Glen Canyon Dam Technical Work Group Meeting
November 29, 2005

Conducting: Norm Henderson, Chairperson

Committee Members Present:

Mary Barger, WAPA
Kerry Christensen, Hualapai Tribe
Jonathan Damp, Pueblo of Zuni
William Davis, CREDA
Lloyd Greiner, UAMPS
Christopher Harris, CRB/CA
Amy Heuslein, BIA
Rick Johnson, Grand Canyon Trust
Chris Kincaid, NPS/GLCA
Dennis Kubly, USBR
Glen Knowles, USFWS
Phillip S. Lehr, Colo. River Comm./NV
Ken McMullen, NPS/GCNP
John O'Brien, CGRG
Bill Persons, AGFD
D. Randolph Seaholm, CWCB
John Shields, WY State Engr Office ***(via phone)***
Mark Steffen, Federation of Fly Fishers
Larry Stevens, Grand Canyon Wildlands Council
Bill Werner, ADWR
Michael Yeatts, The Hopi Tribe

Committee Members Absent:

Steven Begay, Navajo Nation
Brenda Drye, So. Paiute Consortium
Robert King, UDWR
Don Ostler, Upper Colorado River Comm.
John Whipple, NM Interstate Stream Comm.

Alternates Present: **For**:

Wayne Cook — John Whipple, NM Interstate Stream Comm.

Interested Persons:

Matthew Andersen, USGS/GCMRC
Mark Anderson, NPS-GCNRA
Christine Beard, USGS/GCMRC
Mike Berry, USBR
Gary Burton, WAPA
Tara Conrad, DOI-W&S
Kurt Dongoske, CREDA
Helen Fairley, USGS/GCMRC
Pam Foti, Northern Arizona University
Michael Gabaldon, USBR
Dave Garrett, M^{3}Research
John Hamill, USGS/GCMRC
Linda Jalbert, GCNP
Leslie James, CREDA
Paul Li, IEDA
John Loomis, Colorado State University
Ted Melis, USGS/GCMRC
Clayton Palmer, WAPA
Barbara Ralston, USGS/GCMRC
Tom Ryan, USBR
Pam Sponholtz, USFWS
Adam White, Grand Canyon River Guides

Meeting Recorder: Linda Whetton, USBR

Convened: 9:15 a.m.

Welcome and Administrative Items. The chairman welcomed the members, alternates, and interested persons. A quorum was established and attendance sheets distributed.

Agenda Changes.

1. Rick Johnson requested "TWG Procedures and History of Proposed WY06 Experimentation" scheduled for 3:30 be switched with "Proposal for GCD Experimental Flows in WY06" at 2:45. Without objection, the agenda was changed.
2. Dennis Kubly said Mike Gabaldon, the AMWG's Secretary's Designee, will be present this afternoon to explain why the TWG is being asked to discuss the WY06 hydrograph again.
3. Bill Persons said the agenda doesn't indicate which items require TWG action. The TWG had asked for those to be identified on future agendas so members would come prepared to take action/vote. Dennis said the only item which might require action would be the proposed hydrograph being presented by WAPA, and WAPA didn't provide any draft motion language to Reclamation prior to the meeting. The chairman said future agendas will identify those items which may require action.

Review of Draft Minutes from June 21-22, 2005 Meeting. Bill Persons said he started reviewing the minutes and noticed several errors. He requested a more thorough review by Reclamation and/or the new TWG Chair. Bill will provide edits to Linda. She will revise the minutes for approval at the next TWG meeting.

ACTION ITEM: TWG will provide edits on the June 21-22, 2005, draft meeting minutes to Linda by December 15, 2005. She will revise and include with the materials for the next TWG meeting.

Review of Action Items. Norm reviewed the following items:

Item #1. Norm suggested postponing the discussion on the TWG Operating Procedures pending approval of the Roles AHG Report and any subsequent changes to AMWG's Operating Procedures.

Item #4. Bill Persons said the "Feasibility Assessment on Augmentation and Refugia Report," refers to another report by Randy Van Haverbeke done about a year ago which the TWG accepted and should've been distributed to the TWG. Norm suggested that report be folded into the Humpback Chub Comprehensive Plan since it relates to HBC enhancement. Glen Knowles said the report could be incorporated as an appendice to the HBC Comprehensive Plan. The HBCCP AHG is meeting tomorrow and will discuss further.

Old Business. None.

New Arrivals at GCMRC: Ted Melis introduced John Hamill, the new chief of GCMRC. John has a long history of working in the Upper Colorado River Basin, both in development and in overseeing implementation of the upper basin program for almost 12 years. The new Biological Program Manager, Matthew Andersen, said he most recently worked with the Utah Division of Wildlife Resources in Salt Lake City. He looks forward to working on biological resources, especially fishes, as that is his specialty.

Nomination of new TWG Chair. Dennis said he solicited nominations for a new TWG chair at the May meeting but didn't receive any. Rick Johnson nominated Kurt Dongoske. Larry Stevens recommended hiring a facilitator to assist the TWG chair. Dennis asked Kurt to respond to what he perceives are the dual responsibilities of conducting the meeting and being a participant. Kurt said the chair should remain impartial and objective in terms of issues being discussed, however, he would like the flexibility to comment on cultural resources and other substantive issues. As a non-voting member, Kurt said he would provide perspective on issues but not influence the voting results or direct how the TWG discussions progress. Dennis asked if Larry's concern was shared by other TWG members and would they advocate doing something different other than nominating a member or alternate. By moving outside those bounds and hiring a facilitator, the TWG Operating Procedures would need to be revised. John O'Brien thought the TWG may need to think about the possibility that Reclamation might need to chair the TWG should no one want the job. Dennis asked if there were any objections to a vote of

unanimous consent on the nomination. Hearing none, Kurt was elected as the new TWG Chair for FY06. On behalf of Reclamation and the TWG, Dennis thanked Norm for all his hard work over the past two years.

Amy said it would be helpful to have a historical record of the TWG, specifically a list of the past chairpersons and time periods they served as TWG Chairs.

ACTION ITEM: Reclamation will prepare a historical record of past TWG Chairs and where the TWG will be going in the future.

Review of Recreational Protocol Evaluation Panel (PEP) Report. Dr. John Loomis from Colorado State University distributed copies of his report (***Attachment 1a***) and gave a PowerPoint presentation (***Attachment 1b***)

Q*uestions/****A****nswers/****C****omments/****R****esponses:*

Q*: The GCNP has invested a huge amount of time and money in the Colorado River Management Plan. How can the AMP and the CRMP interact? (Stevens)*
A*: One of the recommendations is to increase that interaction because the NPS has recreation as one of its dual mandates. There has to be a sharing of resources because what the Park is interested in may not answer all GCMRC's questions. For example, monitoring some of the physical things or other elements related to the visitor experience. (Loomis)*
C*: The Park Service is not obligated to pay attention to this process for their recreational management per se. They are very direct managers of their resources. Part of the challenge with their program in the past has been a really unfortunate experimental design where they do monitor boating accidents at high flows but they don't bother to come back to the controls before and after. That's a resource this program could provide in terms of expertise in experimental design. (Stevens)*
R*: Chapter 4 in the PEP report talks about coordination with the Park Service and one of the members thought that the opportunity for GCMRC to partner with other groups was quite broad. (Loomis)*
C*: There is also an opportunity coming up for our back country planning effort. As part of that and because it will be an EIS level document, it will require a visitor experience resource protection process. I see a very strong correlation with that program and what GCMRC is looking for so there is an opportunity to blend information and make it a functional program. (McMullen)*
Q*: In Figure 3.1 you talk about the model, would you include such things as unnatural influences such as invasion of non-native fish into the system, the invasion of parasites and salt cedar, and how these things affect recreational use of the river and resources? These are not necessarily under the purview of management agencies but are just occurring. What should that box include? (Davis)*
A*: In principle, things like non-native would be under the biological. The idea behind these is that you actually lay out some trip profiles to the visitors and if that was a relevant characteristic, you'd have Trip A, Trip B, or Trip C. Rapids might be one of the trip attributes, some measure of safety, but if you had something else like salt cedar, tamarisk removal, you could describe how many miles of what you want removed from the canyon. We don't necessarily list all the trip attributes so if you think that's a relevant characteristic and want to know how it affects visitor experience, you could put that in the basic characteristic of the trip and see how people react. This is a fairly general model so you can flesh out the specifics for whatever you're considering and that could change every 5 or 10 years, right? I'm convinced that HBC, water temperature preferences, and visitor temperature preferences are very similar. One of the side benefits of a temperature control device is raising water temperatures for HBC which may even increase visitor safety and enjoyment. You need to think of what things are worth trading off or changing in the Grand Canyon specifically for recreation and other things because we want to reduce invasive species, aid the recovery of HBC, protect archaeological sites, etc.. You could design those into the visitor evaluation and lay out higher or lower levels of trip attributes to see what people say and that would affect their trip making or satisfaction with the trip. (Loomis)*
Q*: How do you address the issue of trying to get an objective evaluation from a first-time visitor? For example, the rapids were at 20,000 yesterday but at 10,000 today. The visitor doesn't know the difference unless they're told or have been down the river several times. The same holds true for camping beaches. If they don't see the sand beaches below 15,000, they don't know they exist and haven't had the experience of camping there. (Greiner)*
A*: That's been addressed in a couple of studies. There was a 2000 study done by Bill Stewart in which he showed pictures of beaches to people and then asked them to compare their experiences with the photos. The economic*

research that was done about two decades ago actually compared what people said they would pay with these profiles of trips to what they actually experienced and there was a very strong relationship. (Loomis)
***C**: There will always be an overlap between river research activities and the peak season because of spawning and the need to be there at specific times. If we had better communication about when visitors were coming, we could be prepared to talk with them about the research being done. (Sponholtz)*
***Q**: Is it correct to assume that this report doesn't apply to visitor experience below Diamond Creek and are you seeking comments on this report (Christensen)*
***A**: The trip didn't go below Diamond Creek but I think the basic work that was done certainly could apply down there as well. We didn't go down to Lake Mead. Your input is valued. We've done the report but don't know if we're going to be rewriting it. If there are things you want to weigh in on, those comments would be welcome. (Fairley)*
***Q**: Often times the recreational perspective of the canyon is antithetical to the way Native American tribes view the proper behavior within a place that is so culturally and spiritually significant to them. Managing the canyon in terms of visitor experience and managing the concerns of Native American tribes that are stakeholders in this program has the potential for conflict. Would you comment on that. (Dongoske)*
***A**: A nice example and it wasn't because of the Native Americans but the Park Service is not allowing a lot of use on the Little Colorado River. We saw this big chain of people floating down and my understanding from when I was on the science advisory board, this is almost sacreligious. So the question is when they did this for HBC or whether we would have to do this for cultural resources, you're taking out a trip attribute so the opportunity to swim, wade, and do stuff in the Little Colorado River could be a dummy variable, 01, you have it/you don't have. We can at least evaluate what the effect is on the visitor satisfaction so that's information we know upfront. The other question is because there are other trip attributes, is there a way possibly or other opportunities to increase the quality of those trip attributes or introduce new trip attributes that would partially compensate for that. First, of all we can determine if that is a significant attribute. Is it statistically significant not going into a particular area or doing a particular activity? And if it is, how much of a reduction does it cause in visitor satisfaction? Is there something else we might be able to do that would offset part of that? (Loomis))*
***C**: I don't see where tribal goals and objectives have been integrated into this report, either through their recreational programs such as Hualapai or the Navajo Nation, or from the cultural perspective. That's a missing link in this document. (Heuslein)*
***C**: One question was also on feedback of recreational visitation impacts on biological resources. There are two arenas in which visitors affect the canyon very clearly which is trampling in tributary canyons. Did you discuss that? (Stevens)*
***A**: In the PEP report it talks about this issue with discretionary time, that there are both the environmental impacts of the visitor but also benefits of the visitor. Those need to be further researched. (Loomis)*

Review of Draft Planning Documents. Dr. Dave Garrett presented a schedule for upcoming meetings in 2006 (below). He then gave an overview of how and why the SPG was formed, what activities they're currently involved in, and what outcomes there will be in the future for TWG approval.

Dates	Meetings in 2006
January 9-10	Approve experimental options. Workshop on metrics for CMINs/Research. Approve MRP sentence outline.
January 25, 26	SPG/TWG. Review of plans by TWG/SPG. Workshop on metrics.
February 22, 23	SA Review (21); Discussions of plans by SAs/SPG. Workshops on metrics.
March 7,8	Progress report to the AMWG.
April 19, 20	SPG/TWG. SPG Approval of SSP, MRP, AWP draft documents.
May 1-20	Final outside science review of plans
May 24, 25	Final Reviews of SSP, MRP, AWP by TWG.
June 15	Release of plans from TWG to AMWG.

Dr. Garrett distributed a memo from John Hamill (***Attachment 2a***) along with drafts of the Strategic Science Plan (***Attachment 2b***) and Monitoring and Research Plan (***Attachment 2c***). The Science Advisors reviewed the documents and are going to provide him with formal comments which he will submit to the TWG Chair and the Chief of GCMRC for distribution. Dave proceeded with a PowerPoint Presentation (***Attachment 2d***). He distributed copies of the handout, "Pursuing SPG Objectives" (***Attachment 2e***).

***Q**uestions/**A**nswers/**C**omments/**R**esponses:*

***Q**: Let's say the goal is to improve recreational opportunities, are we talking about changing the measure or changing the entire objective? (Seaholm)*
***A**: Our approach has been to change the Information Need. I don't think there was any movement on the part of the planning group to say the goals aren't appropriate or none of the goals were inappropriate. They're all appropriate. It becomes how much do you pursue a goal and in what time frame when limited by major problems with your resources and budget capability. (Garrett)*
***C**: I think his question is whether they're off the table and I say no. You're always reviewing your goals and objectives. We've done a review and they're never off the table. (Davis)*

Dave said there is no way to pursue all the Information Needs under all the goals in a science program annually because it would be too costly. He said there needs to be two processes that continue in the future in the resource needs area. One is that managers constantly stay on top of what they actually need even to the point of the level of resolution of information needed – spatial, temporal, and metric dimensions. If the metric dimension changes, then it could change the cost for doing science work. In the overall management of the GCD AMP, there needs to be a thought to looking at what all the GCD AMP agencies are doing and possibly reducing costs by partnering with other programs. There are others that are struggling with some of the same issues. It's possible that some collaborative work might reduce some agency costs and make the science outcome better. The management community needs to think about those kinds of programs.

Review of Draft Planning Documents

Science Advisors' Overall Assessment of the Strategic Science Plan. Dr. Garrett said the SAs feel this is a major improvement and that all the components are there, however, they think it is too long and gave him some suggestions on how to shorten it. They recommend making it a big picture product and offered to do some editing. Dave told the SAs he would prefer them not to do it because he doesn't want them that close to the process. In the whole area where they deal with following the law, EIS, etc., they want the SPG to just reference the AMP Strategic Plan. They wanted an expansion in one area, strategies for understanding all related entities, science and management actions. They think that's very critical to have strategies for incorporating all of the other players in the canyon even though those programs aren't specifically controlled and/or guided by the AMP. They also felt that the SSP is too light on strategies for resource concerns. Several of the science advisors head major National Science Foundation and agricultural science programs and by comparison they see this program as absolutely complex relative to the way it is conducted. They think there needs to be a significant expansion to the chapter on how to continue over time to have resource capabilities in case the budget is reduced or eroded away by increasing costs. They feel there are other strategies which are more proactive that should be incorporated.

Science Advisors' Overall Assessment of the Monitoring and Research Plan. Dr. Garrett reported the SAs feel the plan is very close to where it should be with some recommendations. Relative to past plans, it is a tremendous step forward because it incorporates and responds to criticisms of the science effort as well as incorporating the managers and the scientists in a tight, interactive process. They emphasized that whereby the Monitoring and Research Plan the SPG has focused on talking about using the ecosystem modeling concepts in driving that, they suggest the group think about a broader model, an adaptive management model, as the guidance model. It also has other models that are utilized in moving the science and management forward. There is no tradeoff in the modeling approach. They don't have to be formal models, they have to be processes. There doesn't seem to be a formal process for developing desired future conditions. There aren't formal procedures for handling ranking of the innumerable information needs of the AMP or establishing priorities. There is a chapter in which they go into great detail about the various individual goals and in the programs that would be driven out using an issue, goal statements, and ecosystem assessment, and knowledge assessment and science questions. They

support that process very clearly but were very critical that there wasn't more detail in the monitoring and research projects. In the resource area, just like in the Strategic Plan, they think it is very important to be very candid about what their capabilities are in driving major programs like this, that you have to be honest and upfront about the fact that the program needs are greater than available resources. Therefore, the management group needs processes to make choices and those processes are not clear in the Strategic Science Plan or in the Monitoring and Research Plan.

***Questions/Answers/Comments/Responses**:*

***C**: One of the things we talked about with respect to their comments about the interagency interactive joint approach is having another plan so the other agencies could use it as a reference and point to their part in that plan as justification for their own funding requests. In addition, it would clearly lay out the cooperative nature of those involved do it in a manner not impeded by the structured approach we have to follow for the MRP. (Kincaid)*
***Q**: For clarification, were the SAs asking for actual projects proposed for some of the core monitoring efforts when they said it lacked more information? (McMullen)*
***A**: Remember two meetings ago we were going to go into great detail about what parameters and metrics meant. It's not in our plan. We've kept them in the dark. We want them to be independent assessors. (Garrett)*
***C**: I would like to build off Chris' comment a little bit. Earlier when I was talking about those processes that were in or out, I think that pretty much flows right into some of the information that she is asking for by identifying how these coordinated efforts can be matched up. That's just a little bit different twist. A number of years ago we put together a conceptual model and it seems like one of the science advisors' recommendations was to come up with that type of conceptual model that you could balance tradeoffs against. I'm wondering if it isn't appropriate to dust that off and see if it can be updated. (Seaholm)*

Dave said he would provide the SAs more detailed comments to the TWG chair and GCMRC for further distribution.

ACTION ITEM: TWG will provide comments on the Strategic Science Plan and Research Plan to Dave Garrett by December 15, 2005.

Dave said that one of the parts of the SPG process was to come up with some experimental options. They have spent a lot of time discussing and have one more workshop scheduled. He asked Ted to present some potential proposals.

Ted Melis distributed a copy of "GCMRC's Draft Conceptual Experimental Design for the Colorado River Ecosystem in Water year 2007 and Beyond" (***Attachment 3a***) and then gave a PowerPoint Presentation, "Update on Experimental Planning and Input from Knowledge Assessment," (***Attachment 3b***). He said more information would be presented on the Knowledge Assessment tomorrow. He reminded the TWG that the Knowledge Assessment was intended as part of embracing a hybrid experimental design and actually coming up with the next phase of the experimental design itself. The objective was to support adaptive ecosystem management information needs, provide some historical context for the Record of Decision operation within the context of the experimental design, and then the basic premise for GCMRC's current options for WY 2007-2011.

Ted said the former titration is basically a forward titration. In 2003 the AMP decided to implement the treatment after 11 years of it not occurring and at the same time nature turned the river warm which was a complete coincidence. The titration is in a forward direction and the BHBFs are almost implemented under a random strategy in order to manage the inputs when they occur. With pretty solid data on both the sediment and the fisheries, the MLFF operation and its precursor, interim operation, was implemented from 1991 through 2001 with no mechanical removal or persistent thermal warming. MLFF operations were continued until mechanical removal was implemented along with nature's own version of a selective withdrawal structure in 2002. After an 11-year old long block of the preferred alternative with cold water and unconstrained rainbow trout recruitment, the experiment is headed into the fourth year of

another block which could be characterized as MLFF plus mechanical removal coupled with a warm main channel event.
Ted said the selective withdrawal structure would really be a handy tool in the experimental kit right now because the water could be kept warm for another 6 years or turned cold after 4 years. Presumably mechanical removal of warm and cold water fish species is something the AMP has been directed to undertake immediately.

In trying to evaluate the role of stable flows vs. mechanical removal vs. thermal, Ted said mechanical removal is really the new kid on the block. That wasn't specified anywhere but came out of the evolution towards an experimental design. One option is to stick with the preferred alternative as the baseline management action as a fluctuating flow type of operation. Continuing that and then having a continuation of mechanical removal perhaps in both the warm and cold water species might go on for as long as 8-10 years. Other things to consider is whether the selective withdrawal structure will be built , what the building time frame will be, and if the system can remain in a warm state.

The hybrid design would embrace the idea that mechanical removal, which has been deemed sort of that green known category for how to reduce the numbers of exotic cold water species not that that necessarily is known to provide benefit to HBC or other natives but it is a known methodology that leads to a presumably desired result. You could continue that perhaps for as long as it was turned off and it really was in a sense turned off for 1990-2002. So you could turn it on for about the equivalent amount of time and in a sense you have this factorial design with blocks that are actually a decade long. The real question is what happens on the thermal front. The value of continuing MLFF is that it has become the baseline control operation and has been in effect for 15 years for which the best data has been collected for sediment or fish resources.

***Q**uestions/**A**nswers/**C**omments/**R**esponses:*

***Q**: Ted provided a somewhat endorsement for continuation of MLFF but clearly if one looks no further than pages 47 and 48 of the SCORE Report, we don't find such a ringing endorsement of MLFF there in terms of its effects on the fish community, whether endangered or not. He said it sort of became the baseline but it's also clear from the SCORE Report that it hasn't necessarily been a preferential baseline. (Shields)*
***A**: Some of the things I'm showing on the screen which are coming from the fisheries group now aren't portrayed in the SCORE Report and that is evidence now or data to suggest that a positive recruitment response by HBC in 1998-2000. Unfortunately that information came after the publication of the SCORE Report so it isn't in there but we can't ignore the fact that the fishery scientists are telling us there is some evidence of this recruitment response by HBC under MLFF before we ever had a warm river and before we started culling cold water species from the Marble Canyon Reach. The latest information we have might be an amendment to the SCORE Report that might change your interpretation of what's printed in Chapter 2. (Melis)*
***Q**: You're citing publications with a 2005 publication date too in terms of what is found in that chapter.*
***A**: The modeling results that we got from Bill Pine and Lew Coggins came to us approximately five weeks ago. (Melis)*
***C**: The issue of trying to have at least 3 years for variance in this climatic often very challenged environment and 5 or 10 years might not be enough time to get a really clear resolution on timing of major events. This is a very minimal approach and the uncertainties are very large and surprises are likely to be very substantial. (Stevens)*
***Q**: When are we going to have a serious discussion of implementing a management action of offset rearing of HBC for future augmentation in a forward titration scenario? (Christensen)*
***A**: Tomorrow we're going to discuss our recommendation for the FY07 budget so that is something we could talk about then. (Knowles)*
***C**: I just want to clarify Kerry's statement. At the last SPG meeting, WAPA did propose a strawman which was a reverse titration hybrid design that included elements of the HBC Plan as part of the management actions. That is up on the board which would resolve that issue. (Barger)*
***C**: We just had a formal walkthrough of all of these at the last SPG meeting to find out which of these will be incorporated in the plan. This discussion is ongoing. (Garrett)*

Proposal for GCD Experimental Flows in WY06. Norm said the AMWG reviewed the TWG recommended budget at their August 2005 meeting and with certain modifications forwarded it to the Secretary of the Interior. The budget included a recommendation for a WY06 hydrograph. He introduced Mike Gabaldon, the Secretary's Designee, who wanted to explain why the TWG is being asked to consider a new proposal from WAPA.

Mike reaffirmed that the budget forwarded to the Secretary included a hydrograph, however, there were some questions right at the end of the AMWG meeting whether the hydrograph was part of the budget or not. He did a straw poll and asked the AMWG if they thought the hydrograph was included in that recommendation. The majority of the AMWG raised their hands but there were three stakeholders who didn't. The AMWG was under some pressure from Tom Ryan because he wanted to take a decision to the AOP meeting and couldn't leave the issue hanging. Thus, the recommendation did go to the Secretary with the hydrograph. Subsequent to that he had some conversations with Clayton Palmer and others about their concerns. Mike said he thought it should be brought up with the TWG since it was part of the TWG recommended budget and thought the best way to vet it further was at today's meeting. Mike said he had some additional information that Clayton told him about earlier which actually aligns with what the Secretary told the group through him at the Science Symposium. In his remarks at that meeting, Mike said the Secretary wanted the AMWG to take a close look at the SCORE Report to see if anything stood out and then report back to her with a recommendation. He expressed concern about giving a recommendation to the Secretary and then coming back at a later time with a different recommendation but he felt if there was new information, then it should be vetted again through the TWG and AMWG. He said whatever the TWG decides today will have to go back through the AMWG. The AMWG will have to review it and consider making another recommendation to the Secretary. He said there are going to be some things that tie into that, for example the AOP which is also before the Secretary for some final decisions. She normally makes that decision by the Colorado River Symposium which is in mid-December so there is some language in the AOP that goes back to the AMWG motion that is being discussed.

Clayton Palmer distributed copies of the WAPA Proposal (***Attachment 4a***). He said there is some experimentation in WY06 but it doesn't have a great degree of variation from the Record of Decision. He said today's proposal is based on some new information and partnering with Arizona Game and Fish Department and the Federation of Fly Fishers. The three stakeholders discussed the issues at length with special concern for trout and the state of the foodbase. He gave a short PowerPoint presentation (***Attachment 4b***) and then asked Wayne Cook to comment on several slides.

Clayton said WAPA believes their proposal is consistent with GCMRC's approach for long-term experimentation but will also be contingent on AGFD's evaluation of the trout health and population. He said there was a dissolved oxygen limitation this summer below the dam and Reclamation made some changes to the operations in order to ameliorate that condition, however, he feels the TWG still needs to assess whether trout in this water year need to be managed. WAPA believes the MLFF has accomplished its resource goals as described in the EIS except in some circumstances, specifically that HBC populations have not improved as was anticipated. There have been some reports by sedimentologists that conservation of sediment under MLFF with occasional BHBFs as described in the ROD has not succeeded in meeting some of the sediment goals. There are other AMP goals and they wouldn't propose a set of management actions that knowingly has an adverse and a long-term impact on other CRE resources that were identified in the EIS. He proceeded with a PowerPoint Presentation (***Attachment 4c***). He concluded by saying their proposal seeks to: (1) make improvements in the flexibility of operations for power, fishability, and the aquatic foodbase; (2) move forward on the TCD and continuing work on the HBC Comprehensive Plan, translocation of HBC, and exploring possibilities for refugia or growout pond hatcheries; (3) continue to adaptively manage mechanical removal; and (4) utilize some winter flows related to non-native fish management and also experiment with summer stranding flows. Clayton said he would turn the time over to Wayne Cook to talk about some of the

details of monthly water volumes and variations in flows which WAPA developed since the conceptual paper was posted to the TWG web site (11/23/05).

Wayne said when he and Clayton met with the SPG, they discussed some WAPA work with regards to changing both the daily variation of flow and the downramping rate. One of the things they learned is going from a typical December peak month, 9,000 cfs is found at night going up to 17,000 cfs and then transitioning down to the much slower rate that demand is transitioning down. In order to get down, there is a void that needs to be filled up with other energy or purchase energy from other CRSP resources. In the winter, as it turns out, December is a much more critical month because the other resources, typically at Aspinall, are down to their winter cool periods and there are no CRSP resources available. Even though June and July are considered the toughest periods of time for producing power, it is a more expensive time to buy energy but it's not the most difficult to meet with CRSP resources. When they looked at going from 8,000 to 10,000, it didn't change the how long or how high you are at 17,000 but what how low you go down. In this particular case, one could have gone to 10,000 on a daily basis. Instead of being down at about 9,000 feet you'd be down in the range of 7,000 TCSF/hr as there are actually five hours of duration. You might its dark at 1:00 in the morning but its late/very early morning flows and suddenly they come back up and then follow the demand as the demand goes up an down.

Thus, WAPA is suggesting implementing varying changes for the remaining months of 2006:

- January = implementing changes to the daily rate from 8,000 to 12,000 and change the downramp rate from 1,500 to 3,000.
- February = modify that somewhat _____
- March = 8,000 cfs daily distribution and the downramping rate would again be at 3,000 cfs. This March volume would be a little bit higher than typical in order to get back down to the 5,000 at night. It's interesting to note that the foodbase builds and its fairly consistent all during the period of time that foodbase is important.
- June = going up to 8,000 cfs
- July and August = varying from 8,000 cfs and going to 10,000 cfs. In these particular cases what limits you is not only the volume but you can only get down to 8,000 here because it takes that high a volume at night to just get flow through for that volume. The demand is about 25,000 second feet if you were going to meet that entire demand on a daily basis for energy at Glen Canyon Dam.
- September = going back to typical 6,000 AF distribution and do it in a 6,000 cfs daily change which is the same as the existing downramping rates.
- October = a smaller volume month in the range of 600,000 AF. The downramp rate would not be changed.
- November = the 6,000 daily change be expanded to 8,000 second foot daily change in the downramping rate than would be changed from 1,500 to 3,000.
- December would again look like January but would be back to the 12,000 second foot.

Consequently it's about 17,000 in the peak months and the summer months range from 8,000-18,000, and 5,000-17,000. WAPA wanted to look at what happens to the fish and the foodbase so the low flows occur during the winter periods at night (1 a.m. - 5-6 a.m.) and then go back up. The concern is whether a foodbase can survive during those low flows for 4-5 hours in the dark.

AGFD Comments. Bill Persons said they discussed the proposal with Clayton and Wayne and suggested a few changes and also added a contingency that they don't know the status of the rainbow trout fishery at Lees Ferry so the idea of controlling something that may not need controlling didn't make a whole lot of sense to them. This week the lake just turned over so they are back to having oxygen in the tailwater. They just went through quite a few weeks of very low oxygen conditions that may have eliminated some of the adult trout, if not most of the adult trout life, but they're not sure and will have to wait until the field staff concludes their work. On one hand it may not be wise to try and limit their reproduction, while on the

other hand if they're not there to lay eggs, then it doesn't matter too much what is done there. If there are no eggs in the Redds, it may not matter. He expects they will have some indication of where things are after the warm water workshop next week. AGFD is a little concerned about going in too early, that the fishery may need to stabilize a few weeks after getting its oxygen back so they're considering another trip for early January. He doesn't think a lot of harm will be done to the Lees Ferry fishery with the flows WAPA is proposing but they're not real clear what the impacts might be to other resources and what the effect will be on a bigger, long-term experimental plan.

FFF Comments. Mark Steffen clarified that he represents the Federation of Fly Fishers and also the local affiliate in Flagstaff which is the Northern Arizona Flycasters. He's sees WAPA's proposal as not necessarily being just a modification of MLFF but being a modification of the non-native fish suppression flows. He doesn't like going as low as 5,000 cfs but according to Josh Korman it does contribute to controlling trout particularly in Marble Canyon where the flows would be at 5,000 cfs during the middle of the day. If any fish tried to spawn above the 5,000 cfs level in the middle of the night, the eggs would die during the next day. It keeps that aspect of trout control and then it also makes some minor adjustments to MLFF. He doesn't like having to advocate for fluctuating flows and would prefer to advocate for steady flows because they are more aesthetically pleasing for most folks. However, he realizes there are some stakeholders who want the fluctuating flows. If there was an aquatic foodbase which included organisms such as mayflies, stoneflies, caddis flies, available to the fish, he could see advocating for the steady flows but sees having the fluctuating flows a necessity for food to be delivered to the fish. He feels there should be at least a 6,000 cfs daily variation in order to adequately feed not just trout but HBC as well. In addition, he thinks higher fluctuations and increases in fluctuation could cause even more food drifting and could cause what Mike Yard talked about at the Knowledge Assessment Workshop which was the cropping effect of the algae and the colonization of it further downstream.

History of Proposed WY06 Experimentation. Ted Melis said the recommendation was based on input he received from the AMWG at the March 2005 meeting, conference calls with the Budget AHG and the HBC Comprehensive AHG, and discussions with various other planning committees that were underway last spring. The recommendation was primarily to continue mechanical removal which was obviously a non-flow treatment which had been recommended in 2002 for implementation on a basis of at least four years and also embraced the idea that 06 was shaping up to be a transition or interim year for something unknown in the future. A major sediment experiment was done in November 2004 and there was a significant backlog of work to be done to simply try and report to the AMWG and publish the results of that experimental sediment test. They were looking at it from the perspective of they'd actually need a break to catch up with work that had accumulated after that test. They had a mechanical program that was underway and there was no reason for stopping it in 06. They didn't recommend doing another sediment test even if there was enrichment from tributaries because the AMWG said they weren't sure they would recommend to the Secretary doing that right now until the scientists reported what had been learned from the experiment. It started shaping up to be mostly a non-flow experimental treatment year with the exception of some fall flows that had been proposed to compare a constant 8,000 cfs flow for two weeks with a mild fluctuating flow of 6,500-9,000 cfs. It was the only flow treatment experiment being proposed that seemed like it really needed to be implemented in that time frame.

Ted said a report being prepared by Josh Korman and others on the simulation results from work done in 2003 and 2004 on the various trout suppression flow question in Lees Ferry Reach suggested that the amount of redds mortality under the experimental fluctuation of 5-20,000 didn't appear to be any different than what would've occurred under MLFF operations or normal ROD operations for the same time period. That was a simulation-based prediction but it was developed from two years of field studies that were done by Josh Korman. One of the recommendations Josh had made was to promote learning beyond this and to try and test, verify, or refute the simulation model. It would be important to do something other than what had been done for the previous three years to get some contrast, to collect some more field data under a different operation, and then see if that model simulation could happen. Again, the prediction being that there was mortality incurred on redds under the experimental fluctuation

but it probably wouldn't be any different if you had done MLFF. GCMRC proposed, as part of a flow experiment and ongoing research project, to just simply go back to a controlled operation, or MLFF, for those months, deploy the field crew that did the original work in 2003 and 2004, have their data collected, and then test their model. That was the basic gist of why they were proposing simply a return to MLFF with the exception of September and October which were deemed the special fluctuating vs. constant flow months. As discussed on several occasion, Ted realized that some of the things presented by Clayton, Mark, Wayne, and Bill weren't maybe in existence at that time. None of those were suggested as alternatives at that time and the planning progress time frame had to be completed by about late summer which is when the AMWG meeting occurred.

Mary Barger offered the following motion language:

TWG recommends to the AMWG the WAPA/FFF/AGFD proposed WY06 GCD experimental flows be implemented as soon as practical and that the GCMRC Budget and Work Plan for FY06 be modified as necessary. (Proposal includes modifications as necessary in light of information from AGFD trout survey.)
Motion seconded (Lloyd Greiner)

Discussion.

***Q**: Mike said this is all based on new information that was available from the Science Symposium. It's not clear to me what that new information is so I was hoping you might be able to tell us what's new that would make us want to reevaluate AMWG's decision. (Johnson)*
***A**: I'm going to mention two things and then I'm going to ask Wayne to provide additional clarification. At the Science Symposium Carl Walters made the suggestion that the load following variations in flows might indeed be an improvement over the MLFF. More importantly, I paid attention to the recommendations made by Josh Korman which were not in his report. His report describes fully the evaluation he did over the last couple of years related to the non-native fish suppression flows but he recommended to continue a variation of those flows, to implement the summer stranding flows, and then thought that the transition from August-September might have been one of those summer stranding flows which had actually occurred over the past couple of years. (Palmer)*
***C**: I think Steve Gloss' report was in that same vein. It seems like those fishery scientists that had been most advantaged advising this group all had basically suggested that MLFF is not working for the fish and you know MLFF is not working for sediment. The only other thing I might add is that one of the goals was to try and do some type of restoration of the load following and the energy that that brings in the critical months with an opportunity that WAPA and many of us around the table perhaps had to resolve the issue about the prohibition on BHBFs. Most of the time in these settings we talk about it as though we can just implement it anytime we choose but that's not the case in the ROD. Some people work pretty hard to get that test in 2004 to come with some quid pro quo if you will with regards to restoration to some capacities that are important for the state. I no longer speak for them but I know that is information that you all understand. It just seems like if we're ever going to get to the point where we can resolve the sediment transport issues by making some management actions in the fall under enriched conditions, we're going to have to do that with BHBFs and with the support of everyone around this table, and then going back to the Congress and the Secretary's office in resolving the issues of that prohibition right now. I don't see maintaining MLFF for the next 10 or 15 years is going to be in the best interest of getting that job done. (Cook)*
***C**: I thought we did get a lot of information at the Science Symposium and even information above and beyond the SCORE Report. I see no reason not to revisit these questions. (Persons)*
***C**: I don't disagree that we ought to look at things to revise MLFF, I think most of us would say that there are simply improvements that could be made in a number of different ways but to me that's not the point. The point is I didn't see any data that was presented in the proposal that wasn't in Josh's presentation to the TWG last June or in his report that would change any conclusions that he had made. In fact, he is pretty strident that those January-March fluctuating flows simply aren't the way to go. Getting to a broader question of why revisit AMWG's decision, to me it's got to be based upon additional data that is brought to the table. As you all know, I would like to see some major changes to MLFF but probably not in the same way that you would like to see them. For example, what I saw at the Symposium was an awful lot of emphasis on temperature being the big issue. I didn't see anything that was new at the Symposium. (Johnson)*

***C**: I disagree with what people are characterizing as Josh Korman's results. He made it pretty clear that there was almost no trout spawning in Marble Canyon and I can only attribute that to those non-native fish suppression flows. I think they perhaps did tremendous benefit in Marble Canyon. I think these are minor changes. (Steffen)*
***C**: If you go to Josh's report, page 50, first paragraph, last sentence, he is targeting incubation life stages as least likely to result in a meaningful reduction of the overall recruitment to the adult population. I don't know if anyone could be clearer than that. (Johnson)*
***C**: I brought Josh's report too and his recommendations from the Science Symposium. For example, he said this, "Thus, there will very likely be little additional incubation mortality associated with the higher experimental fluctuations in January-March over the ROD. However, we predicted that redd loss rates could be increased to over 50% in a daytime summer steady flow of 5,000 were implemented." In other words, you folks who say that Josh reported that there was very little difference between the non-native fish management flows in the ROD are quoting Josh out of context. What he says is that they could be more effective and the proposal we have made today includes the more effective recommendations that Josh has made. This specific summer stranding flows is a recommendation he made at the Symposium that is not in this report although he documents the possibility of reduction in the young of year as a result of moving from August to September. We didn't bring a proposal for the purposes of debating Josh Korman's conclusions. We're trying to incorporate in our proposal this additional information. I'm happy to entertain over the course of WY06 further revisions to our proposal in light of science but for now we believe our proposal includes the latest information. (Palmer)*
***C**: The proposal, as outlined by Wayne, seemed to indicate that these fluctuations were going to occur every day but now you're saying that there is potentially a steady - (Henderson)*
***C**: No, what I said was Josh Korman's report describes the possibility that flows for trout management could be modified to be more effective. We are proposing modifications to the 2003, 2004, and 2005 flows. We are not proposing that those be the same flows. We're proposing two changes: (1) is the variation of flows Jan-Mar and, (2) some experimentation with the summer/spring flows. In our earlier work we talked about Sunday low flows as something we would experiment with but this proposal currently does not include Sunday low flows. (Palmer)*
***Q**: You're saying that your proposal only includes the part that Josh said was likely to be no different than the ROD and you're specifically excluding the part he said that might make it more effective? (O'Brien)*
***A**: No. One of the things that we'd propose that Josh made a recommendation was summer stranding flows. That's different than the ROD and it's different from the previous years non-native management flows. (Palmer)*
***Q**: So you're proposing summer stranding? (O'Brien)*
***A**: We're proposing experimentation with summer stranding. (Palmer)*
***C**: No, you're not. I'd like to make the point again. I kind of agree with Clayton that we probably shouldn't be debating Josh's report here. However, I would simply want to point out too that Josh did not do very much in the way of studying trout spawning in Marble Canyon. He was down there twice and he was down there during highly turbid conditions. His conclusions regarding Marble Canyon, I think, need a lot more consideration and investigation. I think that just simply from looking at a hydrographic standpoint, like I said before, the 5,000 low is going to occur during the middle of the day down there so it will have a different impact in Marble Canyon than it will have at Lees Ferry. At Lees Ferry it occurs during the middle of the night so maybe it's insignificant. It could be significant. (Steffen)*
***C**: Just a comment on data. There are some old reports that I did 20 years ago that support what Mark is saying about the potential for fluctuating flows increasing food availability. They were studies done by NAU and studies done under Valdez and Ryal from BioWest that indicate fluctuating flows created more food availability exactly for the same reasons Mark was saying. The critters we have down there are not the typical drifting invertebrates. They are invertebrates that are tied to the substrate and no matter how many grams of standing mass we have, if they're not drawn out and available for fish, who cares. For you guys to support your proposal, we may want to get to those. They should be there at GCMRC but if they're not, I know how to get copies of them. They also had an experiment that looked at this occasionally under nighttime freezing temperatures which would help you guys in terms of your 5,000 at night at Lees Ferry. (Leibfried)*
***Q:** How many hours? (Palmer)*
***A**: We did a variable amount but I think it may help you in terms of determining what may happen under those hours at night at Lees Ferry during the winter. (Leibfried)*
***Q**: I'm very impressed by the presentation. I think it's always a pleasure to hear Clayton speak because he really challenges us to take to task what we know, what we assume, and what we hope. Someplace there is a very large experiment about the role of fluctuating flows in river dynamics, river ecosystem health. This is one tiny piece of that experiment but the only thing I find lacking in your discussion is integrating this into the big picture experiment, the kind of approach that Dave and Ted have been promoting here this morning so we know where this kind of experiment fits in. I would be the first to admit that in all likelihood there would have to be any detectable effect of what you're proposing on anything we can measure there very effectively. If it's at 3%, 2%, 1% change in sediment*

that's going to be masked by climate variability. I don't really see any logical reason to reject the proposal but I'm concerned about the larger science portion of this and that incremental changes are typically very difficult to keep track of. (Stevens)
Norm said the motion was a little unclear because the group was also talking about summer stranding flows.

Additional Discussion:

- It might be helpful to describe how that might happen so the TWG could understand what the summer stranding flows might be. One of them would occur when you go from 800,000 AF in August and you're fluctuating from 8-18 and on Sept. 1 you drop to 5,000 flat or 5-10 and all those little fish are up there are now stranded. It seems like one of the things Josh said is that those fish are smart enough that if it's going up and down every day, they would just as soon stay down in the low areas so they don't have to expend very much energy. The way you get the young of the year, if it happens to be when you want to get the YOY, for instance if there are no YOY next year, you wouldn't want to do one of these if you're not trying to manage trout recruitment. However, you would bring the flow up to 15,000 and leave it there for 24 hours, or 36 hours, to entice the fish up and out into the edges of the river and then you'd drop and in two days it would all be over with. Josh is saying that's far more effective than anything you can do for the other couple of months on either side of it because you get those fish in an unnatural position and then strand them. You'll lose the year class. If you want to lose a year class of trout? (Cook)
- Let me clarify so it's really clear for the sake of this fragile marriage. I want to tell you that the summer stranding flows is a piece of science that we should experiment with. As Wayne said, when you go from August to September, even from ROD flows to ROD flows, you vary the volume to such a degree that in this report Josh called that an effective treatment. We propose to experiment to experiment with summer stranding flows. The detail about the experiment would be one that we've tried to work with the FFF. Does that clarify our position on summer stranding flows? (Palmer)
- The only other question I have is the implications for the GCMRC and what they would be expected to do as far as evaluating. Are you proposing to have this evaluated in any way as far as the science or effectiveness of this goes? (Henderson)
- We appreciate that Ted had in his workplan some work related to evaluating MLFF. He specifically spoke about Josh Korman's modeling of field calibration so I'm presuming that this proposal should it be adopted by the, recommended by the AMWG to the Secretary and implemented would potentially require some reevaluation of the workplan. I don't know that but I think it belongs as part of the proposal. (Palmer)
- So how you would propose that work? It would go to the AMWG for general approval and then come back to the TWG and GCMRC to work out the details of how that is going to be implemented? (Henderson)
- What's the implication of your proposal on sediment? (Beard)
- I don't know. We're concerned about sediment. That's one of the target resources, sediment conservation. The variation in flows that we're proposing that you saw is more limited than the past 3 years than the non-native fish management flows have been in the past 3 years. And that limitation was due to our concern about sediment transportation. One of the things that we seek in the long run is some means of accomplishing BHBFs where they're useful in any season provided that we can work out the policy and legal details so that once we get a sediment input from the tributaries and store that sediment, we're able to vary the flows in the fluctuating zone without a significant long-term harm to our sediment conservation goal. In fact, we believe that our support of BHBFs in any season and we'll work toward that end legally, that that contains with it the seeds of higher variation to follow. The fish management flows that we've proposed there have lower top ends and we expect that in the SPG and the long-term planning that we try to work out BHBFs as a management tool provided we can work within the law. (Palmer)
- I would really recommend people look at Josh's report and see for themselves where they think that data is being adequately used and where it's not, and cherry picking the data. The other thing is I still

haven't heard whether there is any new data that's been brought to the table that would result in us wanting to re-evaluate AMWG's decision. If someone can tell me what the actual data is, I sure would like to hear that because I have not heard any yet. The other thing is I hope people take a look at the proposal and see if they can tell from the proposal what really is being proposed here. To me, it is not clear what we're actually voting on, what we're actually saying we're going to do or not do. It's not clear. There is no hydrograph. A lot of the issues are thrown out there with no real understanding of what's going to be measured, what's going to be done, and when it's going to happen. I think the issue of impacts to the resources are very important and need to be considered. I would like to hear from Ted on what he thinks the impacts to sediments will be and perhaps Barbara or Glen can talk about what they think the impacts might be to humpback chub that are in the mainstem. We've got the best possibility to get recruitment in the mainstem of HBC and I'd like to get a sense from folks what the potential impact these fluctuations might be on the recruitment that we already have. (Johnson)

Time Check. Norm asked if the budget and workplan presentation could be moved until tomorrow to allow for more discussion.

- Let's ask the presenters whether or not if we were to vote for this proposal, would we be voting for the proposal that was sent to the TWG and that we posted and made available to you, the three of you? The proposal that we would be voting on here. Is that proposal is the same proposal that was sent to the TWG? I'm echoing a concern that Rick has voiced that there are differences I think between what was sent out and what was presented today. I wouldn't know at this point which of those two I was voting on. That's a concern to me. I got counsel from my AMWG member on a couple of things. One was be very careful about voiding the budget agreement that's already been made. If this is going to impact the budget in a way that it comes back from the AMWG and we have to readjust it, I have a real concern about that. I can't get the answer to that question today it appears. But I think also in light of some of the challenges to this program that are out there, from the Secretary all the way down through Interior, on the failure of adaptive management as a process, we need to be very careful today to make sure that the vote we make is a credible one that is based on solid information and we know where we're taking the AMWG when we make this recommendation. I really want to start with these details. We have to get down in the weeds here and say is the proposal that we're going to be voting on, if we adopt this, is the same one written before us because it has different numbers. It says 5-20 weekday. It says 5-7 on Sundays. (Kubly)
- Actually Dennis, I can't tell you the degree to which I have respect for your scientific mind but you're misreading it. (Palmer)
- You proposed that these non-native fish management flows in WY06 consist of the following. I can go through this and read it to you. (Kubly)
- No, I'll read it for you. It says it consists of the following: steady flows 5-7,000, etc. and then if you're looking at what was posted to the web site, it says the 5-20K cfs range of flows may be lower reducing the impact on other resources while maintaining their biological purpose. So what we had put out that was posted was our description and our description was agreed to by the three proposers here. What we have now presented today is what within that description does a hydrograph look like. I think there are some variations so the hydrograph that could be implemented but still in concert with that description. I believe that the TWG members could contribute to that. The problem is that some issues related to timing but I have to tell you that we put some pretty considered thought in putting this hydrograph together as well. I hope that the venue that we've chosen to display the hydrograph clarifies for you. We put the nine remaining months, or the eight remaining months, whatever it is of the water year on a graph and showed you the variation of flows that we propose and then we've showed you subsequently the daily variation. I think both of those were passed out. I'd be happy to do further work on the question of what does this look like but here you have the monthly water volumes, the daily variation, and an example for each of those variations of what the daily hydrograph looks like. This is our proposal. I think it's complete. I think it's consistent

with what was posted on the TWG website. I'd appreciate the ability to further clarify for Dennis and Rick. (Palmer)

- I have another point I'd like to make and that's one of timing for implementation of something else that is also left to the imagination up here. Bill, I warned you that I would ask when you could come back to us and tell us what the condition of the trout in the Lees Ferry fishery is and when AGFD would give us a recommendation on whether or not we should move forward with this action. We know that the Annual Operating Plan has to be dealt with in the near term. This is not something you can put off indefinitely so the consequences of not being able to make a good determination here until for example some time in January or February. We're through the important months for you, right? So could we talk for about when this recommendation would have to be implemented in order to give you the satisfaction that you want? How far in the future can we go? (Kubly)
- The motion says as soon as practical and that may be a further discussion for the TWG or with the AMWG. (Palmer)
- I appreciate the thoughtfulness that went into this and I certainly wouldn't want to say anything that would discourage this kind of input. This is a very healthy discussion for this group to have. My main concern is our ability given the late state of the fiscal year to mount an incredible science program to evaluate this. To me that reflects on this whole program with the ability to implement some new actions and the need to have a credible science program in place. We haven't had time to evaluate this and what implications it could have for our workplan. It could require a major redirection which I'm not sure how feasible that is given this late stage of the year and to mediate and get contracts in place. I think these kinds of discussions are good but I question the timeliness and the ability to really respond in a credible way to it. (Hamill)
- I didn't get to Science Symposium or haven't attended any of the SPG meetings but I was the last TWG meeting and at that time we were told we had three good years of data on trout suppression flows and that the next logical step was to go back to the MLFF and find out in a scientifically verifiable way what Mark said that he had a really good, solid feeling that the trout suppression flows were making a difference. As an experiment, do we want to go to that next block? I have direction from my AMWG member that originally the trout suppression flows were part of a 2-year block and then that got extended to a 3-year block and now we're talking about extending it to a 4-year block and I'm wondering if anyone would be looking at following that up with a 4-year block of steady flows for the whole winter? Would that be on the table? I don't really see ROD flows as being one end of the spectrum. I think steady flows are one end of the spectrum and pre-protection act flows would be the other basically running the powerplant down to some minimum is the other end of the spectrum. I tend to think the ROD flows are actually a fairly innocuous compromise where a lot of resources take some kind of a hit but I don't see the ROD flows as being some way out extreme set of flows. I think we could go to seasonally adjusted steady flows as an experiment. This has the feel like we're going into a management action that doesn't seem to be – I'm not sure what is going to be gained as an experiment on this. I think we're pretty clear on the economics but we don't really need an experiment to figure out the economics. That's pretty well detailed. (O'Brien)
- I appreciate what you're saying and especially the part that the steady flows were on the extreme end of the spectrum but realistically I think these are very minor changes in MLFF. If you don't think so, I'd like to know why. If you think they're more than minor, we can make them closer to being minor. That's the way I was wanting to approach this was that I wanted these to be minor adjustments. (Steffen)
- We have this experiment going on this fall between steady 8,000 vs. 6,500 and 9,000 to try and look at the difference between minor and I think if we're going to say did the 5-20 flows have an impact on the trout spawn, we need to go back to the MLFF in order to have a big enough difference to say there was a difference or there wasn't. That's my understanding of the science we need to do to get at that. We need to have a "try it this way and then try it the other way" but if we try to make it too fine each time, the signal is going to get lost in the scientific noise. It may get lost anyway between the MLFF and the 5-20. (O'Brien)
- We didn't propose 5-20, the most we have proposed is 5-17. (Steffen)

- Right, but again I think if we're going to compare this experiment, I think we need to compare against the MLFF. (O'Brien)
- The MLFF would've been 9-17 as opposed to 5-17. (O'Brien)
- Yes, but there are also changes over the course of the whole year in ramp rate year, changes in loads, changes in total daily range. We're changing a lot of things at the same time. (O'Brien)
- They're all minor. There's a lot of changes there. You're right. (Steffen)
- This proposal is being delivered rather abruptly onto this group and there is some science concern about it. There is also a timeliness issue if the decision isn't made relatively soon then this opportunity might be lost for the power industry. Maybe it would be a good idea to determine whether or not we can from the ecosystem side with the dissenting voices here, see if there is any way to detect what these kinds of changes might exact on those systems. In other words, I'm very strongly in favor of this kind of forum because this is a very productive conversation but there is still some uncertainty. We probably do need to have Josh Korman's clarification of what he was talking about for the benefit of Rick. My recommendation would be why don't we get that clarification, give GCMRC a chance to look at it in a scientific fashion and figure out some mechanism where we can make a decision on this within the next couple of weeks. (Stevens)
- I was at the Science Symposium and read the SCORE report and to my mind, this is a good proposal. I like this exchange and I echo the sentiment of other people around the table and I think we need to do more of this. What I took away from the SCORE Report and from the SS was that two resources are doing much worse than they were before the implementation of MLFF, sediment and humpback chub. I don't see how this proposal is responsive to either one of those. And more importantly I'd like to point out that increasing fluctuation in July and August actually could provide more of an adverse effect that MLFF to HBC during those two months. That's a time period when HBC are being washed out of the LCR into the mainstem with monsoonal flows out of the LCR. We have this warming trend in the mainstem that is creating some pretty ideal conditions for young fish. We could confound that with increased fluctuations during July and August and I think have a significantly greater adverse effect over and above what we already have compliance for 2006 in place right now. I guess to my mind this is an interesting proposal but it has some flaws and it's going to take some time to get compliance in place and it's going to create a lot of work too for GCMRC as John pointed out. I don't see an urgent need to do this within the next few weeks, or months, or 2006 at all. (Knowles)
- There were three questions that have been raised but not answered: (1) Dennis asked Bill to talk about what other criteria they're going to use and how are they going to decide whether or not to go through with. (2) I asked for Ted to comment on the impacts to sediment. (3) I asked for Glen or Barbara to talk about potential impacts to HBC and sediment. (Johnson)
- Larry Stevens and I actually agreed with him that it's possible we may need some more information from GCRMC in terms of the effects on the work plan and budget. I asked Larry if he'd be agreeable to moving forward with a vote to move ahead on this. The motion says to implement "as soon as practical" and so if we voted in favor of it, we would ask for further information from GCMRC. We could take it for discussion to AMWG. We certainly wouldn't want to implement something that the consequences of which we didn't know. And so I believe our motion here favors that approach. If it needs further clarification, that's fine and I'd be happy to ask Mary to make an amendment to the motion for further clarification. That's the concern that Larry brought up and it's the same concern I have. I think the motion embodies that concern. We expect to hear back from GCMRC. We expect them to move forward as soon as practical. (Palmer)
- Some of the issues regarding the AMWG have to do with notification requirements and so it may be possible that the TWG could have further consideration given information that comes back from the GCMRC before one could convene an AMWG discussion. I don't see any conflict between Larry's suggestion that we get further information and this motion. I think if we were to vote for this motion, it would mean that we would move forward toward implementation. We'd ask for information from GCMRC. The TWG could meet again by conference call or it could move forward to the AMWG and

with this further information, the AMWG or the TWG could further deliberate on the matter. I don't see any problem with doing that. I think the motion incorporates that process. (Palmer)

- Just to reiterate that we're in the middle of a science planning process. If we get diverted to go down this process to develop a whole new workplan that is going to respond to this, that's going to get put on hold. We can't be in two places at one time. We have holidays coming. This would have a major influence. We'll do what you want but just be aware there will be consequences. (Hamill)
- What's the answer to the trout question? It says you'll be going out and doing sampling in December so assuming it will take you a certain amount of time to analyze those data, what do you project? I'd also like to go to Tom Ryan and talk about the AOP development and where we would run into a wall there. Just as soon does this have to be put together? (Kubly)
- That's a good question. If that's the first thing that needs to be done, we'd make every effort to get it done by the end of December. We're out sampling this week, next week, we're all at a warmwater workshop and then on leave after that. I think we'd want to take a hard look at the data, probably do some modeling and I wouldn't mind bringing the data forward to the group to show them why we're recommending what we're recommending rather than just coming back and saying we recommend. I don't know how that is going to be possible until the next TWG meeting to be honest. Are those some of the practicalities we have to consider? (Persons)
- What I'm trying to get to is there is clearly a benefit for hydropower at the Jan-Feb-Mar window but if we go too far through that and that advantage is lost then is part of the impetus for proposing this change go away. (Kubly)
- Or does it become a 2007 proposal? (Persons)
- Yeah, and then it might surface again in 2007. Tom, what about the AOP question. Where to we hit the wall on changes and recommendations to the Secretary that would in any way effect the AOP determination? (Kubly)
- First of all there is a draft AOP in the Secretary's office. We anticipate it will be approved sometime next month. It says that non-native fish suppression flows are not anticipated in 2006. I think AOP can go forward as is, let this process carry through, and if there is a recommendation to the Secretary that comes from the AMP in 2006, that that really isn't a problem. If there was an incipient recommendation from the AMWG going to the Secretary at the same time she was signing the AOP, then I think we would have an issue that seems like there is going to be a delay between these two processes. (Ryan)
- I have to point out a real basic thing that nobody thinks about but if we have to modify or do a new cooperative agreement with AGFD, you're looking at 60 days before you can go out and do the testing on the fish. (Beard)
- I don't anticipate that. We have a standard monitoring trip that we scheduled. The trip that's going out this week hopefully will address this. We may come back and say we may need another trip in early January and then I'm assuming we'll have to try and do it within the budget we've got right now. (Persons)
- Is it within the work plan? (Beard)
- Yes. (Persons)

Norm notified the group they were running out of time.

Dennis asked for a 5-minute caucus with the DOI members.

Call for the question.
Norm read the motion again.

MOTION: TWG recommends to the AMWG the WAPA/FFF/AGFD proposed WY06 GCD experimental flows be implemented as soon as practical and that the GCMRC Budget and Work Plan for FY06 be modified as necessary. (Proposal includes modifications as necessary in light of information from AGFD trout survey.)

Motion seconded (Lloyd Greiner).
YES = 13 No = 8 Abstaining = 1 (Kerry Christensen)
John Shields voted yes via conference call.
Motion passes.

Rick asked when the motion would be forwarded to the AMWG as it's his intent to prepare a minority report (Attachment 4d) prepared January 6, 2006. Norm said he thought Dennis would be talking with Mike tonight and will report back at tomorrow's meeting what the next step will be.

Larry Stevens said he would like clarification from GCMRC on how practical it would be to implement WAPA's proposal.

Dennis said the point that John Hamill made earlier about the motion derailing the SPG process is a very important one. He wondered if the TWG realizes that by moving forward with the motion, they are advocating displacing that process and that's a real concern for him.

Adjourned: 5 p.m.

Glen Canyon Dam Technical Work Group Meeting
November 30, 2005

Conducting: Norm Henderson, Chairperson

Committee Members Present:

Mary Barger, WAPA
Kerry Christensen, Hualapai Tribe
Jonathan Damp, Pueblo of Zuni
William Davis, CREDA
Lloyd Greiner, UAMPS
Amy Heuslein, BIA
Rick Johnson, Grand Canyon Trust
Dennis Kubly, USBR
Glen Knowles, USFWS
Ken McMullen, NPS/GCNP
John O'Brien, CGRG
Bill Persons, AGFD
D. Randolph Seaholm, CWCB
Mark Steffen, Federation of Fly Fishers
Larry Stevens, Grand Canyon Wildlands Council
Michael Yeatts, The Hopi Tribe

Committee Members Absent:

Steven Begay, Navajo Nation
Brenda Drye, So. Paiute Consortium
Christopher Harris, CRB/CA
Chris Kincaid, NPS/GLCA
Robert King, UDWR
Phillip S. Lehr, Colo. River Comm./NV
Don Ostler, Upper Colorado River Comm.
John Shields, WY State Engr Office
Bill Werner, ADWR
John Whipple, NM Interstate Stream Comm.

Alternates Present: **For**:

Wayne Cook — John Whipple, NM Interstate Stream Comm.

Interested Persons:

Matthew Andersen, USGS/GCMRC
Christine Beard, USGS/GCMRC
Mike Berry, USBR
Gary Burton, WAPA
Kurt Dongoske, CREDA
Helen Fairley, USGS/GCMRC
Dave Garrett, M^{3}Research
John Hamill, USGS/GCMRC
Leslie James, CREDA
Paul Li, IEDA
Ted Melis, USGS/GCMRC
Barbara Ralston, USGS/GCMRC
Pam Sponholtz, USFWS
Adam White, Grand Canyon River Guides

Meeting Recorder: Linda Whetton, USBR

Convened: 8 a.m.

Welcome and Administrative Items. The chairman welcomed the members, alternates, and interested persons. A quorum was established and attendance sheets.

Development of FY07-08 Budget & Workplan – Dennis Kubly said the budget process agreed to by AMWG has as the initial inputs to the BAHG, the PA or cultural resources group, the GCMRC developing projects for the workplan so with the development of the Science Planning Group, they have a different environment than they had in the past where there were several different ad hoc groups. He received a budget estimate from the POAHG for the FY07-08 budget period and knows that the cultural resources group is working on some proposals. They've already had some input in defining the core monitoring

information needs that the SPG is considering. The SPG has developed a set of criteria for considering these projects. He said the focus for development of the budget is that the inputs, whether they come from the HBC AHG, cultural resources group, but for the other requests they should be coming into the SPG process. He asked if that worked for the TWG. He went on to say it was a little different than was identified at the time that the budget process was set out but they also didn't have the SPG at that time. When the budget comes back, it will be the result of deliberations by the SPG as they formulate the foundation documents. In the Core Monitoring Plan, those projects are anticipated to be standardized, repeatable, occurring over a long period of time subject to limited change. Dennis said the timing that was laid out has the budget deliberations starting in June and finalizing in January. However, they're off that schedule once again but he hopes it is the last time. The FY07-08 two-year budget is intended to be developed, that you will be receiving a two-year budget proposal with workplan. They are looking at in January 2006, the TWG will receive draft materials that will be going to the AMWG in February for their early March meeting. The look at a draft budget and workplan that the AMWG asked for last year and had in the autumn, they'll have in the spring this year and passage of the budget anticipated for July for August.

Dennis said they had talked about how the determination is made of budget allocation across monitoring and research categories. Within the research plan now, there are two components one of which is a research and development component that assesses new technology or methods that haven't been utilized long enough that they're adopted and can be moved into the core monitoring realm. There really are three categories of endeavor: 1) core monitoring where the SPG and ultimately the TWG and AMWG agree or sufficiently develop an agreed upon that they can be put in place and serve for an extended period of time with little change; 2) a research and development component which are things in physical sciences they've been developing over the past few years (the FIST and LIST) new technologies for assessing sediment load/sediment transport. The idea is that the projects that are in that R&D box wouldn't necessarily be automatically moved over into core monitoring but when they reach a sufficient level of maturity, then they would rise to a point of being considered for becoming core monitoring protocols and techniques. That's a flexible box in terms of funding that depends on whether new technology and new methods are coming in but likely would diminish over time as you move from R&D into core monitoring; 3) the third is the experimentation box which is the continuation of the active adaptive management approach with the funding such as in the last round set aside for ensuing years in large part because there are random events that drive experiments. Some parts like mechanical removal may be known ahead of time while others like sediment triggers aren't known. If the funds aren't held in arrears, they won't be available at the time needed. The best estimate they had for going into the last cycle was about $1.5 million to carry off a large scale experiment.

Dave Garrett added the SPG will try to complete the metrics assessment by the end of January and have a fairly good idea of the various plan divisions and related costs to the TWG by the first part of February.

Lloyd Greiner asked what was the allocations were between core monitoring and research program, if it was a 60/40 split, 50/50, etc. Mary Barger said this was discussed after the last SPG meeting and they thought it would be unfair to tell GCMRC what the split is because then they would try to force to force into the 60/40 whereas she thinks GCMRC should be asked to come up with an estimate as to what they think is appropriate and then discuss further.

Dennis said there is a fairly rigid set of requirements for something to make into core monitoring right now. It is fluid and it doesn't make sense to say a percentage because that R&D box is going to affect the size of those boxes. They've always said since the first meeting of the core monitoring plan that it was in 40/60 range. People seem to be comfortable with that range.

Ted Melis gave the "Projected GCMRC Science Budget for FY07 and FY08" Powerpoint presentation (***Attachment 5***). He said the first thing to deal with is dealing with the burden costs. The DOI cost-share, the discounted burden that is allowed through the DOI rules, says you can use a discounted rate of 15%

if there is a source of appropriations as a matching fund to get that discounted rate. If there is no appropriated source of funds to cover that, they have to charge the full rate which could vary in 2007 probably as high as 40% as opposed to 15% which is the way they've been operating for the past two years. He said going into FY07, there is no verbal or written agreement from anybody to provide the appropriated sum to get the DOI discounted burden rate. He said Denny Fenn went back to USGS Headquarters in October 2005 and made a plea to acting USGS Director, Pat Leahy, explaining there was potentially a $2 million deficit that would be created by having to pay the full rate if they were unable to get the DOI discounted cost share. Denny called and told Ted and said that Mr. Leahy had agreed to provide USGS-appropriated sums sufficient to provide the DOI discounted cost share for FY07 and FY08.

On the second slide, Chris Beard explained that the burden rate of 15% is only applied to the items that are broken out. For a full percentage of the 6% and 15%, she didn't take it off the science dollars (53%) and so another 10% would need to be taken off of that total. That burden is applied to only the administrative costs. Ted further explained that they have two burden rates that they can deal with. When they have agreements that are being used as a method of outsourcing the science activity, interagency agreements or cooperative agreements, assistance agreements, even grants, they can get a special dispensation to charge only 6% as opposed to the discounted 15% under the DOI cost-share rules. Ted said they get substantial discounts going through agreements, whether cooperative or interagency, things that qualify for the special pass through rate, buy them more science dollars because they get a discount on top of a discount.

Dennis reminded the TWG that in the FY06 budget, they went to the AMWG with about $750,000 proposed for a fund that would be used for the next large experiment and ended up with about $480,000, and wondered if the TWG had any thoughts about trying to do that again. He advised them to consider this when approving the budget.

Questions/Answers/Comments:

***Q**: Any way to figure out what the cost might be for the next BHBF? (Stevens)*
***A**: Based on recent work, we know what we were able to do in 2004 and what we're trying to resolve right now is how would we do anything differently or replicate what was done. The concept of doing one more test under enriched conditions is probably where we want to go. The timing might be around mid-winter or spring. We're trying to get at the question what can be done with the remaining sand supply below the dam that could lead to restoration and sustainability of these physical habitats. We have not resolved whether or not that's possible. (Melis)*
***Q**: I heard there was some issue with the aerials? (Barger)*
***A**: We had an excellent contractor do our systemwide, multi-spectral digital, orthorectified overflight on Memorial Day weekend. The group is called 3001 and they had a contract to fly the mission which they did successfully in May and they had 90 days to deliver the product to us (Sept. 5). The company was based in New Orleans so within the week that they were scheduled to finally deliver the data, Hurricane Katrina hit New Orleans and they had to relocate to Mississippi. They had pulled out of New Orleans early and had moved all their operations and data to a temporary location. They assured us that our data was safe but they didn't finish the processing. As of today, GCMRC has received samples of the final product to evaluate but have yet to receive the entire dataset. The company had to relocate again because of a second hurricane. This company has a stellar record and did a superb job of collecting the dataset. GCMRC hopes to have the whole dataset by the end of December, however, they've been in constant communication with them as they've reviewed the samples and performed internal quality assurance. (Melis)*
C: I would like to see an experimental flow fund and should do something to try to create that with as much flexibility as possible in using it. (Seaholm)

Humpback Chub Translocation in Grand Canyon: Background Feasibility, Experimental Design and Compliance Considerations. Larry Stevens said his presentation was on behalf of the Grand Canyon Wildlands Council, SWCA, and the Grand Canyon National Park. He distributed copies of his "Humpback Chub Translocation in Grand Canyon" PowerPoint presentation (***Attachment 6a***).

Randy Seaholm asked how the project was funded and Larry told him it was fully funded from NPS fee money. He asked Glen how he viewed the work as going towards fulfillment of the second population. Glen said they've identified translocation as a tool that should be considered in the HBC Comprehensive Plan. The AMP tasked the HBC AHG that he chairs with revising it. Glen said that one of the terms of the elements of the Reasonable and Prudent Alternative, FWS asked Reclamation to work towards creating a second population of HBC in the Grand Canyon.

Bill Leibfried said they did two years of work to evaluate tributaries that they thought might be feasible for future reintroduction based on a variety of elements including predator load and habitat. They finished up this year with their last trip in March and were able to fine tune the last couple of trips to really focus on a particular tributary. In Shinumo they thought they had the most effort and the most bang for the buck. He presented his portion beginning with the "Native Fish Habitat Restoration in Selected Tributaries of the Grand Canyon" slide (#10).

Questions/Answers/Comments:

***Q**: Did you look at parasites above the Falls, like you move the chub above? Will they have to be cleaned out because there is no Asian fish tapeworm in these higher reaches? (Sponholtz)*
***A**: I think that is something we would definitely want to address and make sure that if we're going to be translocating fish, we do parasite cleansing. (Leibfried)*
***C**: Rebecca Cole has a trip this coming summer and we're going to try and get Shinumo Creek above the Falls, Kanab Creek, and Bright Angel (Persons).*
***Q**: As I recall Valdez did a similar matrix. Does yours correspond to what he came up with or did you have differences? (Johnson)*
***A**: No. The change in Havasu Creek had a score relative to the Little Colorado River in the kind of iffy region. The reason there is not only simply the political context of trying to negotiate with the tribe, the tribe would have to guarantee water quality downstream. That's a very difficult challenge for them. If there was to be selected as a long-term, second population site, you would look for there to be suitable rearing habitat in the mainstem downstream for those fish and you're going right into a gorge. (Stevens)*
***Q**: If there are water quality issues above, then that's something I would hope the Service is a addressing if that's a threat to HBC. If you really have toxic materials that are being carried down, is this part of an action by the tribes that you have consultation on? There are people out there asking for reconsultation by this program and that one of the things that adaptive management is doing for us is showing us the multitude of threats for HBC and other endangered species in the Grand Canyon. This isn't just an issue of dam operations. (Kubly)*
***A**: Yes. (Leibfried)*
***Q**: Did you guys ask the question on carrying capacity? (Knowles)*
***A**: No, but I'll make note of that. (Stevens)*
***Q**: What is the stability of future funding? (Kubly)*
***A**: We're in a 3-year cycle with this. The project that Larry identified is basically a feasibility project with a plan on how to implement it. The long-term funding of that plan is a good question and it will have to be wrestled with by Park Service and potentially by this program. There is nothing in place at this point. (Henderson)*
***C**: And it's gotten even worse with the current revisions of the criteria for fee demo projects like this. There is a flat rider in there that there will be no money spent on T&E species. (McMullen)*
***C**: It would always be good to have HBC in another location than the LCR. We've advocated for quite awhile that we need to get some fish out in a refugia. To me, Shinumo Creek would be a fairly poor insurance policy if we really needed those fish. If we have to continue to electroshock RBT and there are HBC in the stream, we're going to have some serious issues to deal with and I would urge that we continue to pursue a renovation of the stream to try and get the exotics out before you go back with HBC. Once you get HBC in there, you'll be shocking HBC and will have some problems. (Persons)*
***C**: A lesson we learned in renovation in Fossil Creek is that you treat the whole watershed, that you have to get those stock tanks on them, on top, or wherever the source is. (Sponholtz)*
***Q**: When the translocation was done in the LCR, there was at least a cursory review by some outside geneticists. Is that something you would do in this case too? (Johnson)*
***A**: The genetics issues are paramount and are very important to the whole program. I think we'll probably have a discussion with the HBC AHG about the role of genetics in the decision-making. (Stevens)*

Larry said he would like to request permission for the next TWG meeting to give a brief presentation on the mouth of the Paria River. It's a place where the HBC used to occur and ran upstream for a couple of miles at Lees and developing ponds at the mouth might be another option for this program to consider.

Bill Leibfried also provided disks of the "Feasibility Study to Determine the Efficacy of Using a Weir in Bright Angel Creek to Capture Brown Trout Final Report" (***Attachment 6b***)

UPDATES:

HBC AHG Update: Glen Knowles said the HBC Plan continues to be a work in progress. There are five sections in the document (introduction, status, threats, strategy, and implementation) and then a list of projects as an appendix. The group has come a long way in revising at least three of the sections and are working on the other two. They've also made a lot of revisions to the projects as well. They have updated the projects and integrated them into the work that the SPG is doing. They are close to revising the plan again and hope to have something to the TWG in January and to the AMWG in March.

Randy said that AMWG also wanted to have some discussion on what was in and out of the program and wondered when that discussion should occur. Glen said that AMWG created another group to review in and out issues and Sam Spiller chairs that committee with involvement by Randy and Nikolai. Glen said that they've asked his group to finalize the plan as a single piece, ignore the in/out issue, and then give it to Sam, Randy, and Nikolai for review. Glen said he thought that review would occur when the plan is given to the AMWG.

Cultural Treatment Plan Update. Mike Berry said there are two cultural resource treatment plans currently in development, one for Glen Canyon and one for Grand Canyon. The Glen Canyon work is being performed by the Navajo Nation Archeological Department with Kimberly Spurr as a PI. They have completed field work and submitted a draft report to him in September. He found it to be deficient in a number of areas and they have promised a revised draft in December. The Grand Canyon work is being done jointly by Utah State University and the Zuni Cultural Resource Enterprise with Jonathan Damp and Joel Pedersen as co-PIs. They have accomplished quite a bit of the pre-field work and have applied for a research permit with NPS to begin work in the spring. Both of these projects are being conducted under the Programmatic Agreement for cultural resources. In addition to that, the National Park Service has committed to excavating ten of the larger sites in the Grand Canyon and that work should be accomplished over the next several years.

Questions/Answers/Comments:

***Q**: Does excavation of a site eliminate it from concern then or does it retain cultural significance to the tribes? (Stevens)*
***A**: Those are off our plate literally. They're going to be conducted under a separate MOA with the SHPO. (Berry)*
***Q**: If a site is excavated, what happens culturally in a TCP context, or? (Stevens)*
***A**: My take is that depending on whether the site is fully excavated or partially excavated and that is something still being debated in terms of what the treatment plan looks like that the archeological information values are going to be removed, the site is fully excavated. If not, then presumably (Fairly)*
***C**: The initial plan was for complete excavation of those ten sites. (Berry)*
***C**: As far as the TCP values associated with the location at that point, I think that is a subject that is still open to discussion and consultation with the tribes. (Fairley)*
***Q**: You're in the process of developing the treatment plan? How does that (Henderson)*
***A:** Yes. That's out of the scope of our treatment plan. That's a separate issue. (Berry)*
***C**: That's the money we got from US DOI that is suppose to function as a catalyst to get us to work together and those ten sites are ones that Jeff [Cross] talked about at the presentation awhile back. And those will be funded through that source and also the fact that some of that is going to be CRMP funding for the money we get out of the CRMP. (McMullen)*
***C**: The funds were initially in our treatment plan but then they were pre-empted by the Park Service. (Berry)*

***Q**: What happens as treatment plans are completed, what are the implications for the future budget of this program on out through a longer time frame? (Kubly)*
***A**: We've been working in placeholder mode for many, many years now and we're trying to get away from that as far as budgeting goes. The line item deliverables for both of these treatment plans include a budget for what it will take to actually accomplish a treatment plan. Those contracts will be let separately. Both of these treatment plans will be determination of eligibility. We will only treat eligible properties. I anticipate that consultation with Native American groups will take a full year before we actually do anything to the site. (Berry)*
***Q**: This is probably a question for Ken but at what point do you see bringing in the tribes and other possible consultants for the sites that the Park is looking at because obviously there is no agreement in place. We haven't seen any of the proposed actions yet. What kind of schedule are you looking at? (Yeatts)*
***A**: If Chris Kincaid was here, that would be helpful but ultimately we do plan to do consultation. I know it's early in the process and we're still working on a treatment plan and we're going to discuss that. I fully hope there will be some coordination and co-development of these treatment plans. I know there has been some discussion about that not occurring to the level that people are satisfied with but I'm hoping we can work that out. (McMullen)*
***C**: Suggest you contact the tribes early on because not only are we concerned about the compliance end of things but just what the research is. (Yeatts)*
***C**: We haven't even had a meeting to talk about what the ten sites are. (Barger)*
***C**: Jeff told you what those ten sites were. (McMullen)*
***C**: No, he just said there were ten sites. (Barger)*
***C**: I received that information from the Museum of Northern Arizona and so it hasn't been shared with this group yet. (Fairley)*
***Q**: So the Museum of Northern Arizona is doing the treatment plan as well as the excavation? (Barger)*
***R**: Mary, I've met with MNA and Ted on a number of occasions. He shared that list with me. I don't there would be an obstacle in providing that information to you. (Damp)*
***C**: Sounds like you'd like more input from the Park Service on what it is we're planning to do. (McMullen)*
***Q**: On your treatment plan, are those ten sites excluded from evaluation or are they still being evaluated while the Park Service is going on? (Henderson)*
***R**: No, they're off our plate. (Berry)*
***C**: Well, they've already been evaluated. (McMullen)*
***C**: Well, in 1993 and so they should be probably be re-evaluated again. (Berry)*

***Q**: What's the status on the PA signatories? (Heuslein)*
***A**: The letter went out to all signatories in June. To date, I've received responses from BIA, WAPA, CREDA, and Zuni. The rest of the tribes have not responded. NPS has not responded. The Advisory Council has not responded. The SHPO, at least at the staff level, have stated they will not sign it. (Berry)*
***Q**: What's the path to resolving this? (Kubly)*
***A**: They at least need to acknowledge the letter. (Berry)*
***C**: Margie Nowick responded by saying that she would like to see the PA amended prior to adding the signatures. (Barger)*
***R**: That's right. She was working on some suggested amendments but those were never received. (Berry)*
***Q**: Is this something a regional director needs to get involved in more or does it need to go higher than that? (Heuslein)*
***R**: I don't think it needs to go higher than that but we may need to make phone calls to people and find out what's going on. I know Hopi misplaced their letter. (Berry)*
***Q**: Ken, Do you know why the Park Service hasn't responded to the PA issue? (Heuslein)*
***R**: I'll take the 5th. There has been a long-standing disagreement on who should be members on that agreement. We don't agree with all the people that have been listed on there so like the SHPO, we don't want to sign that. (McMullen)*
***Q**: Have you put that in writing back to Reclamation? (Heuslein)*
***R**: I don't know. I can find out. (McMullen)*
***C**: Mike says you haven't. (Heuslein)*
***C**: Although the River Management Plan PA, CREDA, BIA, and WAPA are listed as interested parties. So on one hand you're saying they're interested parties. (Barger)*
***C**: Randy and Jeff [Cross] came to agreement on that a long time ago so I don't know what's holding it up. (Berry)*
***Q**: Is the Park Service <u>not</u> going to sign or are they still evaluating? What is the actual status? (Henderson)*
***R**: I stall only because it's not current information. The last I heard was that we were not planning to sign it for numerous reasons. That's the last I heard and that is several months old. (McMullen)*
***Q**: Could you pass along to us if it is a negative response? I'd appreciate that. (Berry)*

***Q**: Mike, could we put that on the AMWG agenda and have Joe Alston address it? (Barger)*

Lake Powell Water Quality Update – Matt Andersen gave a PowerPoint presentation (***Attachment 7***). Matt said one change needed to be made and then the presentation would be sent to Linda for posting to the AMP website.

Warm Water Workshop Planning. Matt Andersen said the AMWG and TWG have had some concerns about the warm water releases. He and Lew Coggins have been working on putting together a draft agenda for that meeting. He passed out copies of the draft agenda along with related information and gave a brief PPT presentation on what is being planned for the workshop (***Attachment 8***).

Dennis said he didn't see any prioritization of the species in his set of objectives and also didn't see any identification of who has the management authorities or responsibilities. Some of the species can be dealt with expressly within Grand Canyon and some from outside. He asked what the impediments would be to the program partnering with other entities. Dennis told Matt he would need to look at the political restrictions on accomplishing biological objectives because they will have to be dealt with at some point if the species are going to be controlled. Dennis said that two things the workshop should include: 1) some element of prioritization, and 2) where you have impediments to program control what other authorities have to be brought in to make that work.

Randy Seaholm said he would like to see a rough estimate of what the different detection or control methods might cost.

Update on Knowledge Assessment Workshop & Report. Ted Melis said Josh Korman with Ecometric Research was joining via conference call. He said the knowledge assessment efforts that were underway from May-July and continue were intended to identify strategic science questions as a starting point for identifying experimental and other research that would be required to answer those questions. He gave a PowerPoint presentation (***Attachment 9***) and Josh commented on some of the slides.

In order to move the report forward, Josh suggested going through the comments, revising the document, and then going through the SCORE Report and see if they can shore up the GCRMC references into the report. Following that, the report would be given to the science advisors. Josh said it will be more than just citing the reference but actually reading the reference, discussing it, and interpreting the results.

Comments:

- *I wonder if we can just use the SCORE Report. I don't want to see us re-do the SCORE report in this knowledge assessment. I didn't see a lot of citations and I don't know how extensive we want to get with those but not sure how much value added we would get from that effort. (Persons)*
- *The SCORE Report is the status of the resources. That's sort of the monitoring side and the knowledge assessment really concentrated on what we know about the effects of our actions. I agree with Bill and see some overlap but I also see other elements of the knowledge assessment that you wouldn't find in the SCORE Report. My need for those references can be satisfied by a solicitation to the people who were there and who took positions. (Kubly)*
- *For those cells we've identified as green, which are totally based on studies that tell us not only the direction but also magnitude of response, there certainly needs to be that level of documentation there because the cells themselves are tied to that level of study. We need to make sure that information in the green cells is documented well. (Fairley)*
- *I would rather not see this document as a final one-time shot. I'd like to see it as a document that gets revised on a fairly frequent basis. I don't feel the need to look at all the papers in the library at GCMRC and see which ones are relevant to each cell but I would like to that every time it is revised, information is captured and we keep building on it so we have a good, solid basis for the conclusions recorded in each of these cells. (Johnson)*

ACTION: Any remaining comments on the Knowledge Assessment Workshop and Report need to be sent to Ted Melis by December 15, 2005.

Dennis said the document doesn't really tackle that hard question of which of the actions could be considered management actions for the hybrid design. There isn't a section in the document that refers back to the agreed upon process and design and could meld right into what is being proposed. He thought that perhaps the report needs a section that says "this is what you asked us to do, we're the scientists, this is our role and the next step is for you to determine some combination of red/yellow/green cells."

Ted said the TWG was the context for the first knowledge assessment workshop so the scientists won't tell you what level of uncertainty you should live with and be happy. He felt it would be important to list the steps required in order to resolve issues. (Josh left the conference call).

Mark said one of his concerns from yesterday's discussion was that MLFF would be required because of Josh's redds work and he brought that up. He was told that Josh is really working more on developing a model than actually doing field work. Ted said the model was already developed but that the purpose of this year's effort was to verify or refute whether that model is correct by changing operations to something else, control operation, and seeing if the prediction that he made in his report based on the model he created, is verified. If he is completely wrong, then you'd have to say that model didn't work. Ted said they didn't know yet if the model is correct so Josh even ran things like no-action through it from the 1980's. It seemed like the reasonable thing to do with the compliance in place for a different operation was to simply go back to one that's already been approved by the Secretary for 13 years.

Helen said that one of the implications for the flows that are being proposed for WY06 was to change ramping rates and there are any actual FIST-related work going on so the only thing they would be tracking would be the actual transport rates. They don't have in place as far as experimentation or studies or anything that would actually allow us to evaluate ramping rates affect sandbar deposition and topography, etc. Ted said he will be meeting with some of the sediment scientists next week to discuss a study design that would incorporate potentially field studies as well as flume studies in a controlled laboratory setting as well as modeling efforts. If the request was to do a ramping related field study this winter, GCMRC is not ready to do it and there is nothing in place to do that and anything they do in the field this year will delay reporting and final resolution of what they did in FY04 with the sediment test. He said the plan was to give the sediment scientists and others time to catch up with their work and plan for the future while the program staff really focused on planning the strategic science documents. If they start changing that focus, things are going to falter in other areas.

FY06 Contracting and Coop Agreements.

Reclamation: Mike Berry reported that Reclamation has been funding tribes for participation in the AMP under cooperative agreements for many years, however, this year they are going to be doing sole source contracting for the full amount of $95,000 per tribe. Reclamation used to be responsible for collecting the $95,000 from each of the five DOI agencies and then disbursing the funds to the tribes by cooperative agreements. That process wasn't working very well because Reclamation wasn't very effective in having the agencies kick in their money. Mike Gabaldon worked out an arrangement whereby the Department would be responsible for gathering $95,000 from each DOI agency through an RSA. In theory, there is a pot of money back in Washington and as the tribes bill Reclamation, Reclamation will bill that pot of money. Each of the contracts has line item and task deliverables and that was vaguely defined in the past so this new method is an improvement. Mike said the other line item they have for tribes is for developing a monitoring protocol and those are $25,000 contracts. They will be handled the same way as sole source reimbursable contracts. Reclamation will meet with the other DOI agencies and will outline what they really want from the tribes to satisfy the requirements of the AMP. They will then negotiate with the tribes individually on what they bring to the contract with Native American perspectives

and they will write those line items and deliverables. Reclamation is hoping to develop a protocol that will feed into core monitoring for GCMRC.

Helen said at a meeting held on Monday, it became clear that some of the tribes didn't comprehend that they were cost reimbursable contracts. She thinks it was resolved with the people who were present but she wanted to encourage Reclamation to send a letter to the tribes and remind them that they won't get the money upfront but have to bill for deliverables. Mike said the contracts were sent to the tribes and stipulate quarterly billing.

Dennis said one of the challenges is going to be, because of the timing, the tribes are developing as you say protocols but because the SPG is the process for establishing the core monitoring and research plans, they are also working in that capacity as well. You're going to get pinched in having what you need to get done in time so that can be integrated into the FY07-08 budget process. Mike said the contracts would be in place for one year from the date of execution but feeding into the FY07 budget is going to be difficult. Mike said he is going to try and meet with the tribes in January.

GCMRC: Ted said in terms of the FY06 budget and workplan, they had every intention of making an award based on a competitive process for foodbase research. The award was made at the end of the year during their closeout so they were able to use some 2005 funding to get that new research program underway. The request he made to the AMWG was they needed $100,000 added to the budget but then it turned out that they didn't need all that money. They had originally agreed to having $100,000 in the FY06 budget and basically because of the ability to use some of the FY05 money, that money they requested and were finally granted by the AMWG has been put back into the holding fund for the experimental flow contingency fund. With the closeout, there was money available to get things started so in FY06 they will be making a modification for their second year of work using some of the FY06 that was approved. He said that was the only new agreement he was aware of in FY06.

Dennis asked Ted that if they don't have MLFF, what happens to the contract with Ecometric. Ted said that based on yesterday's discussion, GCMRC will have to go back and discuss what happens next. There was some confusion as to whether an MLFF would be required as a result of Josh's work and that the TWG was told that Josh could test the model. Ted said they're still not sure the model is correct.

Leslie James asked if there are funds that haven't been used, whether there should be a consideration for them to go back into the basin fund. In terms of draws on the basin fund, she wondered if there was some flexibility on when and how often you could do that so they don't get into a situation where there has been a big withdrawal and then money just sits while the basin fund is going down. She said she wasn't sure what the experimental flows line item was but she thought at one point it was $1.5 million. Dennis said that $1.5 million was identified if they expected to do another large, high flow experiment so they set about getting half of that in place and he thinks that at the end of the last AMWG meeting they ended up with $450,000 and now they're might be $100,000 more. If in FY07 there is going to be an experiment, they still have another $900,000 that has to be accumulated somehow. Leslie said that with the latest rate increase that WAPA implemented on October 1, the whole CRSP rate is being done differently and there is a potential of a fuel adjustment clause or fuel adjustment adder that utilities have and there is a cost recovery charge that is part of that CRSP rate but it involves basin fund levels and triggers. She said that if there is money that originally came out of the basin fund and it's not being used and it could go back in, that could potentially mitigate whether a fuel adjustment adder gets charged to all the customers.

Ted also reported there is a new 5-year agreement between Reclamation and GCMRC. The rest of the agreements that are in place for projects that haven't been finalized or completed, if there is an FY06 component to those, will be ongoing work done through modifications.

Science Symposium & SCORE Report Update. Ted Melis said the SCORE Report came out about a month ago. It can be downloaded from the GCMRC website or it can be obtained in CD or report format from Nora Bryant at GCMRC. It was GCMRC's attempt to give the best appraisal of the state of the various resources was through 2003. Ted said he wanted information for future agendas for the TWG and AMWG so they can see the report become a useful tool. He hopes that revisions to the report will not be as costly as the initial setup and that perhaps the report will be updated for an online version and a hard copy every five years or so. The Science Symposium served as a forum for releasing the report. He said that Denny Fenn was going to make a presentation to the AMWG on why the stakeholder process wasn't allowed to preview the report in its early draft version. It turned out that based on the Departmental and agency policy the decision was that it couldn't be previewed until it was finally approved for publication. The final decision was to distribute it to everyone at the same time including the public and the stakeholders. As such, Ted gave Denny's PowerPoint presentation (***Attachment 10***).

Comments.

- *We don't want to see the report become static. We need a mechanism to collect information on an annual basis and that in five years it could be revised. We need the information. (O'Brien)*
- *There are lots of different ways to use the SCORE Report and I think having it in a book format is very useful. I wonder if we need to bring some people together and discuss how we could achieve all the other goals, the real time data coming to us even if in draft form. We've done that on an ad hoc basis and that's okay but it would be nice to say that is something that goes to Congress and the public, maybe the knowledge assessments is something we do for the AMP. There are probably a lot of different ways to cut this but we would be well served to have well defined definitions of the purpose of each one of these documents. (Johnson)*
- *We do have a public relations committee and this is a key public relations piece. If it's on the web, it can be updated on an annual basis. (Stevens)*
- *If and when we prepare this report again, I would suggest there be a presentation to the AMWG or TWG before this is released to the public because what we saw happening we were seeing at the same time everyone else was seeing it. We were getting media phone calls. The POAHG didn't have a role at all because they were looking at it the same time as the media. I think the outcome was quite a bit of negative publicity that came from non-stakeholders. It would serve this program much better if a product like that is made available to the AMWG before it goes to the general public. (James)*
- *When we talk about the Report to Congress, in the past it's largely been "we did this." It hasn't been "the results were." We're now at a stage where we need to upgrade our reporting and we need to think about the Grand Canyon Protection Act and what the metrics are that say this program is succeeding or failing. We need to add to our meeting agenda is a consideration of these targets that Ken is taking the lead for that would become, if adopted at some point by the AMWG, the management objective targets. Then we would have something to report against as whether the resources are responding, whether the targets are being achieved. I think the TWG will have to advocate this to the AMWG and it is probably in conjunction with revision of their Strategic Plan because the timing is right to do that. (Kubly)*
- *One suggestion I would have is that maybe the SCORE Report shouldn't have any opinions in it. If you can't base a discussion on them, then they don't belong in here. (Greiner)*
- *Chapter 13, the score card, got a lot of press. I think there might be a desire on the part of some of the AMWG members to at least have a discussion of that and what it really means. (Persons)*
- *We have an assignment for Interior and it isn't just the SCORE Report, it's also the Knowledge Assessment Report. I think it's very important to keep those two legs together but at some point we owe an interpretation and an analysis in the form of recommendations up to the AMWG to go to Interior. Let's put how we accomplish that as an agenda item. We can't just leave it lying in the dust but I do think we wouldn't want to start too far ahead with the SCORE Report before we have that sister document. It would be advantageous to have them both analyzed at the same time which is what I believe Mike Gabaldon asked for. (Kubly)*
- *I think the SCORE Report did a good job of wrapping the information together. (2) I wished I would've had was an opportunity to comment on Chapter 13 where everyone went in terms of taking the first few boxes related to fine sediment, make a prediction, and then you make comment. I would've hoped that added to that comment was for example, "recognition of the drought that we had over the last half of the period of which this was addressing." That would've focused a little more objectivity on it. That was a piece that I thought would've been quite helpful. (2) With respect to the Science Symposium, there was just too much going on and three days was*

a lot of time. (3) The reports that you send out in detail are great. What I really appreciate most of all is the Fact Sheet that accompanies that because then if I don't have time to read the guts, I at least have that overview. If that overview raises concerns, then I will make the time to read the report. (Seaholm)

Future Agenda Items:

- In-depth discussion on SCORE Report (and Chapter 13 on report card)
- Presentation of sediment augmentation feasibility report by Tim Randle
- What does TWG recommend to AMWG?
- Final HBC Comprehensive Plan proposals. What does TWG recommend to AMWG?
- Status of SPG activities and products and recommendation to AMWG
- Update by budget ad hoc and recommendation to AMWG
- FY06 experimental hydrograph (results of AGFD rainbow trout survey) and revised recommendation to AMWG
- Update on warm water/non-native fish workshop and proposal for '06 monitoring
- Possible genetics report presentation
- Genetics Management Plan update
- Schedule of products and requirements for the coming year
- Update and status of the TCD
- Update on treatment plan, programmatic agreement

Next Meeting:

Wednesday, January 25
Thursday, January 26

Location:

Bureau of Indian Affairs
2 Arizona Center
400 N. 5th Street
Conference Rooms A&B
Phoenix, Arizona

General Key to Adaptive Management Program Acronyms

ADWR – Arizona Dept. of Water Resources
AF – Acre Feet
AGFD – Arizona Game and Fish Department
AGU – American Geophysical Union
AMP – Adaptive Management Program
AMWG – Adaptive Management Work Group
AOP – Annual Operating Plan
BA – Biological Assessment
BE – Biological Evaluation
BHBF – Beach/Habitat-Building Flow
BHMF – Beach/Habitat Maintenance Flow
BHTF – Beach/Habitat Test Flow
BIA – Bureau of Indian Affairs
BO – Biological Opinion
BOR – Bureau of Reclamation
CAPA – Central Arizona Project Assn.
cfs – cubic feet per second
CRBC – Colorado River Board of California
CRCN – Colorado River Commission of Nevada
CREDA – Colorado River Energy Distributors Assn.
CRSP – Colorado River Storage Project
CWCB – Colorado Water Conservation Board
DBMS – Data Base Management System
DOI – Department of the Interior
EA – Environmental Assessment
EIS – Environmental Impact Statement
ESA – Endangered Species Act
FACA – Federal Advisory Committee Act
FEIS – Final Environmental Impact Statement
FRN – Federal Register Notice
FWS – United States Fish & Wildlife Service
GCD – Glen Canyon Dam
GCMRC – Grand Canyon Monitoring and Research Center
GCNP – Grand Canyon National Park
GCNRA – Glen Canyon National Recreation Area
GCPA – Grand Canyon Protection Act
GUI – Graphical User Interface
HBC – Humpback Chub (endangered native fish)
HMF – Habitat Maintenance Flow
HPP – Historic Preservation Plan
IEDA- Irrigation and Electrical Districts Association of Arizona
IN – Information Need
IT – Information Technology (GCMRC program)
KAS – Kanab ambersnail (endangered native snail)
LCR – Little Colorado River
LRRMCP – Lower Colorado River Multi-Species Conservation Program
MAF – Million Acre Feet
MA – Management Action
MO – Management Objective
MRAP – Monitoring and Remedial Action Plan
NAAO – Native American Affairs Office
NAU – Northern Arizona University (Flagstaff, AZ)
NEPA – National Environmental Policy Act
NGS – National Geodetic Survey
NHPA – National Historic Preservation Act
NPS - National Park Service
NRC - National Research Council
NWS - National Weather Service
O&M - Operations & Maintenance (USBR funding)
PA - Programmatic Agreement
PEP - Protocol Evaluation Panel
Powerplant Capacity - 31,000 cfs
Reclamation – U.S. Bureau of Reclamation
RBT – Rainbow Trout
RFP - Request For Proposals
RPA - Reasonable and Prudent Alternative
SAB - Science Advisory Board
Secretary(=s) - Secretary of the Interior
SPG - Science Planning Group
SWCA - Steven W. Carothers Associates
TCD - Temperature Control Device (for Glen Canyon Dam water releases)
TCP - Traditional Cultural Property
TES - Threatened and Endangered Species
TWG - Glen Canyon Technical Work Group (a subcommittee of the AMWG)
UCR - Upper Colorado Region (of the USBR)
UCRC - Upper Colorado River Commission
UDWR - Utah Division of Water Resources
USBR - United States Bureau of Reclamation
USFWS - United States Fish & Wildlife Service
USGS - United States Geological Survey
WAPA - Western Area Power Administration
WY – Water Year (a calendar year)