mentioned in F-11, and F-12 sets out the mechanism for monitoring and how

mitigation will occur. Maybe we can get into that in the next paper.

MR. SCORDELIS: Maybe I can just reference --

MR. ROSENBERG: -- Yes --

MR. SCORDELIS: -- the mitigation plan.

MR. ROSENBERG: -- just reference it. And then, once more, the second mitigation measure, "Acquisition of all required state and federal permits and compliance with their terms and conditions". As I mentioned before, it's not -- not really mitigation, but -- I don't think complying with the law can be --

MR. ARMINSKI: Yes, but the special stipulations are mitigation. Those are the mitigation measures, really.

MR. ROSENBERG: Yes, there will be mitigation but -- okay, put into those permits.

MR. SCORDELIS: I can just -- I can change the wording on Number II there to say that "use or adherence to the" --

MR. ROSENBERG: It's something we discussed before, I didn't remember what kind of conclusion we came to on it.

MR. SCORDELIS: Well, just got me headed in the right direction on that one, so I'll take care of that.

MR. SMITH: I had some questions about the coffer dam construction at Devil Canyon. Should there be some

timing considerations made for that in that we may have increased numbers of salmon moving into the upper reach? Some of the -- past the current blockage at Devil Canyon. Should there be some consideration made for the timing of the year or the method of diversion works and coffer dam construction at Devil Canyon?

MR. SCORDELIS: I'm talked to Mike Bruen (ph) about it at Geotech, and the impression I get from him is that they need to do it in the winter when the flows are lowest.

MR. SMITH: Okay, that would probably be the worst time, then, for --

MR. SCORDELIS: -- As far as --

MR. SMITH: -- passing any --

MR. SCORDELIS: What kind of migrations are there --

MR. ARMINSKI: -- You mean downstream migrants? --

MR. SCORDELIS: -- going to be in the winter?

MR. SMITH: -- Next spring. No, but I'm saying --

MR. SCORDELIS: Oh, if there are fish upstream?

MR. SMITH: Right.

MR. SCORDELIS: For the downstream escapement.

MR. SMITH: Right, providing for -- right now, of course, there's 50, 75, I don't know how many Chinooks

moving through there, but with the project the possibility exists that you could have significant numbers of fish moving into that area.

MR. THRALL: I think you'll find that the engineers would be reluctant to try to divert the river and coffer dam it at high flows.

MR. ARMINSKI: Is there --

MR. THRALL: Diversion and coffer damming is a pretty critical -- I mean, you're really changing -- switching the river course, and there's a lot of things that can go wrong. And they really would like to do it at the lowest flows.

MR. ARMINSKI: Would there be like an alternative -- some sort of compensatory mitigation for that kind of activity? You know, if you can't time the activity to allow the downstream migration, is there something else that we could do?

MR. SMITH: I don't know, you could look at the outlet works that are going to be -- I don't have any idea what the engineering is around that or whether there could be some -- some bypass. One thing I think the monitoring program has to include that stretch, and we -- we've talked with Larry about including that, rather than just the middle river. So you could have a feedback mechanism there. I don't know how reactive you could be if we had a lot of fish moving into that area, then maybe if it looked like it was going to be a sizable problem you could somehow -- I don't even know what possibilities would exist.

MR. THRALL: I think Larry has -- Larry and Don have come up with something here that might be possible. Do you want to --

MR. SMITH: You guys work fast.

MR. ARMINSKI: They didn't even talk to each other.

MR. GILBERTSON: Not really, Jim. If there were large numbers of fish moving into that area, they would certainly be moving into the tributaries, because I doubt -- I doubt if there's a whole lot of spawning substrate in the mainstem in that area. It's pretty large stuff, because of the velocities. But if there were a number of fish moving into those tributaries that you wanted to worry about, you could probably collect the fish at the tributary mouths in the spring and take them around the diversion. I don't think you could net the diversion tunnel. The velocities would be extreme.

MR. BEYER: The velocities are so high that it -- you'd have some real netting problems.

MR. SMITH: I wonder if -- I know that you could -- something like an inclined screen, I don't know whether you could practically install one of those.

MR. BEYER: You could attempt it, but -- and just looking at some -- or thinking about some previous sort of netting operations around reservoirs and stuff, some of them have been real failures. They try real hard and they just don't

pick up the fish.

MR. SMITH: Well, maybe it's just something you could kind of chew on for a while and those ideas are the kind of things that might go into the next iteration of the paper, and trapping sounds like it might be the best way to go if there is a problem.

MR. THRALL: Since it's -- it would be essentially a one-time thing, and to install an inclined screen system would be pretty expensive.

MR. SMITH: Yes, it may be.

MR. THRALL: Maybe just netting and trapping somehow and transport could be done in some cost effective manner.

MR. GILBERTSON: You know, actually it might be easier to collect the spawners the summer before and take them somewhere else if they're -- if they're trying to spawn in those tributaries.

MR. ROSENBERG: I just have a question on Page 9 under borrow and spoil activities. Maybe somebody could explain to me a little bit more about how this is going to work. But it does say that "Feasibility-level studies have not revealed a need for the removal of gravel from streams for the construction of either dam", then further down it does say that "Instream activities associated with borrow and spoil activities include: Removal of borrow material from active watercourses". And just looking at the map it looks to me like some of the borrow sites

are in the -- are in the stream itself.

MR. SCORDELIS: This is somewhat older figure, came out of the license application, and more recent analysis by Geotech personnel indicates that they won't need to go into the streams to build the dams. But I -- when I asked them about roads, they said it may be necessary to get gravel, if we are at a loss for finding gravel somewhere for the road construction, that they might need to get some gravel out of -- off a flood plain or perhaps out of a stream channel. I personally am somewhat at a loss as to what actually is going to go on up there when designs are being made and finalized. But this -- this is the information I've come up with so far.

MR. ARMINSKI: You know, there's going to be an extensive geotechnical program that's going to identify these material sites. Most of these things were done through, you know, aerial surveys, and, you know, the extent of the material sites is probably two to three times larger than is actually required, just to demonstrate that the project's feasible, that there's enough material. So, you know, we're -- once we get the extensive program out in the field we'll be able to delineate the source of material better.

MR. ROSENBERG: Okay, so --

MR. ARMINSKI: We can't -- we can't do any of that until we're authorized to begin the design work. And that's not going to be for some time yet.

MR. ROSENBERG: Okay, I understand that, but perhaps this paper could mention that, that you just don't know a lot of this at this time and that this is what -- and that it's going to have to be essentially -- some of this is going to have to be put off 'til a later date, because you just don't know.

MR. SCORDELIS: I know that borrow site F does encompass both sides of Tsusena Creek, so it's possible that -- you know, that would be one place where they would have a need to get into the stream channel or into the flood plain immediately adjacent to it. But that is a backup site. There's no plan to use that unless absolutely necessary.

MR. ROSENBERG: Isn't borrow site E, which is one of the primary sites, is that --

MR. SCORDELIS: That is on the -- let's see, this map --

MR. ROSENBERG: You can't tell from this map exactly.

MR. SCORDELIS: It's on the north -- it's on the north side, the north bank of the river, from the north bank of the river away from the channel for quite a ways, and quite a ways downstream. Mike Bruen says that he doesn't think they'll need to get into the stream channel there at all. It should be all up -- floodplain and somewhat upland.

MR. ROSENBERG: But theoretically once they

do these geotechnical studies then they find out, "well, it looks like we're going to have to go into the stream channel". So you can't say now that we're not going to go into the stream channel.

MR. THRALL: Until they do more drilling to give you more certainty, and then -- even then you get into and start removing stuff, you can always -- you know, whenever you get into any sort of geological or subsurface you always can run into surprises. My understanding is that people are very confident that there's more than enough material there to take care of the needs. But again, it's -- being 90, 95% confident is not enough, I guess, to put it down on paper that we absolutely won't have to go to any of these back-up sites. And you just simply can't know really until you're actually in there removing it, because you run into some materials mixed in that would make it unsuitable for borrow for some reason. That's considered highly unlikely, I guess.

MR. ARMINSKI: One of the other things, too, is in the staging, the additional excavation for the spillway channel will provide a lot of material for the dam as well, so, you know, there's another area that would lessen the utilization of these other sites.

MR. ROSENBERG: Okay. Yeah, I just wanted to -- some of this what we've just been talking about, just to be brought out so that everybody's just aware of the situation.

MR. THRALL: So you'd like to see a reflection

of the fact that that is subject to change and uncertainties.

MR. ROSENBERG: It is subject to change and that if it does change, you know, then of course we'll just need to --

MR. SCORDELIS: Alice just passed me -- passed us a different figure.

MS. GORDON: It's from AQ-12, which will be the last --

MR. SCORDELIS: -- Air quality --

MS. GORDON: -- paper reviewed today.

MR. ROSENBERG: Oh, okay.

MR. SCORDELIS: And it shows a little better layout of the borrow sites for Watana. And maybe what I'll do is incorporate this figure with this kind of outline in the next version.

MR. ROSENBERG: Yes, that would be good, putting a better map in the revision

MR. ARMINSKI: Any other comments on F-10?

MR. HOSKINS: Just in case you might've thought we changed our mind, we haven't. The Fish & Wildlife Service remains opposed to the project access road from Denali Highway to Watana. On Page 3, first paragraph, the last line, the statement that "Salmon were collected in only two of the 26 streams sampled" implies to me that the other fish species are not considered to be important. I don't think you mean that,

or are not implying that, but that's the way it came across to me. So if that could just be reworded or deleted or something like this. I don't understand the significance of the statement the way it's presented right there.

MR. ROSENBERG: Well, it's necessary for your permits, to identify -- identify that.

MR. ARMINSKI: Well, we --

MR. ROSENBERG: Is that what it's there for?

MR. ARMINSKI: You know, I think there's always been this feeling -- I'm not going to -- I'm not going to say that we discount the other species, but the salmon are the most significant species, seems to be the ones that everyone dwells on, and then we've got the anadromous fish act, too, which, you know, relates specifically to salmon. But I guess we're not trying to assign any specific importance to salmon, because we recognize that the Fish & Wildlife Service is concerned about all the species, and that they all be taken care of --

MR. HOSKINS: Thank you.

MR. THRALL: Could we take the "only" out of that sentence, would that --

MR. ROSENBERG: We're concerned about all the species too.

MR. HOSKINS: My comment over here was deleted.

MR. SCORDELIS: We can do that.

MR. THRALL: -- Well, I -- but noting that salmon were collected in two of the streams. Is that a --

MR. HOSKINS: Yes, I just didn't like the salmon identified as -- as Tom's saying, as being more important than anything else. I think there is a tendency to lump them that way.

MR. LOWENFELS: We all know that they take care of your chloresteral problem better than any other salmon in the world, according to Don Young, but other than that . . .

MR. HOSKINS: On Page 14, under stream crossing, lines 11 and 12 state that the "Scheduling of stream crossings during periods of low fish use can also prevent these impacts". Crossings at this time may not kill fish directly but the habitat may be rendered unsuitable by compaction to later fish use. We recommend that no construction traffic be permitted routinely through fish bearing waters.

MR. ARMINSKI: Is that identified spawning areas or any fish bearing waters?

MR. HOSKINS: My recommendation is that you don't allow any construction traffic routinely through any fish bearing waters.

MR. SCORDELIS: One crossing perhaps to lay in a bridge?

MR. HOSKINS: Sure.

MR. SCORDELIS: Block string (ph) a bridge

or something and then use the bridge?

MR. HOSKINS: Right, yes. I don't like low water crossings in fish streams, this type of thing. And then further down, lines 18 and 19 state "These introductions would be diluted and carried off by the first highwater flow". This refers to silt loads disturbed by heavy equipment. This strikes me as an out of sight, out of mind cure by passing the problem to someone else downstream. We view the silt distribution as an avoidable adverse impact that should not be allowed to occur. If when heavy equipment has to cross fish bearing waters, culverts or bridges should be installed, just as we're talking.

MR. SCORDELIS: I think what I was referring to there was the initial crossing you're bound to get a little pulse of sediment as the item -- the piece of machinery moves across the stream.

MR. HOSKINS: I think I realize what you intend but I don't think it came across quite that way. To me, anyway.

MR. SCORDELIS: I think I can reword that one.

MR. HOSKINS: On Page 15, instream use of equipment. The BMP manual on sedimentation and erosion control does a good job of discussing procedures under this heading. This section could actually be replaced by the BMP references as included in mitigation measures. I think you went to a great

deal of work right there, Phil, in putting this section in there when the BMP manual already does it pretty much for you.

MR. SCORDELIS: What section are you on?

MR. HOSKINS: Page 15, instream use of equipment.

MR. SCORDELIS: Just -- Under this section just reference the BMPM?

MR. HOSKINS: Yes, that would -- that would've done a good job.

MR. SCORDELIS: I'll have to read through it again and see what you're getting to.

MR. HOSKINS: Okay, on Page 17, borrow material deposition. The discussion on coffer damming should be expanded. Will the coffer dams entail the use of sheet piling? Why can't shot rock with a low silt content be used in coffer dam construction? So I'm ask -- looking for an answer right now, I'm asking you to consider these things.

MR. SCORDELIS: Could you have these typed up and --

MR. HOSKINS: They're all -- they're all read right into the --

MR. SCORDELIS: -- That's right, okay --

MR. HOSKINS: -- into the minutes here. On Page 22, please consider adding another mitigation measure covering the investigation of all waters to be impacted and the

relative effectiveness of any fish passage structures installed. Thank you.

MR. GILBERTSON: This -- the post installation?

MR. ROBINSON: Hank, are you referring there to, for example, culvert and bridge installations, things like that, where you say fish passage structures?

MR. HOSKINS: Um-hm. This gets into the monitoring plan that I think we've touched on briefly, and I think we all expect it to be covered in their, just what sort of a scheduling would be appropriate to make sure that we don't have hydraulic jumps or some other fish barrier right there, how often are they going to be checked, examined for debris, or anything else, and maintained accordingly.

MR. ARMINSKI: I've got a question for Dan or Mark. Does the Fish & Game Department permit low water crossings?

MR. KUWADA: I think it's mainly restricted to a period prior to -- or, after egg emergence. Sometime between May 15th and June 15th, I think, is when most of the crossing takes place.

MR. ROSENBERG: We'll check for you.

MR. KUWADA: Yes.

MR. ARMINSKI: Pardon me?

MR. ROSENBERG: We'll check for you.

MR. ARMINSKI: Any other comments on F-10?

MR. KUWADA: I had one other question here on borrow material deposition. It says that there are a number of variables involved and it couldn't be determined if turbidity increases would be sufficient to cause fish overwintering downstream. I was just wondering if there should be some type of monitoring provision for sedimentation and turbidity effects on overwintering fish.

MR. ROBINSON: What page is that on?

MR. KUWADA: Page 17.

MR. ARMINSKI: Or maybe better is a discussion of fish overwintering, I think, in -- let's see, the paper I just read, what was that? F-3 had a discussion of overwintering and I think the indication from that was most of the overwintering is in, you know, the side sloughs and side channels. I think they probably wouldn't be directly affected by any silts introduced into the mainstem. Is that --

MR. GILBERTSON: -- Yes, that's true --

MR. ARMINSKI: -- a fair statement?

MR. GILBERTSON: Yes, that's true for the juvenile salmon. Resident species, rainbow, grayling, do overwinter in the mainstem, some of them. So they would be in that area.

MR. THRALL: I think there probably will be a stipulation on permits, would require you to look at the

turbidity and silts that you're getting from your coffer dam placement.

MR. KUWADA: But there's no specific monitoring provision that you anticipate?

MR. ARMINSKI: Well, if you had to meet the water quality standards, I'm sure that there'd have to be a water quality monitoring program to show that you're meeting those standards.

MR. KUWADA: Okay. Well, I just didn't see it in the monitoring there for mitigation.

MR. ARMINSKI: Bob, were you going to say something?

MR. CLUPACH: What is the flow of Tsusena Creek and Deadman Creeks respectively?

MR. SCORDELIS: All that comes to mind right now is a low flow -- what is it, a one in 20-year low flow was measured at 27 cfs, and I can't remember if that is summer or winter low flow. But it's -- I'm guessing 100 cfs. They're fairly comparable.

MR. CLUPACH: Are they?

MR. SCORDELIS: And I'm guessing 100 cfs. I don't have that information.

MR. CLUPACH: What is anticipated for the water use for 4700 people out at Tsusena Creek?

MR. SCORDELIS: I think it was one or one

and a half cfs. That's discussed in F-8, I believe, borrow -- or, camp construction, effects of camp construction.

MR. CLUPACH: And the waste water that's discharged into Deadman Creek, is that gray or brown water?

MR. SCORDELIS: I'm not sure what those terms mean. It will be given secondary treatment prior to discharge.

MR. CLUPACH: Okay, gray water is typically like soaps and dishwashing detergents, things like that. Brown water, of course, is number two.

MR. SCORDELIS: It's going to be treated camp effluent. That's the terminology I've found in the license application. I imagine it's all of the above.

MR. ARMINSKI: Any other comments? Okay, let's go on to F-11. This is the feasibility and desirability of specific aquatic mitigation options, including structural modifications, flow allocation, physical habitat modification, hatcheries and management options.

MR. ROSENBERG: Should I start on this? Oh, is somebody going to go through it first?

MR. LOWENFELS: Hank's gone, so before you go through it Hank's got to be back.

MR. ROSENBERG: Well, can we go -- Did you have a question?

MR. KUWADA: Well, since we aren't into F-11 yet, I was wondering if we could go back to one more point on

F-10, and talk about on Page 16, a control gate. I was wondering if that could be explained a little bit. I'm not real familiar with what that's supposed -- how it's going to be designed or really what the thing is going to look like.

MR. ARMINSKI: What page is that, Mark?

MR. ROSENBERG: Page 16, under diversions. About line 1, 2, 3, 4, 5, 6 --

MR. KUWADA: -- Yeah, says a control gate --

MR. ROSENBERG: -- Line 6.

MR. KUWADA: -- will create a head pond approximately 50 feet deep. I was wondering if somebody could explain that a little further, I have no idea of what this thing is going to look like.

MR. ARMINSKI: I don't know what it's going to look like, but it's -- it's going to be a, you know, a steel gate that they'll be able to back water up with. I don't know if it's going to be a -- you know, like a sliding gate or what, but --

MR. KUWADA: It's going to be over the diversion tunnel entrance?

MR. ARMINSKI: Yes, it'll be at the mouth.

MR. KUWADA: And how is that going to create a pond, then, or a pool in front of it?

MR. ARMINSKI: Well, just by -- just by raising the water level behind it.

MR. SCORDELIS: It'll restrict flow entering into the diversion tunnel --

MR. KUWADA: -- To some extent, and that'll back up --

MR. SCORDELIS: -- Inflow won't equal outflow through the tunnel and so it will back up, create a diversion pond there, a detention pond, whatever you want to call it.

MR. ARMINSKI: It's basically a valve. I mean, you can think of it as a valve on a pipe.

MR. SCORDELIS: The idea is to back the water up so that it covers the mouth of the diversion tunnel and ice -- therefore ice won't be forming in the tunnel. It's in operation during the winter.

MR. KUWADA: And the thinking is that fish are going to concentrate in this pond?

MR. SCORDELIS: Well, if it's 50 feet deep, it's -- they're liable to.

MR. KUWADA: Right at the mouth of the diversion tunnel?

MR. SCORDELIS: Well, somewhere in the pond, and then if they get -- if they are swimming or are carried towards the mouth of the diversion tunnel, then the high velocity could entrain them and they just move on downstream, get sucked on downstream. That was my imagination at work. If somebody else would like the facts, we did read that in the license application as

one of the possible impacts.

MR. ARMINSKI: I'm not sure, we may have some drawings, conceptual drawings of that gate in Exhibit F. I haven't -- it's been such a long time since I've gone through that I don't know if it's depicted in there or not. But --

MR. SCORDELIS: I don't know. The diversion tunnel is outlined in detail on that. I know that the dam -- dam sites were, but I can't recall the diversion tunnel.

MR. KUWADA: Yes, I'd just never seen it before, so I was kind of wondering what it looked like. That's it.

MR. ARMINSKI: Okay, F-11, I won't repeat the issue, but I'll just go on to say that we've taken the opportunity to develop some mitigation measures and we plan to refine these mitigation measures. We believe that the ones that are described in this paper are feasible and will maintain the net habitat value of the Susitna River.

MR. BEYER: Let me just briefly explain how the paper is derived. Aquatic mitigation planning has been going on since almost the inception of the project. And some of the initial mitigation planning showed up in the license application, and then last December we had a workshop on aquatic mitigation planning. Went into quite a bit of detail about some of the different items that had been proposed. And from that workshop there were some -- there'll be an additional update to that mitigation

plan which will encompass a little bit more than the December plan, and the additional things it'll encompass are primarily in the areas of construction and some additional information about impoundment mitigation planning.

From the sort of evolving mitigation plan, this paper was derived, and the paper tries to encapsulate some of the key points of where mitigation planning stands today. Within F-11 the mitigation measures are segregated into two sort of broad category. One category is the one in which modifications can be made to the design or operation of the project, and in that way you can tend to mitigate some of the potential impacts that might occur. Items under this category include the fixed cone valves, the multilevel intake and flow regulation itself.

In the second category there's measures that really cannot be mitigated with the project design. In this category there's -- although flow is included in category one as something we can regulate, we don't feel that flow will handle everything as far as downstream effects. And one of the areas we don't think it'll be able to mitigate for effects is in the area of chum salmon spawning. And so therefore in the second category we're looking at structural modifications to the sloughs or potentially artificial propagation, depending on which option is finally adopted, as an additional way to mitigate for chum spawning lost.

In the second area also there's impoundment mitigations. Under that there's sort of three levels of mitigation that are

being examined and proposed and one is looking at the artificial propagation of grayling, provision of public access to lower river areas, and we're also going to be looking this summer into stream enhancement measures in the lower river looking for potential additional habitats for resident fish.

Under the -- another subsection of category two there's the construction mitigation, and basically this is an incorporation of practice and measures to the Best Management Practices Manual in the construction documents. There's much more detaili about how this is going to work in the monitoring plan. We had some discussions recently about what this all means, and I think we're going to add some more detail into the monitoring plan about the implementation of the BMP's and how all this is going to work.

MR. ARMINSKI: Comments? Dan?

MR. ROSENBERG: Okay, first off, on Page 1, the discussion under "The APA's goal", I don't think that's really accurately stated. And just for the sake of completeness and to avoid confusion, the -- we need to stick in there something about maintaining habitat values and habitat parameters. We've been through this before, the goal -- the mitigation goal is -- Well, as the Power Authority stated it to us in your reply to our comments on the fish mitigation plan, that the mitigation objective of ADF&G of maintaining values of habitat parameters that support existing fish populations of the Susitna River and its tributaries is in accord with that of the Power Authority.

And so I'd just like to see -- F-10 has it stated fairly well, and so this is just a little bit inconsistent with some of the other statements on the goals.

While we're on that same page, the next to the last line, "Where it is not feasible to achieve this goal", and I guess I'm still unclear as to how this whole feasibility thing is going to be decided, either, you know, economic feasibility, physical -- the actual physical manipulation, the feasibility of those, when and where and how will all that -- this feasibility be -- you know, come to light? Is it just going to be the Power Authority saying, "Well, it's not feasible because it's going to cost us too much, or it's not feasible" --

MR. GILBERTSON: -- That -- that will be the subject of flow negotiations during what we have been calling the comparisons process. I don't know that decisions are going to be made during that process, but that's going to be the subject of discussion during that process, of looking at both habitat and economic consequences of different flow scenarios.

MR. ROSENBERG: Okay. Maybe, you know, the paper could just mention how these -- when this will be and how this will be decided. Or what process, I mean, the process that will decide feasibility.

Further along it does mention in here somewhere that there will be a -- or will possibly be a testing of the feasibility of the habitat modification, slough modification at some

appropriate time, and that's about all it states. On this flow chart on Figure 1, Page 3, perhaps we could stick in there a little box that has the testing of the plan. I think all of the agencies think that that's an important point, if I may speak for everyone at this time, that we'd like to see this whole slough modification thing, if that's what we're -- the way we're going to go, be an experiment done to test its actual workability. And the paper doesn't define very well when and where -- when this will be done, it leaves it rather vague. I'd like something a little bit more concrete. And I'd like to see it in this mitigation plan development and implementation figure. I guess that was on Page 2, paragraph three, is what I'm referring to, I believe. (Pause) Well, no, maybe it's not either. But it is in here.

And another comment on the preferred measures for mitigation. I know, okay, iii, third paragraph, "Within the impoundment zones".

MR. THRALL: What page is that, Dan?

MR. ROSENBERG: I'm sorry, iii, small letters.

MR. THRALL: Oh, in the summary?

MR. ROSENBERG: In the summary, yes, that's where I was confused. I think I was looking further back. The third paragraph, fourth line -- it's the third -- fourth line, "Thus, mitigation measures are focused on either artificial propagation, primarily of grayling, and stocking . . . provision of public access . . . stream enhancement measures. . ." First

of all, I think that these should be ranked by the preferred alternative, and in your comments to us on the fish mitigation plan -- let's see. You did do that -- you did do that, you did recognize our preferred alternative as the latter two of those three. Okay, artificial propogation of grayling is the least preferred of the three, or the least -- it'll come into play after the other two have been implemented.

Okay, now, thirdly, number three, stream enhancement measures in the middle and lower river basin that may make additional habitat accessible to resident species. This is the first time I've seen resident species; previously you've always discussed salmon. And in your comments, you reiterate that, you mention salmon. We mention salmon and you agree with us on salmon enhancement downstream. And this paper keeps referring to the resident species. So it's all very confusing at this point.

MR. BEYER: I guess I'd have to question, would you be trading, then, resident species for salmon? I have a little bit of difficulty here. If the option is there to enhance potential resident --

MR. ROSENBERG: -- Yes, that -- that was clear, I believe, in our comments on the fish mitigation plan, out of kind mitigation for resident species by improving access in the lower river, in the east side tributaries, and by enhancing -- further enhancement of salmon habitat downstream. And that was all recognized and accepted in your comments -- in your reply

to our comments.

MR. BEYER: We can change it to the same.

MR. THRALL: Speaking out of total ignorance, is it not possible to say "accessible to resident and anadromous species"?

MR. ROSENBERG: Oh, yes.

MR. THRALL: I mean, is that a technical contradiction or anything?

MR. GILBERTSON: I was just going to say, we could just make it both. Because one of the things that we're going to look at is things like taking -- is eliminating passage barriers on some of the tributaries, taking the passage barrier out and it's going to open up habitat for both.

MR. ROSENBERG: Um-hm, that's fine. That's fine. Let's see. (Pause) Just bear with me a minute, please, if you would. I had the same on Page 9 under structural modification, I just had the same question of feasibility as far has anybody identified the cost of maintenance of this whole program of structural modification?

MR. ARMINSKI: I think Larry did, didn't he?

MR. ROSENBERG: So that's all been done?

MR. GILBERTSON: Yes, there was some --

MR. ROSENBERG: There's been economic forecasts of maintenance costs?

MR. GILBERTSON: Right, there are some preliminary cost numbers, I believe, in that fish mitigation plan that we had the workshop on. And then this next version will update some of those numbers, as I understand it.

MR. BEYER: Yes. I believe clear back in the license application there was some original numbers on -- in a general sense of what maintenance would cost over the years.

MR. ROSENBERG: On Page 11, the first of those -- let's see, under impoundment area, one, two -- the second paragraph, "Impoundment mitigation options to compensate for lost grayling habitat include", and it talks about recontouring of borrow sites to develop ponds for planting of arctic grayling. We have discussed that especially in reference to perhaps alleviating some of the pressures from construction workers fishing along there. Especially with staging, the whole thing is extended out over a longer period of time. But there is no discussion here at all of that one, of just this whole recontouring of borrow sites. It's not really discussed in reference to the project itself.

MR. BEYER: Yes, the reason a lot of these things don't go into a lot of detail in this particular paper is because they're covered in other position papers. There's -- I can't recall which number, but there's the impoundment fix, F-5, and perhaps maybe the best thing for us to do is to refer to that, maybe add a little bit here, but sort of keep it within

that other issue paper.

MR. ROSENBERG: It would be -- it would be nice, actually, if in the future if we could start referencing back and forth to all these papers, just because there's getting to be so many of them now and it is -- it is getting to be a real tracking problem.

MR. BEYER: Yes, in some instances we do that throughout this one, but we'll -- we'll add something there that references to the other.

MR. ROSENBERG: Yes, I know it had been -- it had been discussed before and I . . . And then just on that same page, once more just mentions -- only mentions resident fish, the very last line.

MR. THRALL: On that -- the first one about the borrow ponds, is your interest there about wording to the effect that you make these areas available to the construction work force to alleviate fishing pressure on other areas? Is that --

MR. ROSENBERG: Yes, we -- well, we discussed the possibilities of if some borrow sites are used early on in the project, whether they could be rehabilitated early on.

MR. THRALL: Could I just ask a question here? We were up at the site the other day and we were looking, there's a whole series of lakes up there, some of which I think have no fish. I'm not sure, some do. But what about, say, taking

some of those naturally existing lakes and even over the summer a put and take sort of trout fishery that is available to the workers, what would the Fish & Game's thoughts be on that? Particularly in terms of whether there might be some small resident population one of the lakes. Would you have a problem?

MR. ROSENBERG: No, I think -- I think the ultimate -- I don't think so. I think the ultimate goal would just be to alleviate fishing pressure on some of these lakes that do have fairly good resident fish populations, rather than have those overfished by workers, we might be able to mitigate that by making -- you know, providing them with other areas that would be both more accessible and satisfy whatever it is that they desired as far as fishing goes. Without having to --

MR. SCORDELIS: How would -- How would Fish & Game control, say, the natural populations? Would those lakes be closed to fishing or would it be hook and release? What are the options that you can use to steer people into these stocked ponds?

MR. ROSENBERG: Well, now we're getting back into regulation. There are options that could be used. The idea is to first try to avoid having to go to those options, I believe, if we can.

MR. SCORDELIS: Well, if you give people a choice between fishing for nine-inch stocked rainbow and a 20-inch grayling or a 20-pound lake trout, I know what choice I would

make.

MR. ROSENBERG: Yes.

MR. SCORDELIS: That would have to be taken into consideration.

MR. ROSENBERG: I guess I don't -- I really am not that familiar with the logistics up there, either of how far people have to go from the construction camp to get to the 20-inch grayling versus the rainbow or what have you.

MR. LATTA: For the 20-pound lake trout it'd probably be a ways.

MR. ROSENBERG: Whatever it was. I -- that does need to be considered, I'm just not familiar with it to -- but the idea -- the idea that I'm just getting at now is if we can alleviate some of that pressure, perhaps.

MR. THRALL: So using some of those lakes up there to throw in a bunch of catchable sized trout and maybe providing some incentive in terms of access for the workers to go pull those out --

MR. ROSENBERG: -- Yes, that and perhaps --

MR. THRALL: -- would be something you'd probably --

MR. ROSENBERG: Or in the borrow pit options too.

MR. ARMINSKI: Does that require a license?

MR. ROSENBERG: What's that, fish in a borrow

pit?

MR. ARMINSKI: No, I mean to stock a lake. I know it doesn't take a license, no. I mean, does that --

MR. ROSENBERG: I don't know. Do you know, Bob?

MR. CLUPACH: If you're going to transfer fish from one drainage to another, it goes through a whole gambit of rules from the respective divisions of Fish & Game. Mainly that -- the hold-ups would be the pathology aspects of -- which we've discussed in other issues. But in those situations in lakes that are just close by, I wouldn't expect to see too much problem in transferring fish from one lake to another, especially right there in that vicinity. You asked another question I forgot.

MR. ARMINSKI: That's really the only question.

MR. THRALL: Would it be simpler for the Power Authority to have an RSA from Fish & Game and let Fish & Game do it?

MR. CLUPACH: Good question, I don't know.

MR. THRALL: Can you permit yourself more easily than --?

MR. CLUPACH: Oh, I'm sure we could permit ourselves.

MR. ARMINSKI: Any other comments?

MR. KUWADA: I had one comment here on Page 7

where it starts with "In summary, project flow regulation is considered the primary means to mitigate for with-project changes in juvenile chinook and . . . for maintaining chum spawning and egg incubation habitat". I haven't been involved in everything that's gone on before this, but I was just wondering if this is intended to indicate that the instream flow model relationships report is going to focus primarily just on chinook and chum spawning or if we're going to get an evaluation of the whole range of species and life stages?

MR. BEYER: Do you want to answer that?

MR. GILBERTSON: The instream flow relationships report?

MR. KUWADA: Yes, I thought that -- well, we've got Volume I but it's pretty much -- you know, we don't have the whole comprehensive analysis yet, and I don't know what to expect, what's coming down the road. This would seem to indicate that, you know, you're going to focus on these particular species and life stages.

MR. GILBERTSON: Okay, our position has been and our feeling is that those are the appropriate two fish to -- and life stages to give primary consideration to, just because of where they are when they're there. We see it as being probably the most critical and most sensitive use of the mainstem affected habitats and that was the rationale for doing that. But we are going to cover the other species and the other life stages during

flow negotiations and the comparisons process. And we'll -- we will be supplying documents to you, either in the form -- some of it will be in the instream flow relationships report, eventually. There'll be other documents that will include some of the other species and uses. Some of them -- some of that information may just be in the form of memorandums, or maybe a little more sophisticated than a memorandum, but maybe a species document of some kind.

MR. KUWADA: Okay, so in terms of the instream flow relationships report, you're saying that we will have some type of comparative analysis for all the species, not just chinook and chum and then memorandums for some others and -- I guess it's hard for me to put together exactly what you're saying here. Are we going to have one document that addresses all these species and life stages in terms of flow?

MR. GILBERTSON: No.

MR. KUWADA: There's going to be just chum and chinook?

MR. GILBERTSON: Well, the instream flow relationships report did address the other species and life stages. It did talk -- it presents them and it presents the rationale as to why -- why we shouldn't be worried about coho spawning. They don't spawn in the mainstem, so why do we need to have an instream flow relationship, a flow versus habitat relationship for coho spawning?

MR. SCORDELIS: Larry, doesn't the report go through the steps by which chum incubation and chinook -- juvenile chinook were selected as evaluation species? Why we can center on these two species and not concentrate on sockeye, cohos and pinks?

MR. GILBERTSON: Yes, it does go through that rationale. I don't -- I hope there's no confusion here. Has that -- If the agency people feel that we have -- we are in error by saying that the best use of water is to protect chinook rearing habitat, we'd like to hear about it. But the point --

MR. SMITH: -- No, I think we've agreed on that, but it was our understanding that that analytical process to back up or refine the flows that we have designed principally for those two species and life history stages would be available, that information would be available to us so that we could essentially fine tune any flow if there was a change in rainbow trout or whatever, that we would have comparable data at some future date. And I guess that was going to -- I assumed it was going to be part of the next version of the -- Woody's work of the relationship report, Volume II, and it would come in the -- I lost track of the -- what we're calling the various reports, but the comparisons report would allow that type of information.

MR. HOSKINS: Are you telling us now there won't be a Volume II?

MR. GILBERTSON: No. No, I'm not telling

you that.

MR. HOSKINS: Are you telling us there will be a Volume II?

MR. GILBERTSON: Yes, if there's reason for a Volume II, yes.

MR. HOSKINS: Now this is quite a shift in what we've been hearing up to this point. Because even when we got Volume I here two or three months ago -- it wasn't that long ago, of Woody's report, we were told then that there would be a Volume II that goes into more detail. As Brad says, it develops sequentially how you arrive at a Case 6 recommendation. And now it's almost a matter of a Case 6 recommendation is here and it's working backwards to support it, to make these evaluations.

MR. GILBERTSON: No, I -- if you want -- there will be additional documents come out. The -- I suppose that we could take all this information that we planned on giving you and put it between two pieces of paper and call it the IFRR report, Volume II. And I'm not being facetious. We may -- we may put out an IFRR's Volume II, but we're not sure that there's a reason to do that. And all this information that we promised would be contained in the instream flow relationships Volume II we're going to provide you. The flow versus habitat information for chinook rearing, chum spawning, sockeye spawning. All these species and habitat uses for which those kinds of relationships are appropriate, we're going to provide it. And we're going to

provide any information we need on some of the other parameters that we've talked about, how to evaluate temperature, turbidity, gas supersaturation, these things.

MR. HOSKINS: Primary productivity.

MR. GILBERTSON: Primary productivity.

MR. SMITH: And whether you call that Volume II of the IFRR or not doesn't matter, but we are going to require something to support the F-1 discussions, the flow negotiations, something like the -- what the comparisons report was to have been, or is going to be. Are we still getting the comparisons report, or that won't actually be a report, as such, it'll be just a series of meetings now?

MR. GILBERTSON: The comparisons -- the comparisons report will be a report documenting what went on in the comparisons process. And that's where I see all this information being brought together into a report to document how -- what was used in the flow negotiations and how that flow as negotiated.

MR. HOSKINS: When is -- when do you anticipate this F-1 paper to be available? Are you just going to wait entirely until you get all the information you need for the three-stage and then just address it then?

MR. GILBERTSON: I believe the F-1 paper is scheduled to come out now toward the end of June. Do you remember, Jack, what the latest decision was on that?

MR. ROBINSON: On Position Paper F-1?

MR. GILBERTSON: F-1, yes.

MR. ROBINSON: I think that's one of the ones where we have to take a look and see how staging's going to --

MR. GILBERTSON: -- Well, staging's going to affect it. I'm sorry, we -- that was part of a discussion yesterday about the timing on that, and I forgot what the author finally decided would be an appropriate date. But this F-1 position paper is not going to be a -- Given the status of the flow negotiations process that we have, the agency consultation process that we have going on right now on flow, that position paper can't really go too far beyond just describing the situation that we're, or the status of that process, and maybe laying out where we plan to go from here.

MR. SMITH: It sounds like it's going to be important for the discussion in that paper to reassure the agencies that the process hasn't been abbreviated because we've agreed that the principal evaluation species should be juvenile chinook and chum spawning. There will be an analysis of the other species that will go along with that. Maybe it will be simply a discussion, like your point on coho salmon, or maybe it will maybe an analysis that isn't quite as intensive as it is for the two evaluation species. But that there will -- we're not going to just make the jump and say, okay, all we have to worry about now are these two species, and then we just discuss away the rest

of them.

MR. GILBERTSON: Well, what I'' intend to have people start working on, and I don't think these would take a long time to put together, and so we should have them available reasonably early in the summer, is a set of documents -- a set of small reports or memorandums, whichever they turn out to be, taking each species and -- For instance, taking coho salmon and describing what we have learned about coho salmon in the Susitna River, put up the flags where there is a potential conflict between coho salmon habitat and the project, and then recommend the method that we would use doing comparisons to assess impacts on coho salmon due to the project.

MR. SMITH: At one time I think that was going to be called the comprehensive fisheries report, Fish & Game, or at least it sound a lot like that, and then that was dropped. Is that -- Do you recall that?

MR. GILBERTSON: No, it really --

MR. HOSKINS: Larry, here on Page 10 it says "A full discussion on the issue of potential impacts due to altered flows is described in Position Paper 1". I guess this is what I was thinking, a full discussion of what the impacts will be on this three stage type thing, and I don't think you can get it ready by, what'd you say, first of June or something like that?

MR. SMITH: Put "potential fishery impacts"

in there too.

MR. ROSENBERG: I'm just --

MR. GILBERTSON: -- If --

MR. ROSENBERG: Sorry.

MR. GILBERTSON: If what you're looking for in Position Paper F-1 is a detailed impact assessment for all species and all life stages, then we can't prepare that position paper probably until about September or October. Because we don't have the habitat versus flow relationships yet from the instream flow work. I mean, those people are in the -- carrying on the activities right now to prepare those things, and we don't anticipate having their final version of those flow versus habitat relationships until around the first of September, something like that. So if you -- I guess to some extent it depends on what you want in that position paper. Because we weren't going to have those tools a full impact assessment on all species and all live stages, that sort of thing, our approach to this position paper was just to describe the process of the flow negotiation, where we're at, the fact that right now the Power Authority's position is Case E-6 is the best set of flow constraints, and, you know, giving -- giving the rationale for that and then describing where we're at in the flow negotiation process and where we're going to go.

MR. ROSENBERG: Yes, if these position papers are intended to be a summary of the issue, the issue was -- of

course the issue is the flow, and we were all under the impression that there was going to be Volume II of the instream flow relationships report. We've had -- you know, the evolution of -- I guess I don't understand the evolution of the whole thought process from where we at one time were going to have an instream flow relationships report and the economic and environmental comparisons report that was going to give us all this information that we've just been talking about. And of course we agreed to the thought that, well, first we'll get Volume I of the IFRR report, and then of course then we'll see Volume II of the IFRR report. Now all of a sudden --

MR. GILBERTSON: Well, one of the reasons --

MR. ROSENBERG: -- this whole thing has come up and it's totally out of the blue.

MR. GILBERTSON: Maybe we should have a meeting at another time to --

MR. ROSENBERG: -- Yes --

MR. GILBERTSON: -- discuss this in more detail, because I think you're -- I don't think there's a problem, I think it's just we've called something a one volume IFRR for a long time and now I'm going to provide you the same information but in smaller pieces. But one of the reasons for that, talking about the evolution of the process, is that as we had originally had this whole thing planned out, we -- agency interaction in the process was pretty much darted in certain places along the

ball and arrow chart, if you remember right. We were going to do an economic environmental comparisons report and then hand it to, and let you review it and this sorts of thing -- this sort of thing. Now, what we have done is try to bring the agency people into the process all the way along, all right, so the agency people are actually part of the comparisons process, part of the history that will go into the document, and perhaps even part of writing the document. And so because of those changes, the increased emphasis on agency consultation in those things is just, I think, more effective and more efficient and it makes more sense to keep giving you these pieces -- these things in smaller pieces instead of waiting 'til we go through our whole analysis, pull everything together, you know, put two pieces of paper around it and give it a name and then hand it to you and let you review it. I would rather have you going over the components and going through the process that will eventually be reported in those documents. That's --

MR. ROSENBERG: Yes, well, we appreciate being involved in the process.

MR. GILBERTSON: But that's the reason why some of these things have changed.

MR. ROSENBERG: I understand how some of these things may have changed, but as part of our involvement in the process we were all led to believe that this is how the process was going to go. And if you want to change the process,

that's fine, it's just that we should be involved in these changes and it just sort of came up out of the blue.

MR. GILBERTSON: The process hasn't changed. As of right now there is still planned an instream flow relationships Volume II.

MR. SMITH: I think the meeting is a good idea, just to get us back -- Like you say, I think it's likely we don't have a problem with this stuff and it's just there are some internal changes going on that -- that we're picking up as being more significant than they might be about what actually the Volume II of the relationship report is going to be. I think both F-11, certainly F-1 and F-10 are all going to be changed so severely by the stage development that I'm not sure what real benefit we're achieving today in discussing them. Even something as basic as the primary evaluation species, I'm not so sure that those would remain constant if there's significant changes brought on by the stage development. One thing we're going to look for, I think, in the F-1 is a separate discussion of each stage of the stage development, and assuming that we might have to live with that for a longer period than is currently being planned, a full analysis of just the Little Watana alone, a full analysis of the Little Watana and Devil Canyon and a full analysis of the ultimate capacity. It just seems reasonable that to generate a certain amount of energy with a lower head dam you're going to have to release more water, and possibly a lot more water,

which seems like you would have trouble maintaining any flow that you're talking about under the current scenario. And while right now because of the influence of the mainstem the primary evaluation species tend to make sense, if these new flows look like there's nothing we can do to support those, then maybe we should be looking at possibly some evaluation species that may not be there right now, or may have minimal association with the mainstem. I don't know, but -- And I'm sure that that type of analysis hasn't gone on and won't go on for a couple months. So I don't know how far -- I hate to throw water on the whole meeting, but I don't know how far we can go on these things.

MR. THRALL: Well, some of that analysis has gone on in a preliminary way and is continuing on. But, again you know, the only observation on all this that I can make is -- well, two observations. One is we are in a state of flux right now, and we -- you know, we'd like it better if we weren't, I'm sure the Power Authority would like it better if we weren't, and I'm sure you would like it better if we weren't, but we are with staging, it's going to cause some disruptions. And the other thing is that this whole instream flow approach is -- you know, planning by committee is never neat and efficient. But that's what we're in, and we're trying to -- we think that that's good. In the end, it's going to be good, but it's going to be messy. Certainly there are sometimes appearances that we're -- we're not announcing things, you know, with enough foresight in how

our thinking changes, but when you're, you know, standing in the middle trying to dance fifty different ways it gets -- it gets confusing.

MR. BEYER: I think you're right, Brad, in that a lot of these things have to be re-examined and everything, but there's a lot of things in mitigation that aren't going to change an awful lot with three-stage mitigation. I mean, the primary goal in the mitigation plan for the Power Authority downstream of the project is useful. And then you have -- the process, I guess, is there, and that's the key thing you can't just scrap. So not all is lost by discussing it. The cone valves probably won't go away, the multilevel intakes won't go away, the impoundment mitigations we're talking about are not going to change an awful lot. And certainly if you have comments on those things, like, you know, Dan has had, or whatever, continue to ask them, because three-stage development won't change an awful lot of those.

MR. SMITH: I don't even -- you know, I think that you just -- your ability to make that statement means that you're -- you're privy to some information that we don't have, or I don't understand exactly what the engineering considerations are for the stage development. I -- you mentioned there's no change in the cone valves, but it seems to me like there might be a lot of change in what the project flood these things can handle then. So, you know, there are some changes --or maybe

there aren't, if the design flood hasn't changed.

MR. BEYER: Yes, and a lot of those things are in, I'd say, the preliminary stage of analysis. And right now we are going back through and asking, well, is the design still for one 50-year flood, to hold that back, and as a biologist I'm asking, are your cone valves in the same place, you know, and what is your multilevel intakes going to do. So those are re-examined, but some of the basic things of leaving out -- or, trying to avoid supersaturation are still there, and still priorities.

MR. THRALL: Again, we are in this analysis and we haven't told you what those results are because we're doing it, and I don't think it's -- would be good of us to go to you right now and say, "okay, we've done an analysis on flow and we've found this" when we're -- you know, we've only done a preliminary analysis, and then come back to you a month later and say, "Oh, by the way, forget what we told you last month about this analysis what we now know is this", and then a month later tell you something different. And as soon as we get to the point of where we know what we're talking about with a little bit of certainty --

MR. SMITH: -- No, I didn't mean to imply that you guys are keeping us in the dark or anything like that. It's just that it's hard for us to talk about which things aren't going to be appreciably affected and which things are going to be affected by the stage development at this point because we

we don't know.

MR. THRALL: But I don't think going through this and getting your comments is at all a waste even if there were some major changes, because I think we're discussing some issues in here that would be applicable to pretty much any kind of a project on the Susitna River. I think the sort of things we're talking about are philosophical to some degree, and telling us what we need to do in terms of including all the species, for example, and how you see that right now, whether we're doing that right or not. I think we're learning -- mutually learning a lot of things by this discussion.

MR. ARMINSKI: Why don't we move on and talk about this further later? Are there any more comments on this paper specifically?

MR. ROSENBERG: No, just that, Larry, you'll set up a meeting then?

MR. GILBERTSON: Sure.

MR. GRANATA: Would you include us in that also?

MR. GILBERTSON: Absolutely.

MR. HOSKINS: Don, you've got a reference in here, "Proposed mitigation measures for potential construction impacts will be described in the report to be issued in the spring of 1985". And evidently that's one that Woodward Clyde (ph) or Entrix (ph) or something like that's working on or -- what's the

status of that?

MR. BEYER: It's going to be very late spring.

MR. LATTA: Already is.

MR. BEYER: Yes. As of probably the last few days, I would say, we're looking into sometime next month. The problem -- the problem here is that we're now -- When this came out, then three-stage development came along, and now we're re-examining that plan to see how it might change.

MR. HOSKINS: Okay, so this mitigation plan right here will likely not be released to the agencies until it incorporates the three stages?

MR. BEYER: Right. Because then we just have to come back and do it again, so --

MR. HOSKINS: Yes, okay.

MR. ARMINSKI: Anything else? Okay, the last two papers are -- relate to air quality issues. AQ-1 is the significance of ambient air quality impacts during project construction, AQ-2 is the formulation and implementation of air quality mitigation measures. The air quality of the project area right now is well within the air quality standards, and we believe that it can be maintained -- the air quality standards can be maintained during the construction of the project and there won't be any significant impacts related to that. Jim, are you going to --

MR. WILDER: Sure. Let me just emphasize

what you just said. Again, the Alaska Power Authority is working right now with the lead agency, the Department of Environmental Conservation, to document that indeed there will be no adverse air quality impacts. The position paper we have here does describe the applicable regulations the Power Authority is going to be complying with, the mitigation measures that they will be employing to insure that those regulations are followed. The permitting itself that the Power Authority will be subject to is pretty much up in the air even at this stage. There are several levels of air quality permitting that apply in the state of Alaska. The level of detail that's required depends on the level of emissions the project generates. And at this state, since there is no real hard fast engineering plan, the level of emissions haven't been established, therefore even the permitting process hasn't exactly been established. As far as mitigation measures are concerned, a lot of the mitigation measures for air quality are either just good common sense engineering practices, and in a lot of cases they're the most cost-effective engineering practices, and in almost all cases, just by good luck, they're also mitigation measures that do reduce siltation and sedimentation that have a lot of impacts on fisheries and wildlife.

So, in summary, if the Power Authority just follows good common sense, they will, you know, reduce impacts on a lot of other issues other than air quality.

MR. HOSKINS: They won't build the project.

MR. ARMINSKI: Any comments?

MR. HOSKINS: On Page 6, Jim, on the third bullet down, the statement is "Analysis of 'effect' on visibility, vegetation and soils". Does that mean that the Power Authority is going to develop a monitoring program to do these -- make these analyses, or what -- what does the statement mean?

MR. WILDER: Okay, again, depending on the level of permitting that DEC requires, they may require either some predictive analyses to show that there will be no adverse effect on visibility, deposition of dust on the vegetation, et cetera. At DEC's discretion they may or may not require construction monitoring of air quality. A lot depends on, again, what the engineering plans show will be the magnitude of the emissions, which has not yet been done.

MR. ROSENBERG: I don't have any comment.

MR. GRANATA: The only comment that --

MR. ARMINSKI: I guess I told -- I told Jack I was going to represent DEC's position there, so . . .

MR. HOSKINS: Where's the rubber stamp?

MR. ROSENBERG: Where's DEC?

MR. GRANATA: Well, the only comment would be on the fugitive dust emissions and any kind of plan to control that in terms of using water.

MR. WILDER: Yes, the -- there are several ways to reduce fugitive emissions. I think probably the preferred

method, like I hinted at earlier, is to just adjust the construction practices to minimize exposed surfaces, et cetera. It'll just minimize fugitive dust from wind in addition to surface runoff. It may or may not be required that -- well, adding water to haul roads almost certainly will be done. In most cases the amount of water that's added to the haul road is a lot less than what is added in the rest of the process. So there won't be a real impact on water use from haul road watering. In extreme cases it may be required that some chemical additives may be added to haul roads. In most cases these are nonwater soluble, they will not enter streams or rivers. But the specific methods for reducing fugitive dust clearly depend on the engineering plan. And at this date the contractor's not develop anything so all we can talk is generic terms. So the specific methods for reducing fugitive dust will be part of the DEC permits and will be included as part of the contract documents with the contractor.

MR. GRANATA: Keeping in mind also any temporary water use permits for -- it would depend on how much water you need and where you're taking it from.

MR. WILDER: That's true. Yes, the source of the water would have to be defined. In no cases would water added for fugitive dust control run off. That's just really overkill. It wouldn't be done.

MR. ARMINSKI: Other comments? Okay, thank you for coming, and your comments. We'll see you next time.

END OF PROCEEDINGS

MEMORANDUM

DEPARTMENT OF NATURAL RESOURCES

State of Alaska

DIVISION OF GEOLOGICAL AND GEOPHYSICAL SURVEYS

TO: Leroy Latta
Project Manager

DATE: May 15, 1985

FILE NO: 85-5A

THRU: Merlin Wibbenmeyer, Deputy Chief
Resource Analysis Section

TELEPHONE NO: 786-2164

FROM: Bill Petrik
Geology Assistant

SUBJECT: Sustina Hydro Settlement
Process Position Papers
AQ-1,2,F-10,11,S-7,8

ENGINEERING GEOLOGY

F-10: In concurrence
Others: No jurisdiction

CONTRIBUTOR: Randy Updike
Engineering Geologist

WATER RESOURCES

Surface Water:

F-10 Downstream erosion and/or sedimentation could result from instream work (e.g.-dredging); the effects on the hydrologic regime are not addressed.

F-11 If best management practices are followed and adhered to, the structural modifications and construction impacts should be minimal. However, if a large number of sloughs are affected and the BMP are loosely followed then the hydrologic regime could be altered enough to cause subsequent erosion and/or deposition, channel changes and sedimentation. A detailed review of the plans and BMP is beyond the scope of this LDR.

Ground Water:

F-10 The F-10 issue is the only one in which groundwater is mentioned (p.21) or in which the impact potential is relevant with respect to groundwater. I recall having reviewed APA's BMPM on "water supply", and if it has not been expanded (and improved) and rerouted through DGGS, it should be.

F-11 Ground water mentioned only on p.9.
The statement "mechanical excavations of sloughs can be used to ...maintain the amount of groundwater upwelling" is potentially misleading and technically inaccurate. Where groundwater is moving upward and discharges into sloughs, the water level in a slough may be a function (or reflection) of the pressure head in the aquifer. The head may drop significantly during Winter months or as a result

of droughts. In such cases, deepening of the slough may assure a minimum depth of water in it, but the flow (discharge rate) of groundwater into it does no necessarily remain constant. Thus, the word "maintain" is inappropriate.

Water Quality:

F-10 Increased turbidity and sediment load during clearwater flows, especially in late autumn, could affect the behavior of rearing juvenile salmon and resident fish in the mainstream.

F-11 Is groundwater upwelling in sloughs the result of resurfacing mainstream river flow, groundwater aquifer flow, or a combination of the two? If upwelling is primarily dependent on the mainstream river flow regime, water quality and quantity in sloughs may be affected.

CONTRIBUTOR: Water Resources Section

BP/mw

C E R T I F I C A T E

UNITED STATES OF AMERICA)
) ss.
STATE OF ALASKA)

I, Teresa E. Mielke, Notary Public in and for the State of Alaska, residing at Anchorage, Alaska, and Reporter for Gemini Reporting Services, do hereby certify:

That the annexed and foregoing meeting was taken before me on the 17th day of May, 1985, commencing at the hour of 8:30 a.m., in the Alyeska Room, Northern Lights Inn, 598 West Northern Lights Boulevard, Anchorage, Alaska;

That this transcript as heretofore annexed is a true and correct transcription of said proceedings, taken by me electronically and thereafter transcribed by me.

IN WITNESS WHEREOF I have hereunto set my hand and affixed my seal this 21st day of May, 1985.

Notary Public in and for Alaska
My commission expires 5/6/87

SEAL

GEMINI
Reporting Services
943 West 6th, Suite 110
Anchorage, Alaska 99501
277-8691