

**Glen Canyon Dam Adaptive Management Work Group Meeting
February 3-4, 2010**

Conducting: Anne Castle, Secretary's Designee
Facilitator: Mary Orton

Convened: 9:35 a.m.

Committee Members/Alternates:

Perri Benemelis, AZ Dept. of Water Resources (alt.)
Charley Bulletts, Southern Paiute Consortium
George Caan, Colo. River Commission/Nevada
Jennifer Gimbel, Colo. Water Conservation Board
Ann Gold, Bureau of Reclamation
Amy Heuslein, Bureau of Indian Affairs
Loretta Jackson-Kelly, Hualapai Tribe
Leslie James, CREDA
Rick Johnson, Grand Canyon Trust (alt.)
Arden Kucate, Pueblo of Zuni
Steve Martin, NPS/GCNP
Don Ostler, NM Interstate Stream Commission (alt.)

Clayton Palmer, WAPA (alt.)
Andre Potochnik, Grand Canyon River Guides
Ted Rampton, UAMPS
Mike Senn, Arizona Game & Fish Department
John Shields, Wyoming State Engineer's Office
Sam Spiller, U.S. Fish and Wildlife Service
Larry Stevens, Grand Canyon Wildlands Council
Dennis Strong, Utah Div. of Water Resources
Mike Yeatts, The Hopi Tribe (alt.)
Gerald Zimmerman, Colo. River Board of California
VACANT, Navajo Nation
VACANT, Federation of Fly Fishers

Committee Members Absent:

Nikolai Lash, Grand Canyon Trust

Interested Persons:

Andrea Alpine, USGS
Deanna Archuleta, DOI
Jan Balsom, NPS/GCNP
Mary Barger, WAPA
Mike Berry, USBR
Shane Capron, WAPA (TWG Chair)
Kerry Christensen, Hualapai Tribe
Rick Clayton, USBR
Marianne Crawford, USBR
Kevin Dahl, Nat'l Parks Conservation Assoc.
Mary Daugherty, USGS/GCMRC
Paul Davidson, USBR
Bill Davis, CREDA
Kurt Dongoske, Pueblo of Zuni
Helen Fairley, USGS/GCMRC
Carol Fritzingler, USGS/GCMRC
Bert Frost, NPS
Dave Garrett, Science Advisors
Pamela Garrett, M³Research
J. Lonnie Gourley, USBR (GCD)
Paul Grams, USGS/GCMRC
Martha Hahn, NPS/GCNP
John Hamill, USGS/GCMRC
Lynn Hamilton, Grand Canyon River Guides
Burt Hawkes, WAPA
Norm Henderson, NPS
Kara Hilwig, USGS/GCMRC
Lisa Iams, USBR
Sam Jansen, Grand Canyon River Guides
Rick Johnson, Grand Canyon Trust
Ted Kennedy, USGS/GCMRC
Robert King, UDWR
Anne Kinsinger, USGS

Kate Kitchell, USGS
Glen Knowles, USFWS
Ted Kowalski, Colorado Water Conservation Board
Dennis Kubly, USBR
LaVerne Kyriss, WAPA
Estevan López, NM Interstate Stream Commission
Jane Lyder, DOI-Deputy AS, FWP
Robert S. Lynch, Attorney at Law (IEDA)
Cyd Martin, NPS/Intermountain Region
Shanan Martineau, So. Paiute Consortium Monitor
Barbara McKenzie, USGS/GCMRC
Ted Melis, USGS/GCMRC
Steve Mietz, NPS/GCNP
Doug Miller, CAWCD
Doug Milligan, Salt River Project
David Nimkin, National Parks Conservation Assoc.
Mary Orton, The Mary Orton Company
Colby Pellegrino, Southern Nevada Water Authority
Tom Ryan, USBR
Bob Snow, DOI Solicitor's Office
Bill Stewart, Arizona Game and Fish Department
Bill Swan, Imperial Irrigation District
Jason Thiriot, Colorado River Commission/Nevada
Benjamin Tuggle, Fish and Wildlife Service (phone)
Bill Victor, Grand Canyon Private Boaters Assoc.
Larry Walkoviak, USBR
Jeff Warner, CREDA
John Weisheit, Living Rivers
Bill Werner, citizen
Barry Wirth, USBR
Curtis Yazzie, Navajo Nation

Meeting Recorder: Linda Whetton, USBR

Welcome and Administrative: Ms. Anne Castle introduced herself as the Secretary's Designee and welcomed AMWG members, alternates, and members of the public. A roll call was taken and a quorum (15 members) was established. Ms. Castle talked about the importance of Glen Canyon Dam and related issues. She announced the following member appointments:

- Ann Gold (USBR) and Mike Senn (AGFD) were officially appointed AMWG members.
- The following members were reappointed: Amy Heuslein, Loretta Jackson-Kelly, Leslie James, Nikolai Lash, Andre Potochnik, Ted Rampton, John Shields, Sam Spiller, and Jerry Zimmerman.
- The following individuals were appointed AMWG alternates: Perri Benemelis, Kerry Christensen, Bill Davis, Martha Hahn, McClain Peterson, and Clayton Palmer.

The appointment of Estevan López is still being processed. Ms. Castle invited him to sit at the table and said if a vote was required, Mr. Don Ostler would handle that as New Mexico's alternate. Mr. Curtis Yazzie represented the Navajo Nation as the proposed nominees were unable to attend. He was allowed to participate in the discussions but could not vote on any motions.

Scoping Session Requirements. Ms. Orton distributed copies of the scoping speaking forms to be completed by individuals who wanted to provide verbal comments during the High Flow Experiment Protocol (HFE) Scoping Session. She said the length of speaking times would be adjusted by the number of people wanting to participate.

Reports to Congress. Ms. Castle said the 2008-2009 Report to Congress was filed and posted last week (**Attachment 1**). The 2009-10 report is currently being prepared. All DOI agencies have submitted narratives describing their work over the past year. The Department is reviewing the drafts and the AMWG will be asked for comments prior to the June filing date.

Grand Canyon Trust Request. Mr. Johnson said the GCT would like to receive a detailed timeline for when reports required under the GCPA will be completed. Ms. Castle said a list would be provided of those documents which have been filed and those that are in process.

ACTION ITEM: Provide a list of reports in Grand Canyon Trust's minority report that have been filed and copies thereof.

Secretary's Response to AMWG Recommendation Letters. Ms. Castle distributed copies of Secretary Ken Salazar's response to the AMWG's recommendations from the last two meetings (**Attachment 2**).

Approval of August 12-13, 2009, Meeting Minutes. Without objection the minutes were approved.

Action Item Tracking Report (Attachment 3). Ms. Castle said there was a considerable backlog of issues and a number of them relate to the Roles Ad Hoc Group Report and need to be dealt with sequentially. She said the Action Item Tracking Report is informational and is meant to remind the AMWG of what needs to be done. If there are still relevant issues, they need to be completed.

Legislative Updates. Mr. Kubly said he looks at bills related to endangered species, energy, and Federal Advisory Committee Act (FACA) issues. In the 111th Session of Congress, there were 139 bills passed by Congress and signed by the President. He said H.R. 644 is a bill that may be of interest to the AMWG because it proposes to withdraw the Tusayan Ranger District and federal land managed by the Bureau of Land Management that borders Grand Canyon National Park and has to do with uranium mining. Some field hearings will be held in February. Mr. Martin didn't know what topics would be discussed but said Chairman Raul Grijalva (D-AZ) is supportive of Secretary Salazar putting a hold on mining and exploration while the Park Service does an environmental impact statement being led by BLM. Dennis said other bills in process would authorize appropriations in the Bureau of Reclamation for the Upper Colorado River Recovery Implementation Program, the San

Juan Recovery Implementation Program, and the Lower Colorado River Multi-Species Conservation Program.

Litigation Update. Mr. Snow said the case of Grand Canyon Trust against the Department of the Interior has been going on for almost two and a half years. Since the last AMWG Meeting in August 2009 there was a court-ordered remand of the Biological Opinion. The Fish and Wildlife Service filed a supplement to the BO in October. Subsequent to the BO being filed with the court, the United States objected to some of the allegations the Trust made against the BO but the judge rejected those.

AMWG Charter Renewal. Ms. Castle stated the AMWG Charter (**Attachment 4a**) will expire on July 23rd of this year. Even though the Charter is renewed every two years, she felt it had been some time since it had been thoroughly reviewed. Using the Roles Ad Hoc Group Report (**Attachment 4b**) as a reference for the review, she suggested an ad hoc group be formed to review the charter and propose any changes to the AMWG. She anticipated this could be done within a year.

Mr. Stevens proposed motion language and the AMWG discussed the need for sending a recommendation to renew the Charter to the Secretary. The AMWG typically hasn't sent motions to renew the Charter in the past. The group then discussed the need to establish an ad hoc group and whether that information should also be included in the motion language. It was decided to have two separate motions and the following motions were passed by consensus:

MOTION (Proposed by Mr. Stevens, seconded by Mr. Johnson): The AMWG recommends that the Secretary of the Interior renew the AMWG Charter for two years.

MOTION (Proposed by Mr. Stevens, seconded by Mr. Johnson): AMWG establishes a Charter Ad Hoc Group (CAHG) to make a recommendation to the AMWG in no more than a year regarding changes to the Charter. The CAHG will use the Roles Report as a reference.

Charter Ad Hoc Group (CAHG) Charge: To make a recommendation to the AMWG in no more than a year regarding changes to the Charter, using the Roles Report as a reference. The following people volunteered to serve on the Charter Ad Hoc Group (CAHG): Jennifer Gimbel (co-chair), Ann Gold (co-chair), Perri Benemelis, Kurt Dongoske, Leslie James, Rick Johnson/Nikolai Lash, Steve Mietz, McClain Peterson/Jason Thiriot, Ted Rampton, and John Shields.

Appointment Process for TWG Members and Alternates. Ms. Castle said the AMWG Charter states that subgroup members are named by members of the AMWG. The Charter says that "subgroup members may designate alternates subject to the approval of the Secretary's Designee and the AMWG." She said there's been a situation where TWG alternates have to be approved by the AMWG but the TWG meets a lot more frequently than the AMWG meets and that is why she has sent e-mails asking if there are any objections to approving an individual to serve as a TWG alternate. She proposed that when there is a request for an alternate, she will approve them and notify the AMWG members but that they not go through an AMWG approval process for TWG alternates. She asked if there was any objection to doing that. No objections were offered.

HFE Experiment (**Attachment 5a = AIF**). Dr. Melis distributed a handout, "Glen Canyon Dam Adaptive Management Program Published Research on Experimental Activities" (**Attachment 5b**) along with a recent USGS Fact Sheet, "2008 High-Flow Experiment at Glen Canyon Dam Benefits Colorado River Resources in Grand Canyon National Park" (**Attachment 5c**). He then gave a PPT presentation, "2008 High Flow Experimental Results" (**Attachment 5d**) which included related project updates. He said they intend to publish another USGS circular in December 2010 in an effort to help stakeholders deliberate and do future HFE planning. He said the consensus of the sediment researchers is that none of the 2008 sediment results refute in any way any of the previously published sediment findings. Referencing comments made by Dr. David Topping, Ted said a long-

term experimental sediment triggering approach is needed to answer the strategic sediment question: Is there enough sand under a dam-operations-only strategy to build or maintain sandbars or habitats over a long period of time? He said sandbars can be built if they have sediment supplies but they tend to be eroded by dam operations whether they're stable, fluctuating, or other flows and it is just part of the package in dealing with long-term planning.

He recommended the members read Barbara Ralston's Open File Report, "Riparian Vegetation to the March 2008 Short-Duration, High-Flow Experiment—Implications of Timing and Frequency of Flood Disturbance on Nonnative Plant Establishment Along the Colorado River Below Glen Canyon Dam" (**Attachment 5e**) which was also posted to the USGS website.

Ms. Castle said she wanted to provide a little bit of a big picture context: 1) With respect to the timing and release of the report, she said the report was promised in January 2010. She said the Administration takes timing promises very seriously. One of the criticisms of the AMP has been that reports and science have not been promptly delivered. She wants to make sure that's not the case going forward. She said the report was presented to the TWG on January 20, 2010, and they collectively thought it would be a more productive discussion with the AMWG today if there was a written report available and didn't just have an oral presentation. 2) She said this is the type of science that is needed to move forward. As directed by the AMWG, the scientists have been asked to analyze the particular issues. They haven't been asked to deal with the other obligations of the Department of the Interior and the Law of the River so there are a lot of other considerations that have to be overlaid on the science. She just wanted to make clear that this is component of what the AMWG has to consider going forward; it's not the entirety.

Q: *What about the mass balance of sand? (Shields)*

A: *If we had perhaps done an earlier high flow, in response to the 06 and 07 sediment inputs, that upper reach from Mile 1 to Mile 30 in Marble Canyon, there probably would've been a more demonstratively positive result because that's what we measured in 2004. The fall 2004 experiment was in our immediate release of an HFE, the response to a Paria input, but smaller. I think what happened was we had the loss downstream, part of that input as well as the 07 input. Now the duration question is a good one. I think if we had done a shorter duration, it might also have been positive even with the winter conditions of the sand we had up in Marble Canyon but we may not have seen the robust part of it that we saw occur through 90% of the rest of the system in 2008. Again, because the deposition rates to eddies are tied not only to the amount of sand available but also to the grain size of the sand delivered. Higher depositional rates with more sand and finer sand is lower depositional rates with coarser sand the rest of the year. It's a tradeoff and needs to be considered for future planning based on the objectives. (Melis)*

Q: *Based on this presentation and other work you've done, my take home message is that there is really no way to maintain sediment in the Grand Canyon under MLFF in any sort of BHBF or high flow regime. If that's not correct, can you tell me under what conditions we can actually maintain sediment in the Grand Canyon if we've got other fluctuating flows? (Johnson)*

A: *We can't say today that under MLFF with enriched high flows that it is impossible to maintain some condition of sandbar rebuilding. We've had opportunities potentially of sand input since 1996 by our estimates eight times, eight years. Since 1996 we've had triggering sand inputs from the Paria River. Only two of those have actually been followed by experimental high flows, the one in 2004 and again in 2008. Had we done the other six, we could've had completely different conditions that what I'm showing you now but we can't timecast that effect. Within the context of MLFF, which is the approved operation, we've only attempted to experimentally manage only 25% of the available inputs. Had we tried to experiment with 100%, it might be possible but based on the 25%, I think what we can tell you today is you've got sand conditions that are approximately the same throughout the Grand Canyon as prior to the two high flow tests.*

Q: *If we can only do these every two years, I don't see the logic. Even if we do it every time we have enriched conditions that comes by an average of every three years, I don't see how we're going to maintain sediment. (Johnson)*

A: *It really does depend on what condition it is that you desire as the goal. So we've had sandbars in the canyon in the post-dam era the full time, sometimes they've been larger, sometimes they've been smaller. It's unclear to us what the objective goal is, the amount of sand desired. We can't say today that we have substantially less sand than we had in the sites we measured. We do know we have less sand today than we had in 1994 based*

on Jack Schmidt's work. Based on the measurements we've made and what's been achieved based on two out of eight enrichment episodes where we had high flows and if it is desired to have more sand in the system than that, then we're suggesting that perhaps try to experimentally manage every trigger input other than just 25% of them over 5- or 10-year period. (Melis)

Q: Were all the same sites measured both pre- and post- of each of the events? (James)

A: There were many more backwaters measured in this experimental approach than the original sandbars that you've heard about since the 1990's. The goal was in terms of those sites is to compare the 2008 measurements across the channel to all the 1996 measurements. The backwater sites constituted a subsample of that. There were over 116 sites so there were many new sites measured for the first time so we had direct comparison of 30-35 sites between 1996 and 2008. We increased the sandbar measurements over time to about 45 and backwaters measured were more than twice that number. Some of these sites were measured four times within six months. (Melis)

HFE Protocol (Attachment 6a = AIF, FRN, and Scoping Schedule). Ms. Castle played the video of Secretary Ken Salazar delivering a speech from Copenhagen on December 10, 2009, to the Colorado River Water Users Association in Las Vegas (**Attachment 6b** = text from speech). Per his remarks, Ms. Castle said the Department will be using the environmental assessment process to develop a HFE protocol to obtain stakeholder and general public comments via today's scoping session. She said it's not the Department's intent to propose an action that would have an impact on power deliveries and that the subsequent flows will be part of a longer effort. Currently there is a 5-year plan in place and the Department is committed to that plan until it expires in 2012. Since that's not very far off, Ms. Castle said the AMWG needs to plan ahead and put an experimental plan in place. In the interim, however, she doesn't want the program to lose the benefit of using sediment enriched conditions. She said the session would be for scoping and developing a purpose and need statement.

Mr. Ryan provided the process and schedule for development of the HFE Protocol Experiment. He said comments will be accepted throughout the public scoping process. Written statements can also be sent to protocol@usbr.gov which is listed in the Federal Register Notice.

HFE Scoping Session Comments (Attachment 7 = Transcript)

- *I'm vague about the EA because I don't have enough information. Disappointed in the steady flows. Think they're untimely. We don't have sediment augmentation underway. We don't have a TCD. The things that were wrong in the EIS 1995 have not been addressed. (Weisheit)*
- *With sediment trigger criteria, we should consider flow input from all the tributaries. Two weeks ago there was a large storm. There needs to be some combined sediment triggers. (Potochnik)*
- *We need consultation on aquatic wildlife and the TCPs. Where in the HFE does it include other flows? (Kucate)*
- *The protocol should be narrowly developed. A science report should be completed after each HFE and presented to the AMWG. The protocol should also include the financial costs and the effects of the HFE on other items in the budget. (James)*
- *There may be impacts to resources not limited to native fish. We would like to have the mitigation actions become part of the action so it can be included in the FONSI. HFE events not include just BHBFs but also HMFs and even potentially Cook-Moody flows. (Palmer)*
- *I represent the Irrigation Electrical Distributors Association (IEDA) of Arizona which contracts for power from Western and CRSP, Glen Canyon Dam and have a lot of concerns: the duration of the test, how the studies relate to the Record of Decision, haven't seen the correlation between these kinds of studies and hydrology, alternatives to be explored, possibility of a federal action, and need to have a lot of things addressed before the end of this process. (Lynch)*
- *Flooding is an essential process and while confidence is increasing in sediment and HBC, there are still other concerns for other resources. Need for an expanded ecosystem focus – landscape modeling, etc. (Stevens)*
- *The GCT wants intervening flows to be included in the EA. We'll submit written comments. (Johnson)*
- *The protocol must be narrowly focused and synthesis completed before designing a future protocol. The protocol should include hydrologic, sociologic, and financial conditions and should identify costs. In order to*

conclude the protocol with a FONSI, effects will need to be mitigated. Lake Powell is a critical water resource and we need to be able to continue to use our water resources. (Shields)

- *You need to describe what the purpose of this protocol is and what the flows will be. Let's make sure there are specific questions that will be answered before the next HFE comes along. (Gimbel)*
- *We are encouraged that the Secretary has developed this initiative and it's a step forward for this program. Need the best available science to develop these protocols. As far as distribution, the longevity of the effects may not be attainable without the pre- or post-conditions of flows. We have had three HFEs done. I appreciate the adaptive nature of this and our ability to learn and to make it as effective as possible. We hope there might be some mechanism to weigh in on this EA. (Hamilton)*
- *The HFE protocol would have effects on the Hualapai, Diamond down to Lake Mead, and I believe the sandbars created will damage our river equipment. We need to be involved in the protocol and want to be a cooperator. (Jackson-Kelly)*
- *The protocol could be in place for 2, 5, 10 years. If we're in an adaptive process and the protocol isn't working, wouldn't it make sense to determine the timeframe for the protocol? (Zimmerman)*

Tribal Coordination and Consultation (Attachment 8 = AIF).

Report on Tribal Liaison Position. Ms. Archuleta announced that all five DOI agencies have agreed to provide funding to support the position. The position will be funded for two years and the vacancy announcement should be posted within the next two weeks. It will be sent to the AMWG and they were encouraged to forward on to persons interested in the position. It will be posted for 30 days. It was vetted through Human Resources to have representative groups from the tribes to be on the selection committee/interview team. The position will report to the Assistant Secretary for Water and Science although the duties will be determined jointly by the AS-WS and the AS-WS for BIA. The position will be located either in Phoenix or Flagstaff. It has been classified as a GS-14.

Report on Tribal Consultation Regarding 2010 Work Issues Including Non-native Fish Control. Ms. Archuleta reported DOI personnel met with the AMWG tribes about two weeks ago. She asked Mr. Walkoviak and Mr. Tuggle to provide updates on what's been happening between Reclamation and the Fish and Wildlife Service since that time.

Mr. Walkoviak said Reclamation has a biological opinion which requires them to work on control of non-native fish, endangered species compliance requirements, and also address tribal religious beliefs about the taking of life in the river. He said Ben Tuggle, Reclamation staff, and he have been spending a lot of time working through the issues with the goal of keeping within ESA compliance but also honoring the concerns raised by the tribes. He hopes to get things resolved soon so they can move forward with the work items that may be required, one of which may be fish removal, or doing something other than non-native control trips this summer. All the issues are on the table and they're looking for solutions. He thanked Ben and his staff for all their hard work in this effort.

Mr. Tuggle echoed what Mr. Walkoviak said and reiterated it's one of those situations where they have to be careful in moving forward because they have conservation measures in that BO that speaks to how humpback chub will be conserved in the Colorado River. They also need to be very sensitive to the tribal concerns that have been expressed. He said the Service: 1) wants to support Reclamation as it relates to the Department's position on tribal consultation, and 2) wants to stand beside Reclamation in being able to fend off any legal vulnerability related carrying out the conservation measures.

Ms. Archuleta thanked the tribes for their efforts and said there has been an immense amount of time spent on this by everybody and it's a difficult situation that they're in and certainly emotional but literally there have been thousands of hours spent on this and all of the agencies have been involved in this. They've been discussing putting together a team together for consultation so that all of the agencies are represented and in that way they can go out to the tribes to help with the situation of access and making sure that the information flow is communicated. She expressed her thanks to the

Governor of the Pueblo of Zuni who had sent a letter originally requesting consultation following the last AMWG meeting, as well as to staff from BIA, NPS, Reclamation, and GCMRC.

Ms. Castle said she wanted to echo what Larry said and stated it's been a difficult dilemma for the Department to comply with their legal obligations under the ESA and accommodate the very heartfelt, ancestral cultural values that the tribes have expressed. The Department is struggling with that and doesn't have a solution yet. They're trying to thread their path forward but it hasn't been easy and they don't know how issues will be resolved at this point. She wanted to assure the tribes again that every effort is being put into this process. The appointment of the tribal liaison position and the work that the Interior agencies have done to get to that point is one demonstration of the understanding they are trying to bring, that the tribes feel they are not able to adequately participate in this process, and to have their concerns adequately considered. The tribal liaison position is designed to increase that understanding, to increase effective participation, and to assist in dealing with issues like this. She said that Deputy AS-WS Deanna Archuleta has been tasked with this issue, and thanked Deanna for her efforts and said that she has spent many hours herself in this process, attended many meetings, and participated in many phone calls and will continue to do that until these issues are resolved.

Q: *If you're going to do mechanical removal in 2010 and given the time frame for getting people on board with the logistics, is it even a possibility anymore? (Johnson)*

A: *While we are trying to figure out some solution to this situation, the pre-planning for such trips, if they were to occur, has been allowed to get started. So if a trip or two has to be done, then the pre-planning is underway. However, the pre-planning can be truncated at some point if necessary. We were looking at the same situation working with AGFD. I think John you had told us that somewhere around February 1 or late January they need to know, so we've allowed that pre-planning to get started. We'll have to decide if we truncate that at some point but we felt it was prudent to just be ready if indeed that was the decision that got reached. (Walkoviak)*

C: *In 2003 the first removal trip was proposed. The Hopi Tribe took a formal position on that and I want to repeat that position at this time because this is a new proposal to proceed with issues dealing with the chub down the river. When we received notice in 2003, my office took the notice of that proposal to the Hopi elders. With the Hopi Tribe's initial participation in the EIS back in 1992-93, it was the first tribe to do so. The Hopi Tribe, like many tribes, has a value for the Grand Canyon. In 2003 one of the issues that popped up for the Hopi people was the location of work near the confluence, between the big canyon and the Little Colorado River gorge. Throughout the history of the Hopi Tribe's involvement, things have been documented by the Hopi Tribe about the Canyon and its importance overall. And the confluence is one of them. At that time the location of the confluence was a real problem because that confluence represents life to the Hopi Tribe. At that time the numbers of trout to be removed was not in the hundreds or perhaps even in the thousands. One of the issues within the Canyon these days is the influx of trout and non-native species, which is human-caused. Trying to remediate or mitigate a human-caused problem and to do so with this proposal, whether by the Federal Government or not, the number of trout to be taken really is a cultural burden for the Hopi people. My position on this whole removal is that the tribes need to be consulted with and be part of that process. Thank you. (Kuwanwisiwma)*

Q: *We are not in favor of mechanical removal at this time as an organization because of scientific reasons. When we proposed to do mechanical removal of trout in 2003 and before then it was deemed to be a success, we were planning a long-term experimental plan at that time. One of the proposals for the experimental plan was from GCMRC to do a block plan of 4 years on and 4 years off, treatments to the system to see if you could isolate the causative factor in the decline of the chub. And not knowing if it was the cold water or the non-natives, but since then the chub have rebounded which may be due to the warming water. It seems to me the scientific jury is still out as to whether the chub rebounded because of warmer water, mechanical removal, or both and we won't know the answer to that question unless we try a scientific experiment. Does the BO, as its rewritten now, specifically say that we have to do mechanical removal this year? (Potochnik)*

A: *No, it does not say we have to do it this year. (Spiller)*

Q: *I can understand the really difficult position that everyone is in trying to respond to a very sensitive issue and can we find a creative solution. A process question: There will be a decision later, next week, or the week after? Is that a short-term decision? I'm a little confused. (Senn)*

A: *The plan would be that whatever action we take this year will be decided by the end of the week and then there is a long-term plan scheduled to start looking at what are we going to do in a longer range in the next few years. We've asked the tribes to be cooperating agencies, along with others, so there is a long-term plan to start as well. (Archuleta)*

A: *If the decision winds up being that we have to do non-native removal trips this year then we will conduct an environmental assessment and get environmental compliance. If the decision is that we are not going to do non-native removal trips this summer, then we probably have an open question of do we need to do environmental compliance. We know we probably need to work on long-term plans and other options and so a lot of this stuff hinges on the decision to be made fairly soon as to what needs to be done to stay in compliance with the BO. (Walkoviak)*

C: *The FWS has advised Reclamation and DOI leadership that they want to consult with the tribes to the maximum intent to meet their concerns. At the same time with regard to looking at various options on a long-term basis, the FWS wants to see that be transparent. We recommend and request it include any group that is interested, especially recreational fishing interests. (Spiller)*

C: *WAPA supports DOI's interest in tribal sensitivity. The DOE is concerned as well. Mechanical removal does have a scientific basis and we see this as a potential means for achieving environmental goals without relying on the Dam to do it. (Palmer)*

C: *I want to clarify some points. On September 15, 2009 it was the Zuni Tribal Government that initiated the consultation with the responsible federal agencies, not the agencies. Since then we've put our issues and significant cultural concerns on the table. As indicated by Ken Salazar in his talk presented this morning about the Law of the River, we also have a greater law that pertains to our way of life and the taking of life relative to the non-native mechanical removal issue. I'm getting confused but it sounds like it's already been decided in that we've had two pre-meetings and there were alternatives that were provided to see if there was something we could mitigate or be able to work with. But now it seems like this whole non-native fish removal is already slated to proceed forward and then the tribes will get consulted after the fact. That's what I'm hearing. For the record, if that's the case, then what's the point in consulting with the tribes? Governor Cooney's point of view is that we haven't really even exhausted any measure of actual government-to-government consultations which I've been reiterating over and over again and I still don't know where to go from here. We feel that we have to go through this whole measure of government-to-government consultation with every federal agency that's responsible for this. When we had the meeting down in Zuni, we had the representation from the Department of the Interior. We still have yet to continue our consultation initiative effort. If I'm totally off field, I need to be corrected here today. (Kucate)*

R: *That initial consultation began with the Zuni because of the letter received from Governor Cooney. In the workplan that was submitted to the Secretary it called for one to two trips for mechanical removal. However, the staff has been working hard to look at other options. Everything is on the table right now. We should have an idea of what that looks like soon and we'll send out letters to start those discussions. I apologize for any confusion. (Archuleta)*

C: *If between Reclamation and the Service we are able to come up with an alternative to non-native removal trips during 2010, we anticipate that decision will also include additional work to determine what the future options look like, what we have to do to be going forward. It is on that type of plan that we would further consult with the tribes pursuant to Section 106 of the NHPA. That may have contributed to the confusion you were expressing Arden about a decision having already been made. We are anticipating there will be a more robust plan of how to proceed given the concerns expressed. (Castle)*

C: *I think there was a discussion of options in the consultation process, options to not doing non-native fish removal. I want to reassure you that no decisions on what to implement have been made. (Tuggle)*

Non-Native Fish Control Planning (**Attachment 9a** = AIF and Nonnative Report). Ms. Hilwig distributed copies of the "Nonnative Fish Control in Grand Canyon—Historical Perspectives and Recommendations for Monitoring, Control, and Research Report" and then gave a PPT on the overview of the plan (**Attachment 9b**) and also went over plans for the Nonnative workshops.

Management Agencies Perspectives. Mr. Spiller gave a PPT presentation, "Non-native Fish Control Planning, Management Agency Perspectives: Upcoming Challenges" (**Attachment 9c**). He concluded that he wants the management plan to be done in an open and transparent way with input from all parties in order for it to be effective.

Ms. Castle said that one of the concerns expressed by the tribes is that the mechanical removal method of controlling non-native fish was originally billed as an experimental action and seemed to have morphed into a management action. She said Kara's presentation made it more clear that the experimental nature of the mechanical removal is still accurate, that the effort that's going on is an effort to determine what the options are for non-native control including mechanical removal but not

limited to mechanical removal. She feels the group is still continuing in the experimental phase of that portion of the effort to balance the resources downstream of the Dam.

TWG Review and Comment. Mr. Capron gave a PPT presentation, "Non-native Fish Control Planning, TWG Review and Comment" (**Attachment 9d**) which presented the TWG's comments on the Non-native Fish Control Planning document. He posed several questions regarding unresolved issues and made the following summary points:

- Tribal consultation issues need to be resolved, TWG needs direction
- Risk assessment is critical to priority setting
- The nonnative control document is complicated by mechanical removal (biological opinion implementation, trigger, efficacy)
- Control plan or "Rapid Response Plan," how to integrate cooperators?
- Practical, urgent need to have an on-the-ground plan to address non-natives in Grand Canyon

Q: *Go back to Action Item Tracking Report. Was it to be a proposal that AMWG put forward in 2006, the RIP for the AMWG? (James)*

A: *We developed a report on the strategy and provided that to Brenda Burman in September 2007 and then Deputy Secretary Lynn Scarlett agreed to do a high flow test. In May 2008 I advised Brenda and Bob Snow and was told the report should be updated to incorporate the BO. It has sat because the legal advisors said they shouldn't be working on it because of litigation issues. Since then FWS has been working to make the report more focused and are also awaiting litigation outcome. We feel the concerns that AMWG has in regard to the In/Out Group need to be addressed. The document isn't final but is in a finished draft form. (Spiller)*

C: *So the question is whether the managers will step forward and develop a management plan based on what the scientists recommend. (Garrett)*

Q: *We don't know completely know the efficacy of trout removal. We have ongoing consultation with the tribes. I am suggesting the workshop address the current alternative mechanisms for dealing with non-natives. Is there a way to see if the alternatives would be just as effective and how that could be turned into future management actions? If we go into an alternative fish control plan, then we have another science project. (Caan)*

Q: *This is a shift in the management process and that is outside the area of the dam and we have to integrate that with management of the Park. When it was a plan, it focused on the mainstem but then moved into the tributaries and spills over into the Park. We need to join Park management and the other resources. We need to sit down as managers and discuss the broader management of the Park. (Martin)*

C: *In addition to what George said about the efficacy of the various options for non-native control, I hope the workshop will look at the differing risks of the options that the agencies need to know in evaluating those options. None of us want to see the chub crash on our watch. (Castle)*

Report on Cultural Program. (**Attachment 10** = AIF and PPT).

Resolution of Permitting Issues. Mr. Hamill said in 2008 and 2009, GCMRC was not permitted to carry out testing of LIDAR technology on archaeological sites within Grand Canyon National Park. The Park agreed to issue a permit to conduct testing of LIDAR technology on selected sites in 2010. In cooperation with GRCA, GCMRC is in the process of identifying the selected sites. An analysis of the archaeological site database will be used to help determine a representative sample of sites that will be used for pilot, dam-effects monitoring in 2011. John said the regional directors and other DOI staff held several facilitated-sessions, meetings, and conference calls in an effort to get the Core Monitoring Program back on track. Mr. Hamill discussed several phases of the project: using LIDAR work to detect change for archeological sites (10 sites this year); tests of the detectability of LIDAR to measure change in the sites; weather monitoring; and additional research and development on techniques site monitoring. Also, a geomorphic workshop is planned, as well as a tribal monitoring workshop to integrate tribal monitoring programs with GCMRC monitoring projects.

Mr. Martin said Mr. Hamill provided a good summary. He said getting the long-term cultural monitoring program at the Park dove-tailed with the AMP has taken some time. He feels that over the last couple of months they've made good progress. They are working towards integrating the two programs and he feels they'll be set to go this year.

Programmatic Agreement. Ms. Gold said the current agreement was created in 1994 by a work group made up of federal employees and tribal representatives. In July 2009, a revision was tentatively accepted, but not approved, by the PA signatories. While GCMRC was involved in discussions leading up to the draft, the agency was not included as a signatory because of unresolved issues. Since September 2009, Reclamation, GRCA, and GCMRC have discussed how to include GCMRC in the new PA. They've had several meetings and conference calls. There is still some internal review and it is going back to the PA group and will include a Memorandum of Agreement.

Traditional Cultural Properties. Mr. Berry gave a PowerPoint presentation that defined what Traditional Cultural Properties are, the TCP process, TCP responsibility, progress made to date and the future of TCPs. In reality, he said there are thousands of sites in the canyon that qualify as TCPs and Reclamation will work with the tribes to identify and incorporate them under the NHPA umbrella.

DOI/DOE Tribal Consultation Guidance. Mr. Berry said following the recommendation of a March 2000 PEP, work on what was then called the Tribal Consultation Plan was initiated by the Hualapai Tribe under contract to Reclamation in 2001. The Hualapai tribal attorney, Dean Suagee, took the lead in developing the plan. The plan was to be incorporated into the Historic Preservation Plan as part of the Programmatic Agreement for compliance with NHPA for Glen and Grand Canyon historic properties. It was also slated to serve as an appendix to the GCDAMP strategic plan. In August 2004, Reclamation took the lead and, working with the DOI-DOE agencies and tribes, produced a final draft in December 2008. The intent was to issue it as a guidance document to assist the agencies in meeting tribal consultation responsibilities. In 2009, it was posted to the AMP website for review by the AMWG and in late 2009, the responsibility went to DOI. Ms. Gold said a few more agencies need to review it and then it will come back to the AMWG for review and finalization. Ms. Castle said President Obama issued an Executive Order on tribal consultation and directed all federal agencies to create effective means for consulting with tribes on issues of concern. As a result of the EO, the Department of the Interior has held a series of public meetings across the country to get tribal and other stakeholder input. The Department is currently in the process of developing its own departmental guidelines on tribal consultation. They will not supersede the AMWG guidelines but may further inform the AMWG guidelines. It's also anticipated that all of the different executive branch agencies will provide their departmental guidelines up to the White House. The White House is expected to issue some guidance back to the departments on tribal consultation, possibly including particular provisions that the White House would like to see included in every department's consultation guidelines. She expects to bring the document described back to the AMWG before all those processes are completed. She said the Department wants to get DOI-DOE tribal consultation guidelines that may get further changed as a result of the Executive Branch process.

Mr. Palmer said that WAPA hasn't seen the latest version and expressed WAPA's concern at the July meeting in which they had a disagreement on the area of potential effect. Ms. Gold said she was aware of his concerns and said the Programmatic Agreement was going back to the PA group that developed it so WAPA would have another opportunity for additional discussion and changes.

Ms. Jackson-Kelly said that Mr. Berry's presentation sounded very optimistic to get the tribes together to identify TCPs and pronounce them as eligible to the national register. She assumed they would be using NPS guidelines in nominating TCPs or historic properties to the national register. She asked if that was Mike's intent and if he had a timeline for that. Mr. Berry said that's exactly what he said and that he would be happy to work with Loretta and any other tribes that are involved. She said one of the Hualapai's concerns is a desire to incorporate cultural landscapes into the PA. He said he would work with her and the other tribes in completing the necessary paperwork. Ms. Jackson-Kelly said the process is very frustrating because there are delays and then other issues come up and they're caught up in not having any supporting documentation to help them such as the PA. She said it's important for people to note that when working with the Indian tribes and Native American concerns regarding sacred sites, there has to be some type of acknowledgement and then closure. She said a

TCP is not going to go away. A TCP cannot be mitigated. An archaeology site with all of the cultural artifacts and materials can be excavated and removed but everyone has to realize the need for transparency and the need to work together. Mr. Berry said he would begin working with the Hualapai Tribe immediately and then move forward with the other tribes in consultation meetings.

Mr. Yeatts said the 1994 PA was developed jointly between the AMP tribes and agencies. The new one has relegated the tribes to a review role with very little opportunity for input. He feels there is a lack of consultation or collaboration in developing the document that is by and large dealing with those sites and locations that are ancestral properties for all the tribes involved. He feels the tribes are coming in at the end and don't have a significant role in developing the PA or other tribal documents. Ms. Gold said that the July version dealt with determining what role GCMRC would be in the PA and there weren't a lot of changes to the previous version.

Ms. Castle said the order in which the PA has been addressed is part of the effort the Department has been making to speak with one voice which has also been a priority and a concern of the AMWG. She said they want to make sure that the document presented to the AMWG has the concurrence of the DOI agencies so they don't air their differences in the AMWG. That dictates that there has to be some internal discussion before they reach out and there are different orders in which they can do that. She reiterated that it's certainly not the intent to disenfranchise the tribes and others interested in the PA. The DOI agencies were asked to work on the draft and develop concurrence before it would come back to the AMWG.

Ms. Jackson-Kelly said she listened to this morning's discussion in which Ms. Archuleta talked about developing a team and wanted to know more about the roles and responsibilities of it. Deanna told her that each bureau is currently working on who should be their team leads.

Desired Future Conditions (Attachment 11 = AIF and DFC Memo). As mentioned this morning, Ms. Castle said there are a number of backlogged items the AMWG has not completely dealt with. The desired future conditions work is one of those things at the top of her list that needs to get done. She feels if people are adaptively managing whatever resource, they need to know what the targets and goals are in order to make that management work. She said that is what the DFCs are intended to provide. She said the DFCs were discussed on the January 14th conference call and were provided in draft form via an e-mail sent out on January 22, 2010 by Ms. Lori Caramanian with the DFC memo. She said a panel comprised of the regional directors and/or their representatives would talk about the process they used to develop the draft that was provided.

U.S. Geological Survey. Ms. Kinsinger said it was their intent today to have an informal panel discussion to let people know what they were thinking and where they are currently at on the DFCs. She said USGS sees their role as primarily to develop the scientific and technical input. She said DFCs were developed for two of the AMP goals, sediment and humpback chub. She said that process was put on hold in 2008 as they were starting to think about the long-term experimental plan development. During that time the DOI agencies decided to speak with one voice and worked to draft a new set of goals for the AMWG's consideration and be much broader than the original TWG goals. They started with the 12 AMP goals from the strategic plan and two specific things they didn't seem to fit as a DFC: 1) the temperature and flow measurements, which they think will actually be within several of the ten DFCs, and 2) validation of the AMP process. She said they would need to look at short-term and long-term goals and whether there are any tradeoffs.

National Park Service. Mr. Martin said that DFCs can't be done without a scientific basis. He said they tried to use things developed in the past but realized that some things didn't fit in the DFCs and those were put into a management context. He said they looked at the DFCs as initial guidance and direction to come up with where they're going and what success will look like.

Bureau of Reclamation. Mr. Walkoviak said they spent a lot of time talking about what's in the front end of the document and trying to flesh out some of their thoughts on what the document is and what it would do. He said it references the GCPA and the compacts, Law of the River, etc. He said they put a lot of their thoughts in the management context section of the document.

Next Steps. Ms. Castle said she wanted to talk to the AMWG about how the process would move forward. Phase I is a qualitative statement of DFCs and in Phase II they take what they have agreed upon as their narrative qualitative goals and turn those into quantitative goals to track progress on particular resource issues. She said the group has to decide how they describe the DFCs qualitatively first before embarking on Phase II. The draft document is intended to address those qualitative goals. She said this is the most important work that the AMWG is doing right now—establishing goals for the operation of Glen Canyon Dam that they want to see downstream of the Dam. She said she wanted the group to pay very close attention to developing the DFCs and suggested from here they designate another ad hoc group to put a lot of time, thought, and effort into taking the draft into a document that the ad hoc group could recommend to the AMWG. She said it would be a time consuming effort, but was hopeful that with several meetings between now and the next AMWG meeting, the ad hoc group would have something to bring to the AMWG or request further guidance. She feels it's important to get the DFCs in place soon.

She said it's been suggested to use a process of considering various categories of the DFCs independently and not charge the group with doing all ten at the same time. For example, one group would look at fish and wildlife, and another group that would look at sediment and vegetation. She felt it could be a very good strategy and takes them out of the game of deciding right now whether all the goals can be balanced or achieved independently which could be for a future process. She felt the AMWG should give some specific direction to the ad hoc group on timing and what they would like to see as an end product but that the ad hoc can decide what their own process would be.

C: When I read the DFCs, they can't be accomplished the way they are currently stated. We really need to put all ten resources in a matrix and begin to identify where linkages are. We also need to look at where the tradeoffs need to be made so that when we initially set our desired future condition, it is something realistic toward meeting that future goal. Otherwise, we're meeting one future goal here that is in direct conflict with another future goal. I'm not sure those can be done simultaneously and whether we can get the science that could support us moving forward in a linear type fashion. (Zimmerman)

C: I agree with Jerry. When you were talking about tradeoffs in your paper, is that what you were trying to get at as well? Because the way some of these are identified qualitatively, the potential exists for them to be in conflict with one another. One of the areas I focused on when I was reading through the list of goals had to do with aquatic foodbase and another goal that talks about reintroducing species that have been extirpated from this system. Those are obviously very much linked together. We also have a very imperiled chub population that we need to consider and there are some very important questions with regard to that foodbase that needs to be answered before there would be any action that would be recommended by this group to address some of those later goals. (Benemelis)

C: Had we had an integrated ecosystem approach for this process, I think we would be able to approach these DFCs in a much more coherent fashion. In reading through these, it sounds like we actually understand what species we're dealing with, what their natural food is, distribution is, and that is largely erroneous. Most of the species in the ecosystem we have no idea what their status is, what they do, or what their role is. (Stevens)

Q: 1) Will this process eventually go through the NEPA process? 2) You said you would deal with the end points separately but within that section of the strategic plan, it was also intended to undertake various water quality components like salinity and how we're going to deal with those issues? 3) How do you see the DFCs incorporating the elements and management plans for GCNP but also the NPS management policies?(Johnson)

Q: Rick, were you asking about NEPA compliance in the process of establishing DFCs? (Walkoviak)

Q: I think about the Colorado River Management Plan, snowmobiles in Yellowstone, and similar processes end up going through some kind of NEPA process whether it's an EA or EIS. Is this going to be the same? (Johnson)

A: That's something we have to review and get a legal opinion on and I don't think it's an appropriate discussion for this group right now. (Castle)

C: *It was our agreement within the group that it could work with Park Service management policies because the concepts of park management, restoration, and those kinds of things recognizing that this is a really complex management undertaking. We have all of the other constraints and the goal would be to have it consistent with Park Service management policies, GCPA, Law of the River, etc. (Martin)*

C: *We want to give the Department accolades for getting these goals started. It's a good start. But some of items identified seem to be "outside" the AMP. For example, the threat to humpback chub of a contaminant spill at Cameron Bridge. (Palmer)*

C: *Referring to Ted's PPT this morning, I can't find the linkage to maintaining or attaining levels of sediment storage within the main channel and along shorelines to achieve ecosystem goals to get to this level of specificity that we're going to need to answer Ted's question. Overall, this is a wonderful effort in terms of the Department taking a blank sheet of paper and trying to write some meaningful, succinct DFCs, but I think the one shortcoming there is with respect to #7 and linkage back relative to sediment and getting to maintenance of the HBC which is #2. When we look at the resource elements to be addressed for #2 and #7, there needs to be more of a linkage between those two in terms of the resource elements to be addressed. (Shields)*

C: *I believe that if we're first able to identify what the important resources are, we can deal with conflicts later. The TWG tried to do two of the resources and we ended up not successful in that. I think this was because we were also trying to deal with conflicts at the same time. We know there are going to be conflicts. We know we can't push those off too far, but I would rather see this because it's different than how we've been moving forward. I commend the Department for doing this because until we move forward on understanding DFCs, we really won't make a lot of progress. (Caan)*

C: *I was looking at page 9 under #8, and think that socioeconomics could be addressed here as well. On the first bullet, we go back to the resources and values of the GCNP and how it's maintained and I would like to include the greater lower reaches of the Grand Canyon because the Hualapai Tribe maintains the northern boundary of their reservation. It starts at River Mile 165 and ends at River Mile 273. We realize that the DOI solicitor had made an opinion about this years ago which the Hualapai Tribe does not agree with and we don't want to open it up here, but we can come to the table and agree to disagree on some points. This is certainly one of the elements we do want to be included in where our concerns and issues would always focus on the relationship to the land, especially the northern boundary of the Hualapai Indian Reservation. When we do address GCNP, our concerns should cover more than that. Our focus should be on the greater Grand Canyon. I want to see this integrated approach to address the bigger picture. This is an issue the Tribe will bring up again and again in government-to-government consultations. (Jackson-Kelly)*

Motion (Proposed by Mr. Potochnik, seconded by Mr. Stevens): To establish a Desired Future Conditions AHG to consider and make recommendations to AMWG on the draft Phase I DFC statements developed by the DOI agencies dated January 22, 2010, and describe linkages among resources, prior to the Phase II development of quantitative DFCs.

Public Comments on the motion: None

Motion passed by consensus.

Ms. Castle said the ad hoc group would deal with Phase I and bring a narrative and list of goals back to the AMWG. She felt it would be important for the ad hoc group to include DOI representatives. She said it's an awkward situation that DOI people be on the ad hoc group but not be allowed to be voting members. She asked the members to consider whether they wanted to participate in a DFC AHG (DAHG) and let Linda or Mary know by Friday, February 5, 2010.

PUBLIC COMMENTS:

Dave Nimkin (Nat'l Parks Conservation Association in SLC): This is my second meeting so I've learned a lot. To some degree, I'm rather amazed that this group is so moved to hugging each other, and rivals finding they agree with one another. I also give you credit on the DFCs and the discussion we've just had. I was struck by the presentation by Dr. Melis and the importance of the HFE, what was learned, but it seemed to be somewhat disconnected from what seems to be imbedded in the science which is how do you really sustain those improvements. I guess it would be helpful for me to understand how we sort of disaggregate one from the other and I know that's part of this process that you're going through but it seems that sustaining the kinds of DFCs that were apparent from the presentation, dam operations really don't necessarily allow for that. That's a conundrum for me and I

know you've been doing this for a long time and you take a long-term view but there is some urgency and I represent an organization that certainly recognizes the various stakeholders amongst all of you but primarily is concerned with the protection of our national park and its ecosystem.

Carly Margarano: I am here on behalf of Bob Lynch who couldn't be here this afternoon due to a conflict. I'm going to read some comments he had on the DFC draft. The DFC draft constitutes an interpretation of the Grand Canyon Protection Act that does not inter-relate other acts and provisions in the DFC analysis. The DFC draft contains management actions that are not merely advisory. The DFC draft decides to manage the river corridor as wilderness. The DFC draft relegates hydropower generation to second class status below even other economic interests not given such priority in the CRSP Act or the GCPA. These and other management decisions and omissions made this document in its current form an articulation that is a major federal action significantly affecting the human environment. Thus both an EIS and a BO are required in this effort to go forward unless the DFC draft is substantially rewritten.

Adjourned: 5:45 p.m.

Glen Canyon Dam Adaptive Management Work Group Meeting February 3-4, 2010

Conducting: Anne Castle, Secretary's Designee
Facilitator: Mary Orton

Convened: 8 a.m.

Committee Members/Alternates:

Perri Benemelis, AZ Dept. of Water Resources (alt.)
Charley Bullets, Southern Paiute Consortium
George Caan, Colo. River Commission/Nevada
Jennifer Gimbel, Colo. Water Conservation Board
Ann Gold, Bureau of Reclamation
Amy Heuslein, Bureau of Indian Affairs
Loretta Jackson-Kelly, Hualapai Tribe
Leslie James, CREDA
Rick Johnson, Grand Canyon Trust (alt.)
Arden Kucate, Pueblo of Zuni
Steve Martin, NPS/GCNP
Don Ostler, NM Interstate Stream Commission (alt.)

Clayton Palmer, WAPA (alt.)
Andre Potochnik, Grand Canyon River Guides
Ted Rampton, UAMPS
Mike Senn, Arizona Game & Fish Department
John Shields, Wyoming State Engineer's Office
Sam Spiller, U.S. Fish and Wildlife Service
Larry Stevens, Grand Canyon Wildlands Council
Dennis Strong, Utah Div. of Water Resources
Mike Yeatts, The Hopi Tribe (alt.)
Gerald Zimmerman, Colo. River Board of California
VACANT, Navajo Nation
VACANT, Federation of Fly Fishers

Committee Members Absent:

Nikolai Lash, Grand Canyon Trust

Interested Persons:

Andrea Alpine, USGS
Deanna Archuleta, DOI
Jan Balsom, NPS/GCNP
Mary Barger, WAPA
Mike Berry, USBR
Shane Capron, WAPA (TWG Chair)
Kerry Christensen, Hualapai Tribe
Rick Clayton, USBR
Marianne Crawford, USBR
Kevin Dahl, Nat'l Parks Conservation Assoc.
Mary Daughtery, USGS/GCMRC
Paul Davidson, USBR
Bill Davis, CREDA
Kurt Dongoske, Pueblo of Zuni
Helen Fairley, USGS/GCMRC
Carol Fritzing, USGS/GCMRC
Bert Frost, NPS
Dave Garrett, Science Advisors
Pamela Garrett, M³Research
J. Lonnie Gourley, USBR (GCD)
Paul Grams, USGS/GCMRC
Martha Hahn, NPS/GCNP
John Hamill, USGS/GCMRC
Lynn Hamilton, Grand Canyon River Guides
Burt Hawkes, WAPA
Norm Henderson, NPS
Kara Hilwig, USGS/GCMRC

Lisa Iams, USBR
Sam Jansen, Grand Canyon River Guides
Robert King, UDWR
Anne Kinsinger, USGS
Glen Knowles, USFWS
Dennis Kubly, USBR
Estevan López, NM Interstate Stream Commission
Ted Kowalski, Colorado Water Conservation Board
LaVerne Kyriss, WAPA
Jane Lyder, DOI-Deputy AS, FWP
Cyd Martin, NPS/Intermountain Region
Shanan Martineau, So. Paiute Consortium Monitor
Barbara McKenzie, USGS/GCMRC
Ted Melis, USGS/GCMRC
Steve Mietz, NPS/GCNP
David Nimkin, National Parks Conservation Assoc.
Mary Orton, The Mary Orton Company
Tom Ryan, USBR
Dave Slick, Salt River Project
Bob Snow, DOI Solicitor's Office
Bill Stewart, Arizona Game and Fish Department
Bill Swan, Imperial Irrigation District
Jason Thiriot, Colorado River Commission/Nevada
Larry Walkoviak, USBR
Bill Werner, citizen
Barry Wirth, USBR

Meeting Recorder: Linda Whetton, USBR

Welcome and Administrative: Ms. Anne Castle welcomed the AMWG members, alternates, and members of the public. A roll call was taken and a quorum (15 members) was established. She felt yesterday's discussion on the AMWG Charter was a good one and didn't want to lose the comments that

were made and asked that Linda summarize those comments and get that summary out to the Charter AHG that is being formed. She said volunteers are still needed for the Charter AHG and the DFC AHG so if anyone is interested, they should provide their name to Mary Orton by February 5, 2010.

Basin Hydrology (Attachment 12 = AIF and PPT) Mr. Clayton introduced himself and said his work involves scheduling the releases out of the major reservoirs in the Upper Colorado Basin and also Lake Powell. He said they monitor the snowpack conditions and work with the River Forecast Center which develops forecasts for Reclamation and then those forecasted runoffs are run through the reservoir system to give projections on where the reservoirs will be throughout the water year and also what the releases will be. They are currently 82% of average for the snowpack conditions above Lake Powell. He said currently they are 60% through the snowpack building season so they have 40% left to go. There is 1.5 maf of space in all the reservoirs above Lake Powell and essentially 10 maf of space in Lake Powell. He said in April when they run the 24-month study, they take the forecast in April and the initial conditions on April 1 for the reservoirs and determine what the projected end of water year elevation (Sep 30) will be for Lake Powell. If Lake Powell is projected to be above the equalization line for this year (3642), which is 8.23 maf, that would trigger equalization because their projected elevation at the end of the water year is higher than the equalization level. He said that if equalization is triggered this year, the controlling factor under equalization is Lake Mead at 1105, meaning that water has to be released out of Lake Powell to achieve an end water year elevation of Lake Mead of 1105. This release would be in the realm of 10.7 maf.

Regarding maintenance at Glen Canyon Dam, Mr. Clayton said there are never eight full units available for release. In August they were projecting equalization and when the high volumes of release are required, they need lots of units available in order to get the water out. He said unit 6 has been offline for the entire water year and is projected to be patched up and back online in a diminished capacity for this water year. He said things change because the maintenance schedule is always being adjusted.

Public Outreach AHG Update. (Attachment 13 = AIF) Mr. Yeatts said the public outreach work was divided into two phases. Phase I focused on the history of the AMP and developing fact sheets, an AMP logo, portable and stationary display panels, and an AMP public outreach website. Proposed products for Phase II include tribal outreach materials, media kit folders, new fact sheets, guide materials and other things. Reclamation has been maintaining the POAHG website (<http://www.gcdamp.gov>). Currently, they're in the process of purchasing a new traveling display which will work better than the last one. He said the POAHG needs guidance from the AMWG since they've completed a lot of the products and posed the following questions: Is there still a need for the POAHG? What is its role and refined mission description? How should it be organized? Mike said there are currently no AMWG members on the ad hoc group and that a lot of the individual agencies do their own public outreach. They want to hold a workshop this summer to talk about what the POAHG should be doing. The POAHG can't currently respond to outreach needs in real time so they really need a focused session to see where they go from here.

Mr. Palmer said one of the original tasks posed was to coordinate press releases among the stakeholders but then it was decided that since many of the stakeholders do their own releases, the POAHG shouldn't do those. Mr. Hamill said GCMRC found the POAHG to be a good coordinating body for ensuring that people were on the same page but it wasn't appropriate for them to do press releases. He also said that since science is always changing, it's hard to keep the fact sheets current. Ms. James said that one of the challenges to the doing the fact sheets is making them easier for people to understand and encouraged someone from GCMRC to participate on the POAHG so the science is relayed accurately.

Mr. Kucate asked how the tribal information is disseminated. Mr. Yeatts said the Hopi Tribe is working on some of that but nothing has been coordinated with the other tribes. He said getting all the information out on what the AMWG does is hard to do.

Ms. Castle said she thought a POAHG workshop would be very useful and suggested they talk about the pending projects and to the extent they need to be completed and make recommendations on which of those projects should be completed and which ones they would ask for further direction, and then come back to the AMWG with a recommendation at the next meeting. She said the group could be disbanded and then reconstituted as needed but doesn't want to lose the benefit of all the good work that has been done.

ACTION ITEM: The POAHG will have a work session to determine future direction. They will develop a list of pending projects, and determine which should be completed and which they need direction on. They will make a recommendation at the next AMWG meeting.

General Core Monitoring Plan Results. (**Attachment 14a** = AIF and PPT). Mr. Hamill said the draft GCMP was completed in late July 2009 and delivered to the Science Advisors for their review in early August. A report from the Science Advisors was given to him in mid-September 2009. By October 24, GCMRC had prepared written responses to each of the Science Advisors' comments and revised the plan accordingly. On that date, GCMRC sent to TWG the original draft plan, the revised draft plan, and the Science Advisors' comments with GCMRC responses, with a request for comments to be returned to GCMRC by close of business November 16. He gave a PPT presentation and concluded by saying that one of his concerns that seems to be coming forward are more management and policy related issues – what is core monitoring, is this way too much money, what are desired future conditions, and can we have a plan before DFCs.

TWG Chair Report on GCMP Workshop. (**Attachment 14b** = AIF and PPT). Mr. Capron said that core monitoring is very important to budget processes and buy-in from the AMWG is absolutely essential because 65% of the AMP budget will go toward core monitoring. He gave a PPT presentation and provided details from the GCMP Workshop held December 1, 2009. He provided results from the workshop and went over the next steps to be taken. He said GCMRC would create a response to comments table and revise the GCMP draft for the March TWG meeting.

Ms. Martin asked how tribal monitoring would be integrated. Mr. Hamill said they need to find a better way to address tribal needs and intend to hold a workshop next fall to discuss further.

Dr. Garrett said the issue right now is to develop an adaptive management process first and foremost that incorporates the very important trade-off mechanisms. He said it's very important to establish the criteria for evaluating monitoring protocols so that everyone is involved and understands the trade-offs and that the process is transparent. He said the Science Advisors really pushed for that this year.

Long-Term Experimental Management Plan (LTEMP). Ms. Castle said she wants to make sure the program is pointed in the direction of preparing a long-term experimental and management plan that can come into being at the expiration of the existing 5-year plan in 2012. She wants to make sure the AMWG is focused on that and said her preference is to have that process started at the end of this calendar year. She recognized that a lot of work has gone into thinking about where they should be headed long-term in the AMP. She said the Science Planning Group (SPG) did a lot of work on that, there was an LTEMP process that got pretty far along, and she didn't want to lose the advantage, benefit, and thinking that has gone into those two efforts. She said that within Interior they will put some hard thought over the next ten months into using the SPG and LTEMP work and try to synthesize that into the beginnings of what can be used as a starting point for the planning for an LTEMP and bring that back to the AMWG so they will have that framework to use as a platform.

Mr. Stevens said it would be advantageous to have an administrative history of this process and as they go through that effort, they will have a fair amount of historical information and could be thinking how that could be incorporated into the larger history of the process. Ms. Castle said she would talk with Larry about his proposal offline.

Stakeholder Perspective: (**Attachment 15 = AIF and PPT**). Mr. Caan said the mission of the Colorado River Commission of Nevada is to serve the communities of the State of Nevada by responsibly managing and protecting their Colorado River water and power resources. He gave a PPT presentation. He said the Board consists of four members who have been appointed by the Governor and three members appointed by the Southern Nevada Water Authority. Funding for the Commission is provided by water and power customers. He said there is a heavy emphasis on outdoor water conservation and they manage water supply with return-flow credits and are the only major city on the Colorado River. He said there is a rebate program in southern Nevada for xeriscaping personal property but people don't get a refund if they do dirt and rocks because 50% of the land has to be covered with desert plants. He concluded by asking the following question about the AMP: "Will this effort evolve into a program that moves from experiments to management actions to meet the goals of the Grand Canyon Protection Act consistent with and within the framework of the Law of the River?"

C: *How does your organization interface with getting water from northern or central Nevada? (Potochnik)*

A: *Because we have a board of SNWA members, we have a lot of discussion. One of the things we do at each of our meetings is we summarize the 24-month study and show them just how close they are getting to shortage in the basin. One of our statutory authorizations is to deal with supplemental water to the Colorado River. Although we're not involved in the planning, permitting, or funding of any additional water supplies, on a policy level we are concerned about the fact that 90% of our water supplies are provided by Lake Mead and we have a population that is almost growing to two million. Relying on one basin shared with seven states does not provide the kind of diversification we need as a community to survive. We have been supportive when we've talked about intermediate banking and other programs; it's been with the emphasis that we're going to develop additional supplies to augment the Colorado River supplies. Our board has taken action in support of the SNWA's filings for the permit. We are interveners in their current legal case in appealing their water rights. If a pipeline is built, we will construct and operate a power system.*

Q: *Could you clarify on what you meant by moving from experimentation to management actions? What is included in the management action component? (Henderson)*

A: *From a management perspective, we've been discussing the MSCP for ten years. The experiments that we had were more biological, looking at the biology of the system, the habitat restoration, what does the science say about where the willow flycatcher reside, where doesn't it reside, and so we did a lot of investigation for ten years. That eventually led to the MSCP, which in my view is a management plan and it's a management plan that says here's how many acres we need, here's how many fish we need to restore, here's the maintenance projects for the habitat, here's the adaptive management component, etc.. So we've moved from a period of uncertainty, experimentation, and finally made a decision what we're willing to do. A real good example is that we had a huge amount of species and a huge amount of costs and we had to decide that we were not going to develop a management plan that was going to be a 100 species, so we did 26. So what we learned we put into a document and the FWS said yes and we moved forward. That's the premise. My view is that we have a lot of good science going on. At some point we need to identify what is our primary focus, what science has been done, what science has not been done, and we may move to a program with less science. At some point we have to say this is the best we can do, this is the best we know, and let's conduct a management plan to manage the river, the species, the non-natives, the cultural resources, etc., in a way that science will tell us how to do it better. (Caan)*

Socio-economic Workshop Results (**Attachment 16 = AIF and PPT**). Ms. Fairley said GCMRC organized and convened a Socioeconomic Workshop for the TWG on December 2-3, 2009. The purpose of the workshop was to assist GCMRC in identifying and discussing socioeconomic questions that would be useful to inform decision making for the GCDAMP. She said a report from the panel should be available in a few weeks and another report is being prepared by Mary Orton and Helen to be sent to the TWG and AMWG in preparation for the budget cycle discussions.

TWG Chair Report. Mr. Capron said the TWG would be looking at the FY2011-12 budget and making an initial recommendation back to the AMWG. He said the FY11 budget is in place and fully allocated. He felt it would be good for the AMWG to give the TWG clear direction on how to proceed with Phase I. He said if it was started in February or March, they would need some help on how to implement because the budget is already allocated and money would need to be found somewhere within the budget to fund those efforts.

Ms. Castle said the AMWG would need to see a more complete description of what the socioeconomic Phase I would look like and what would be proposed for funding and any potential trade-offs that might be done with the same money. She asked if it would be possible for the TWG to develop that information at their next meeting and bring that information back as part of the budget discussion in April. Shane said the TWG could look at the potential costs and provide a recommendation to the AMWG.

C: We haven't seen the report and, in fact, some recommendations that come out could be very expensive in Phase I. Until we see that report and the TWG has time to digest it, it may have to be pushed back awhile because of the timing and the budget. (James)

C: I was at the SE workshop and also the CM workshop as well. This socioeconomic piece needs to be folded into the core monitoring because that's one of the recommendations that came out of the workshop. Again, maybe some direction from the AMWG would be good on this for the TWG's deliberations on the core monitoring plan. This is a fairly significant plan for tying up the budget and charting a direction for a long-term monitoring program for the AMP. (Henderson)

C: I'm not familiar with this issue at all. I don't understand how this would fit into the core monitoring plan and I don't know if there is an easy, quick way to explain what that is. (Benemelis)

R: One of the things recommended in the past was the idea that we needed a monitoring system in place for assessing people's changing values towards some of these resources that we're trying to manage in this program. For example, the context of the recreation protocol evaluation panel focused on how we monitor recreation related issues and there was a recommendation there that we needed to have a better grasp of people's need for values associated with recreation on the Colorado River. They recommended implementing surveys at regular intervals every five years or perhaps every ten years to make sure that we are keeping our program up to speed. (Fairley)

C: I was really quite surprised as I reviewed the AIF concerning the workshop to read on page 4 that says, "therefore, the discussion during the workshop is the primary product of the workshop; it shows the participants' evolution in thinking about this subject area, etc.," and I guess what I'm inferring in reading this is that there is a perception that the TWG members learn more about these issues that somehow their value judgments about the importance of the various questions which they were surveyed on is going to radically change. I'd be very surprised if that is the case. It's just an observation that I would make relative to this document. There needs to be some more winnowing here. There are 24 different questions or topics that are listed and some of those fall into other areas. They're much broader than just socioeconomic in terms of what is raised. As I read that again today, it just harkens back to what you said yesterday, Madame Chairman, about the need to overlay the Law of the River on top of the activities that are done here. There are certain guarantees, if you will, as provided in the 1956 legislation about the economic viability of water development in the Upper Basin being tied to the operation of the hydropower generation plants across the basin so we have to be pretty careful as we do these things. (Shields)

R: Since I wrote that line, I don't think there was an assumption that the TWG members or the participants' views would drastically change, but it was an acknowledgement that this was really the first time that this program has ever had any kind of workshop or learning opportunity around these issues. It really was a learning process for everyone and people's thinking did evolve over the two days. (Orton)

Ms. Castle said she didn't feel the program was ready for a policy decision on a particular budget line item for this coming year. She felt it needed more refinement in terms of the report from the workshop, evaluation by the TWG for a particular program going forward, and then further discussion by the AMWG. Ms. Castle said she would talk to Shane offline about direction for the TWG after the report is completed.

Scientific Controls and Management: (**Attachment 17** = AIF and PPT). Mr. Sevens said the Grand Canyon Wildlands Council has been concerned about some issues that don't receive a lot of attention. In scientific experiments, controls are used as reference conditions to compare the results of scientific treatments; however, interpretation of the results of complex experiments, such as large river stewardship efforts, benefit from consideration of several different kinds of control. He gave a PPT presentation.

He said he would like the AMWG to consider the following motion at its next meeting: "AMWG directs the TWG to work with GCMRC and the Science Advisors to assess the need for a state-of-knowledge ecological evaluation of the Colorado river ecosystem in Cataract Canyon to refine understanding and implications of AMP management of the CRE in relation to DFC's and AMP goals and objectives. If

judged to be relevant to the AMP, this assessment also should recommend further information needs and study design elements for the use of Cataract Canyon as a scientific control for CRE management.”

Q: Who manages Cataract Canyon? (Spiller)

A: Canyonlands National Park. (Stevens)

Q: And do you know a little bit as far as what type of survey data they may have available at this time? (Spiller)

A: Flow and sediment are measured at gages upstream from Cataract Canyon. Andre and others have done work on sediment distribution and there is a relation to archaeological sites and various other foundation work, but just one study. There is fish monitoring going on there through the Upper Basin program. As wonderful and natural as that system is in terms of flow and hydrology, the fish story is not very positive. There are tremendous impacts on those native fish populations. It's a warning flag for all of us. If bringing back natural flow and sediment conditions is not necessarily the answer for saving native fish, we need to look at that pretty carefully. (Stevens)

C: In your 1999 article it presented five overarching ecosystem states and declared it was management's responsibility to decide which one of these they wanted to try to accomplish and then let the technical folks work out the degree to which these could be accomplished and how to go about doing it. By suggesting that the DFCs be informed by looking at Cataract Canyon, you've taken a position. You've taken one of those five and I'm not sure I would agree that's the one to take. (Palmer)

R: I have not taken a position on this. I'm very interested in the comparison and having the comparison would allow us to judge what it would take to get to whatever desired future condition we decide upon. (Stevens)

Ms. Castle asked Mr. Stevens what he thought needed to happen in order to refine his suggestion to a point where he would want to come back to the AMWG with a proposed motion. Mr. Stevens said that because the scope of the AMP has traditionally been from the forebay of Glen Canyon Dam down to Lake Mead, with selected portions of tributaries that are relevant to the program, Cataract Canyon is out of the scope of the AMP. By having this presentation, he said it reintroduces the idea of having other features of the West play a role in the AMP process.

Mr. Spiller said that the USGS has a lot of programs and asked if a meeting with GCMRC could help define what the costs might be to do some monitoring. Mr. Hamill said having controls in any science program is fundamental to understanding and interpreting the data being collected so in that regard, he felt there would be broad support from GCMRC for these. He has three proposals on his desk from his scientists to do work in Cataract Canyon relative to foodbase, climate change, sediment dynamics, and Aeolian deposition. He hasn't been able to secure funding for those because they are not within the scope of the AMP and couldn't be supported. He said if there is interest in the work being proposed, he would be interested in working with Larry to flesh out a more thoughtful proposal.

Ms. Castle said that what she sees is an initial investigation to determine whether Cataract Canyon would be a suitable control. She said that's something the AMWG would need more info about for comparing trade-offs between doing that and doing some of the other things that GCMRC has been directed to do. In order to make that decision, she feels the AMWG needs that kind of input and evaluation on what Larry is suggesting from the TWG. She didn't think it was realistic in this economic time to assume that the AMP would do it with additional funds. She said the program is looking at level funding and trade-offs between the various things they could be doing. She asked Shane if the suitability of using Cataract Canyon as a control is something the TWG could discuss as part of evaluating the core monitoring plans or possible scientific research functions. Shane said he thought the TWG could potentially do that but felt it was a conversation that needs to occur between Interior, GCMRC, and the Upper Basin. He said that working cooperatively with the Upper Basin might be a way of getting this work done. Ms. Castle asked that Larry, GCMRC, and the Park Service discuss and have a recommendation go back through the TWG before coming to the AMWG.

Next AMWG Meetings: Ms. Castle said a meeting needs to be scheduled to review the Draft FY2011-12 budget. In an effort to save on travel costs she suggested holding a webinar/conference call in late April. The budget would then go through its regular review process and be brought back for an in-person meeting in August. She asked for feedback. Ms. Gimbel said that with the states having to cut their

budgets, she supported going in this direction. Ms. Castle said the logistics would be worked out and the AMWG would receive more information at a later date.

TWG Chair Report. (**Attachment 18** = AIF). Mr. Capron said the Annual Reports Meeting with GCMRC held in January went very well. He was impressed by the quality of the presentations and felt it was really helpful for the TWG and others to receive updates at the same time so there is an equal level of knowledge in moving forward with future projects. He said they did a little bit of work on the TCD/sediment augmentation and the biennial budget process. He distributed copies of the TWG 1-Year Running Work Plan and described the major activities the TWG would be involved with.

Based on a motion passed at the last AMWG meeting that instructed the TWG to bring forward a 2-year non-rolling budget and draft a discussion paper, Mr. Capron said that assignment was completed. However, it couldn't be discussed at the last meeting because it hadn't gone through the Budget AHG so they will review and then TWG will consider a recommendation on the paper to the AMWG at the TWG March meeting.

Regarding the TCD/sediment augmentation motion passed at the August 2009 AMWG meeting, Mr. Capron said Reclamation completed their part of their report in September. They had it on the agenda for the January meeting but didn't have a quorum so they weren't able to vote on a motion. He said GCT had made the motion and wanted it discussed with the AMWG before the TWG moves forward. He read the following language: "The TWG recommends that the AMWG consider a recommendation to the Secretary of Interior to develop an engineering feasibility study and risk assessment, with a synthesis of existing information, for the implementation of a Temperature Control Device that considers the following: (a) incorporates a TCD design with both warm and cold-water release options and with a combination of 2, 4, 6, and 8 units, (b) considers concerns that new warm-water non-natives and additional planktonic food sources might be established in the CRE, and (c) considers the potential of using turbidity (silt and clay) as a mechanism to affect predation rates of non-native fish on native fish. The goals of the action would be to support recovery of native fish. TWG further recommends that the consideration of a TCD be implemented within a long-term experimental process."

Mr. Johnson said he felt there was a huge issue between the coordination between the AOP and the AMP process. He said Reclamation prepared an AOP flow chart in 1997 which laid out deadlines in order to get all the various planning together and in place. He asked if the dates were still right and how would the AMP go about doing coordination with the AOP process. He didn't feel it was appropriate to discuss the flow chart since no one is prepared to do so and said he would send the flow chart to Ms. Castle with the intent to have further AMWG discussion. Mr. Capron said he thought the TWG agreed that it would be appropriate for the BAHG to consider flows in its development of an initial budget based on the fact that they annually recommend a hydrograph as well.

ACTION ITEM: Mr. Johnson will send the AOP flow chart to Ms. Castle.

Mr. Johnson said there were two components to the motion, one was the TCD and the other was sediment augmentation. He said the reason the GCT put that together was that people judge the risk of additional non-native fish in different ways. Some people think that it's a very large threat and some people think it's a small threat. The idea of moving forward with the risk assessment on the TCD when there are some people who see it as a potential large threat makes it so that doing a risk assessment of just the TCD as a standalone doesn't make sense because one of the ways of dealing with an influx of non-natives might be turbidity. From his perspective, putting those together because one might be a tool to deal with potential negative impacts of the other one suggests that you want to have both of them at the same time or at least be able to consider both of them at the same time. He said it may well be that they could warm the water with the TCD if they ended up with an influx of non-natives, they might be able to turn off the warm and turn on the cold with the idea of having both options available. The other option might be also to start putting some sediment into the system to increase turbidity and disadvantage the

non-natives. He said moving ahead with the risk assessment on a TCD is a good idea. He also thought a study on the sediment augmentation risk study with it would be good to do. Shane said he thought doing the second study would be more expensive.

C: The FWS is supportive of this as a study in the sense within the feasibility of it. We fear construction and operation of a TCD brings risks to management of HBC. We have warm water that I've always been leading the charge on wanting. We get a positive response of HBC figuratively. In year five or six, that's what it takes for bullheads or channel catfish to build up into significant numbers to become a predaceous force on HBC. Then we call for cold water but unfortunately can't call upon Lake Powell because it's in a low reservoir condition. (Spiller)

C: The possibility exists that Lake Powell is going to go down really low anyway and you'd naturally have warm water and you're going to have the same situation you may have described and we won't have any way around it so I'm not sure that mitigation gives us reason not to look at a TCD. (King)

C: There was also a discussion about the TWG providing feedback to adjustments to the monthly volumes. (Henderson)

Q: I would anticipate that if that was discussed, there was a fair amount of resistance and pushback to that particular proposal or notion at the meeting. Is that true as well? (Shields)

A: This is a big question that we don't have a lot of clarity on, the relationship between the TWG and recommendations we make and the AOP. Whereas sometimes these questions practically come up. It's like we heard about the hydrology today and the flow volumes that we're looking for in the nearshore ecology study in September and October. There may be some concerns and discussions we might want to have with GCMRC about implications of that hydrology on the nearshore ecology study. (Capron)

Final Expenditures for FY09. (Attachment 19 = AIF and USBR PPT).

USBR Final Expenditures. Mr. Kubly said the total budget for Reclamation was \$1,913,899 and added to that was the \$475,000 provided by the DOI agencies to fund the tribes for their participation. He said that in most categories, the amounts were very close to the amounts budgeted and expended. He said the Reclamation burden rate only applies to salaries. He said the negatives are increasing in Reclamation's personnel costs. He said last year 1.77% provided to rest of U.S. Federal employees is a requirement but they have a -1.03% negative CPI so they lose a little ground whenever they get into that situation. He said there are still outstanding charges. For example, he was informed yesterday that the NPS will be submitting an IPAC for NPS/Permitting charges. Mr. Berry also told him that in the treatment plan and in the integrated tribal resources monitoring, the tribes are not on a fiscal year basis so there will still be charges from them. He said the treatment plan is a multi-year contract so you can determine the actual costs at the end of every fiscal year. He said any carryover would be divided into three categories: 1) Compliance because they're looking forward to FY2012 as having some larger than average compliance needs, 2) The Experimental carryover funds were transferred to GCMRC this year so if they can, they will put some of the funding back in there, and 3) two of the three years of the Non-native Fish Contingency Fund were also transferred to GCMRC so they would augment that portion of the budget.

GCMRC Final Expenditures (Attachment 20). Mr. Hamill said GCMRC had four sources of funds in FY09: 1) power revenues, 2) funding for Lake Powell, 3) significant withdrawals from the high flow experimental fund, and 4) some significant Reclamation appropriated dollars. The total budget was \$12.1 million. He referenced his January 8, 2010 memo and said they ended up with about \$1.6 million in carryover funds. About \$1.2 million of that was previously identified and incorporated into the FY10-11 budget. He said they anticipated some of that carryover was coming and they built it into the FY10 budget. He said a lot of that was planned carryover from the nearshore ecology study, the cultural program, and the normal deposits into the overflight fund. Since that time they have identified an additional \$400,000 in carryover, most of which was associated with some lapsed positions that hadn't been filled and some agreements that came in less than were anticipated. They have allocated that to two sources: 1) In FY10 and FY11 to produce about 55 different publications at a cost of \$170,000, and 2) They had originally budgeted \$175,000 for high flow synthesis but the actual cost came in at \$299,000. As such, they had to provide additional funds for that synthesis work. They were able to cover most of that with HFE carryover funds. They had enough carryover funds for the HFE project that they

were able to return some funds that they were originally anticipated withdrawing from the experimental fund (about \$40K) but then didn't need to do tap into it. He said Table II shows what they did with all of the carryover funds from FY09. He said the negative CPI rate resulted in GCMRC receiving \$103,000 less than what they had anticipated. They were able to cover that deficiency by adjusting their burden rate on some work.

Science Advisors' Assessment. (**Attachment 21** = AIF & PPT). Dr. Garrett distributed copies of the "Prospectus, Evaluation of Transition of Science Management Actions in Adaptive Management Programs" and his PPT presentation. He said the objective of the project was to evaluate adaptive management literature for guidance on criteria to transition from science to management actions and also review some existing adaptive management programs. He identified eight programs they reviewed and then added some programs from the Lower Colorado Multi-Species Conservation Program. He concluded by saying the Science Advisors request to present findings to the AMWG in the following areas: 1) appropriateness of adaptive management for GCDAMP, 2) important roles of management actions and science in GCDAMP, and 3) improving the AM model for the GCDAMP.

This dealt with going from science to a management action. He is currently looking at 16 other adaptive management programs so he feels having an extra couple of months will help him prepare a document for the next AMWG meeting.

C: I would encourage the scientists to do whatever we can do to get more timely evaluations after they have monitored a management action. (King)

R: In an adaptive management model, without the additional upgrade in the information, the manager is very short-suited to make a change in the management action to effect the resource and learn. (Garrett)

C: In reference to conducting resource trade-offs, there has to be a recognition that in processes such as this one and the others that you are studying, that agency prerogatives are not relinquished on the part of the partners doing these things. You've got to be careful in realizing that you can only work in certain subsets of the whole set of resources and resource considerations. There are some things that are beyond the prerogative of the group as a whole and specifically some of the resource tradeoffs that need to be made are made by the Secretary of the Interior. I missed the notion of checks and balances in this presentation. (Shields)

C: On the management side we don't always have the luxury of waiting for research to be peer reviewed until we can take an action. I was going to ask the USGS folks when I was back for the BRD review, that was one of the points that was raised by a couple of folks and I know that they were looking at that if there was a way for USGS to make information available in a more timely manner. (Senn)

R: Some things we do release right away based on peer reviewed protocol so people can go on our website and get stream gauge data in real time. We can also streamline our peer review process. But it depends on the power of the analysis, how long we collect data, and then what we do with it. Those are really questions that we can grapple with in terms of what's the level of science you're asking for and it really does relate to the trade-off question. I'll make a note to keep this group apprised of our internal machinations, but I also think the AMWG has to figure out what kinds of questions you want to ask. (Kinsinger)

Ms. Castle said the manager of the Colorado River and the manager of the Glen Canyon Dam is the Secretary of the Interior and the AMWG will make recommendations to the Secretary. The AMWG needs to keep that in mind as the program is moved forward and make those decisions from experimentation to management. She thanked Dr. Garrett for his timely presentation and said she looks forward to his guidance as the AMWG takes that next step.

Informational Write-ups. (**Attachment 22** = AIFs for GCMRC Updates and HBC Comprehensive Plan Implementation AHG Update). Ms. Castle said the write-ups were in the meeting packets. She asked if there were any questions, comments, or discussions about any of them. As a participating member in the Humpback Chub Implementation Ad Hoc Group, Mr. Stevens said the group had lost their leadership with the retirement of Bill Werner.

Ecosystem Modeling Workshop. Dr. Melis distributed copies of the draft agenda for the first day of the Ecosystem Modeling Workshop to be held at Saguaro Lake Ranch April 13-15, 2010. The final agenda (**Attachment 23**) was e-mailed to AMWG and TWG members/alternates on April 5, 2010.

Desired Future Conditions AHG (DAHG) Formation. Anyone wishing to participate in the DAHG should let Mary Orton know by Friday, Feb. 5, 2010. Once the group has been formed, Ms. Castle said the members will be contacted directly about the co-chairing process and moving the process forward.

A-V Meeting Support. Ms. Castle thanked Mary Daugherty for providing assistance for PowerPoint presentations on such short notice.

Next AMWG Meetings. Ms. Castle said Linda Whetton would be requesting dates for a webinar/conference call in late April/early May and an AMWG meeting in August.

Farewell from Andrea Alpine: Ms. Alpine said she recalled that one of the first things she talked to the AMWG about when she came to GCRMC was what the value of science would be and the value of science would mean much more to them if they had the DFCs. She said the DFCs are going to be very challenging but said one of the most important parts will be to keep it at the top of the list. She told them they could not ignore climate change while doing the DFCs or they would face that all things being done would be irrelevant. She suggested doing basin climate annual updates similar to basin hydrology and watch for the Department because many climate centers are being put in all over the states and are downscaling models now, but will be getting better and will be of greater value in seeing what is happening in the whole area of the AMP. On a personal note, Ms. Alpine said she will remember her relationships with all of the stakeholders and would miss them.

Additional documents provided at meeting but not presented:

Attachment 24: Memo from Anne Castle to Secretary Salazar, Subject: Report and Recommendations from the Glen Canyon Dam Adaptive Management Federal Advisory Committee Dated March 16, 2010. (e-mailed on April 2, 2010).

Attachment 25: Aeolian Reworking of Sandbars from the March 2008 Glen Canyon Dam High-Flow Experiment in Grand Canyon

Attachment 26: Evaluating Effects of a High-Flow Event on Rainbow Trout Movement in Glen and Marble Canyons, Arizona, by Using Acoustic Telemetry and Relative Abundance Measures

Attachment 27: Public Law 111-11 Omnibus Public Land Management Act of 2009, Section 7103 for Boundary Expansion, Little River Canyon National Preserve

Concluding Remarks: Ms. Castle thanked everyone for their participation and felt a lot of progress had been made. She adjourned the meeting.

Adjourned: 2:30 p.m.

Respectfully submitted,

Linda Whetton
U.S. Bureau of Reclamation
Upper Colorado Region

General Key to Adaptive Management Program Acronyms

ADWR – Arizona Dept. of Water Resources	KA □ Knowledge Assessment (workshop)
AF – Acre Feet	KAS – Kanab ambersnail (endangered native snail)
AGFD – Arizona Game and Fish Department	LCR – Little Colorado River
AGU – American Geophysical Union	LRRMCP – Lower Colorado River Multi-Species Conservation Program
AIF □ Agenda Information Form	LTEP – Long Term Experimental Plan
AMP – Adaptive Management Program	MAF – Million Acre Feet
AMWG – Adaptive Management Work Group	MA – Management Action
AOP – Annual Operating Plan	MATA – Multi-Attribute Trade-Off Analysis
BA – Biological Assessment	MLFF □ Modified Low Fluctuating Flow
BAHG – Budget Ad Hoc Group	MO – Management Objective
BCOM – Biological Conservation Measure	MRP □ Monitoring and Research Plan
BE – Biological Evaluation	NAAO – Native American Affairs Office
BHBF – Beach/Habitat-Building Flow	NAU – Northern Arizona University (Flagstaff, AZ)
BHMF – Beach/Habitat Maintenance Flow	NEPA – National Environmental Policy Act
BHTF – Beach/Habitat Test Flow	NGS – National Geodetic Survey
BIA – Bureau of Indian Affairs	NHPA – National Historic Preservation Act
BO – Biological Opinion	NPS □ National Park Service
BOR – Bureau of Reclamation	NRC □ National Research Council
CAHG – Charter Ad Hoc Group	NWS □ National Weather Service
CAPA – Central Arizona Project Association	O&M □ Operations & Maintenance (USBR funding)
GCT □ Grand Canyon Trust	PA □ Programmatic Agreement
CESU – Cooperative Ecosystems Studies Unit	PEP □ Protocol Evaluation Panel
cfs – cubic feet per second	POAHG □ Public Outreach Ad Hoc Group
CMINs □ Core Monitoring Information Needs	Powerplant Capacity = 31,000 cfs
CRBC – Colorado River Board of California	PPT □ PowerPoint (presentation)
CRAHG - Cultural Resources Ad Hoc Group	R&D □ Research and Development
CRCN – Colorado River Commission of Nevada	Reclamation □ United States Bureau of Reclamation
CRE □ Colorado River Ecosystem	RBT – Rainbow Trout
CREDA – Colorado River Energy Distributors Assn.	RFP □ Request For Proposals
CRSP – Colorado River Storage Project	RINs □ Research Information Needs
DASA - Data Acquisition, Storage and Analysis	ROD Flows □ Record of Decision Flows
CWCB – Colorado Water Conservation Board	RPA □ Reasonable and Prudent Alternative
DBMS – Data Base Management System	SA □ Science Advisors
DFCAHG □ Desired Future Conditions Ad Hoc Group	Secretary □ Secretary of the Interior
DOE □ Department of Energy	SCORE □ State of the Colorado River Ecosystem
DOI – Department of the Interior	SHPO – State Historic Preservation Office(r)
EA – Environmental Assessment	SOW □ Scope of Work
EIS – Environmental Impact Statement	SPAHG – Strategic Plan Ad Hoc Group
ESA – Endangered Species Act	SPG □ Science Planning Group
FACA – Federal Advisory Committee Act	SSQs □ Strategic Science Questions
FEIS – Final Environmental Impact Statement	SWCA □ Steven W. Carothers Associates
FRN – Federal Register Notice	TCD □ Temperature Control Device
FWS – United States Fish & Wildlife Service	TCP □ Traditional Cultural Property
FY – Fiscal Year (October 1 – September 30)	TES □ Threatened and Endangered Species
GCD – Glen Canyon Dam	TWG □ Technical Work Group
GCT □ Grand Canyon Trust	UCRC □ Upper Colorado River Commission
GCMRC – Grand Canyon Monitoring & Research Ctr.	UDWR □ Utah Division of Water Resources
GCNP – Grand Canyon National Park	USBR □ United States Bureau of Reclamation
GCNRA – Glen Canyon National Recreation Area	USFWS □ United States Fish & Wildlife Service
GCPA – Grand Canyon Protection Act	USGS □ United States Geological Survey
GLCA – Glen Canyon National Recreation Area	WAPA □ Western Area Power Administration
GRCA □ Grand Canyon National Park	WY – Water Year (a calendar year)
GCRG □ Grand Canyon River Guides	
GCWC □ Grand Canyon Wildlands Council	
GUI – Graphical User Interface	
HBC – Humpback Chub (endangered native fish)	
HMF – Habitat Maintenance Flow	
HPP – Historic Preservation Plan	
IEDA □ Irrigation & Electrical Districts Assoc. of Arizona	
INs – Information Needs	
IT – Information Technology	

Q/A/C/R = Question/Answer/Comment/Response