Glen Canyon Dam Adaptive Management Work Group Meeting
May 22, 2008

Conducting: Brenda Burman Secretary's Designee **Convened**: 9:15 a.m.
Facilitator: Mary Orton

Committee Members on the Conference Call:
Steven Begay, Navajo Nation (via phone at times)
Bob Broscheid, AGFD
Charley Bulletts, Southern Paiute Consortium
George Caan, Colorado River Comm./NV
Jay Groseclose, NM Interstate Stream Comm.
Amy Heuslein, BIA
Loretta Jackson-Kelly, Hualapai Tribe
Leslie James, CREDA
Nikolai Lash, Grand Canyon Trust
Steve Martin, NPS/GCNP
Ted Rampton, UAMPS
Dave Sabo, USBR
Dennis Strong
Sam Spiller, USFWS
Mark Steffen, Federation of Fly Fishers
Larry Stevens, Grand Canyon Wildlands Council
Brad Warren, WAPA
Bill Werner, ADWR
Gerald Zimmerman, Colorado River Board/California

Committee Members Absent:
Leigh Kuwanwisiwma, The Hopi Tribe
Andre Potochnik, Grand Canyon River Guides
John Shields, WY State Engineers Office

Alternates Present: **For**:
Randy Seaholm — State of Colorado
John O'Brien — Andre Potochnik, Grand Canyon River Guides
Don Ostler, Upper Colorado River Commission — John Shields, State of Wyoming

Interested Persons:
Jason Alberts, DOI
Andrea Alpine, USGS
Matthew Andersen, USGS/GCMRC
Jan Balsom, NPS/GCNP
Cliff Barrett, CREDA
Perri Benemelis, ADWR
Glenn Bennett, USGS/GCMRC
Shane Capron, WAPA
James Cason, DOI
William Davis, CREDA
Kurt Dongoske, TWG Chair
Helen Fairley, USGS/GCMRC
Dave & Pam Garrett, M^{3}Research
Jennifer Gimbel, State of Colorado
Paul Grams, USGS/GCMRC
Martha Hahn, NPS/GCNP
John Hamill, USGS/GCMRC
Norm Henderson, NPS
Doug Hendrix, USBR
Rick Johnson, Grand Canyon Trust
Robert King, UDWR
Dennis Kubly, USBR
Kerry McCalman, USBR (UC Power Office)
Barbara McKenzie, USGS/GCMRC
Ted Melis, USGS/GCMRC
Rick Moore, Grand Canyon Trust
Clayton Palmer, WAPA
Bill Persons, AGFD
Randy Peterson, USBR
Scott Rogers, AGFD
Tom Ryan, USBR
Rod Smith, DOI Solicitor's Office
Bob Snow, DOI Solicitor's Offce
Pam Sponholtz, USFWS
Tim Steffen, Federation of Fly Fishers
Larry Walkoviak, USBR

Meeting Recorder: Linda Whetton, USBR

Welcome and Administrative: Brenda Burman welcomed the AMWG members, AMWG alternates, and members of the public. A roll call was taken and a quorum (15 members) was established. Ms. Burman reported a lot has happened and a good portion of the agenda will focus on what has occurred in conjunction with the high flow experiment. Ms. Burman invited Mr. Walkoviak to make a presentation to Randy Peterson. Randy has been with the program since 1999 and will be retiring in June. Randy was given a recent picture of Glen Canyon Dam taken early in the morning during the high flow experiment.

Approval of the August 29-30, 2007 Minutes. Without objection they were amended with changes. **Approval of the Jan 17, 2008 meeting**. Mr. Nikolai Lash commented that he had no intent to block consensus on a vote and wanted the minutes to reflect that change. Without objection the minutes were approved pending the above correction.

Action Item Tracking Report. (***Attachment 1***) Ms. Burman said at the August 2007 meeting there was a long discussion about the Roles Ad Hoc Group Report. The AHG was tasked to go back and work on the comments they heard and written comments received but right during that process, work began on a possible high flow experiment and then an actual high flow test. Consequently, the AHG work was postponed. Some edits were made to the and it will be further discussed at the September meeting.

Legislative Updates. 1) Mr. Dennis Kubly said there was a Federal Advisory Committee Act bill that was introduced into the House (HR 5687) and has been referred to the Committee on Oversight and Government Reform. The purpose is to increase the transparency and accountability of federal advisory committees. Mary said she had a copy of the marked up bill and if anyone wanted a copy, they should see her. 2) Dennis added that there are renewals of the Upper Basin Recovery Implementation Program, the San Juan and the Upper Colorado, and asked if Randy Seaholm could provide an update. Mr. Seaholm said there is some legislation being introduced but couldn't provide any further details.

Litigation Update. Mr. Bob Snow, DOI Solicitor's Office, said the Department is in litigation on some of the issues that are very important to the GCDAMP and wanted to make sure everyone was working from a common base of knowledge. He said that in August the Grand Canyon Trust gave notice they were contemplating a suit. The first complaint was filed in December and that complaint was updated in Federal court in March 2008. At this time they are about halfway through the case. Many of the issues in the case have been briefed but at least half of the issues have not been briefed. The case involves four or five key issues, one being when the Bureau of Reclamation (DOI) prepares annual reports and documents, whether those reports have to comply with the Endangered Species Act and NEPA. A second phase of the case involves whether the Bureau of Reclamation operated Glen Canyon Dam in conformance with the 1995 Biological Opinion. That will be the first half of the case. The newer half of the case that came in March deals with the recently completed Environmental Assessment by Reclamation, the recently completed Biological Opinion by the Fish and Wildlife Service, and a broader question about whether current operations at GCD comply with the Grand Canyon Protection Act. The case is pending in the District Court of Arizona. The case is against the Bureau of Reclamation in some parts and the BO challenges an action by the FWS. Since the plaintiffs and the defendants are at the table, he wasn't sure how it was going to affect the program. This program has been litigation-free since 2006 when the Center for Biological Diversity sued the Department but they weren't a sitting FACA member. He said with this being a FACA meeting and minutes taken, people need to understand that words matter and what is said could have an effect on content of the litigation. He said the challenge for the AMWG is to be mindful of the litigation but not let it overwhelm the important work they're charged to do.

Mr. Nikolai Lash said the Grand Canyon Trust didn't file the lawsuit and develop claims in an effort to diminish the program or make the program harder. They believe there are some violations of law that can't be addressed in another forum so they filed the lawsuit in good faith to address what they believe are violations of Federal law

AMWG Charter. Mr. Burman informed the members the AMWG Charter expires every two years and will need to be renewed before July 26. She said copies of the Charter were included in the meeting packet and if any of the members want to provide comments, they should send them to Mary Orton by June 5.

Action Item: AMWG members should send comments on the AMWG Charter to Mary Orton by June 5, 2008. (mary@maryorton.com) or 702-914-8066.

Experimental Action – High Flow Experiment, Preliminary Observations (***Attachment 2a: AIF and PPT***). Mr. John Hamill said the high flow test was a collaborative effort among many agencies and stakeholders. He said it was the third high flow test and it came off without any problems or injuries to anyone. He said his staff would provide preliminary observations today and stressed this is an ongoing experiment and scientists are still collecting and analyzing data. He said the test occurred from March 4-8 where it reached a peak of 31,500 cfs and lasted for 60 hours. The test was followed by normal dam operations, MLFF. They've seen higher flows since that time. They still fit within the MLFF parameters but because of equalization of elevations between lakes Powell and Mead, they've seen higher flows than expected and through the EA there have been some steady flows that have been proposed for September and October. He passed out copies of his PPT, "Update on 2008 Experimental High Flow Test and Observations." He also passed out copies of the "Reporting Schedule for Experimental Studies Associated with the March 2008 High Flow Experiment" (***Attachment 2b***) listing when reports/results will be available.

Dr. Ted Melis continued with the presentation and provided the following draft synopsis:

- Demonstrable sand enrichment prior to flood in all reach except between river-miles 61 and 88
- Some sandbars eroded in uppermost Marble Canyon
- Impressive sandbar deposition in parts of lower Marble Canyon and eastern Grand Canyon
- October 2006-March 2008 sand mass balance remained positive between river-miles 1 and 88

Grand Canyon National Park–Observations and Monitoring Results. Dr. Steve Martin said NPS, USGS, and some representatives from the Native American tribes that live around the Park ran a river trip before the high flow experiment (HFE) and after the water had dropped to get an idea of the preliminary results. He said there are 125 sites along the river that they've been monitoring for a long time and are actually working in conjunction with the river guides, their scientists, USGS, and others to keep track of those. It provides them with their responsibilities for the real time management of Grand Canyon and its integration and relationship with all of the resources. He gave a PPT with some recent results (***Attachment 2c***).

Arizona Game and Fish Department Preliminary Results. Scott Rogers distributed copies of his PPT, "Long-term Fish Monitoring and Preliminary Results of the 2008 High Flow Experiment Electrofishing" (***Attachment 2d***). He said they followed their long-term design where they had 26 random sites and 8 fixed sites at Lees Ferry. They were sampled at the same places both prior to and after the HFE. He made the following conclusions:

- Rainbow trout (0-152 mm and 305-405 mm relative condition was lower in Lees Ferry reach during the post-HFE than during pre-HFE sampling.
- All inferences on catch rates downriver of the Little Colorado River (reaches 3-5) are confounded by changes in turbidity and likely changes in capture probabilities between the pre- and post-HFE sampling trips.

Don Ostler asked when the data obtained from the test might be assimilated into models so that those models can be used to make additional judgments and determinations. Dr. Ted Melis said Project 1B is the beginning of that modeling effort. It will include data collected in the field during the HFE specifically for use by the sediment and transport modelers. The funding is set up over two years with the actual post-processing and use of those data is scheduled for FY09. The TWG and the BAHG are looking at budget proposals and research proposals as part of GCMRC's annual science plan that describe how those modeling tasks might be accelerated and expanded with additional funding and effort. For the time being, just related to the HFE, there will be results and published reports on some element of the model based on the data collected and that's scheduled to be done in 09.

George Caan said that since 1999 we have been studying below average water years and referenced one of the bullets in the PPT as suggesting that until more is understood about retention in the key resources that no more high flow tests should be conducted. Dr. Melis said that knowing what you get into the system is the first step in making a decision about how to manage a new input or test around it. Knowing where the sand is and the fate of that input is really critical. In 2004 they did one test almost immediately after the

inputs. In this case they waited a year and a half. They would like to have a better model in order to accurately predict the fate of those inputs over some time under normal operations and wouldn't have to make as many measurements. They would have to make calibration measurements or validation measurements, but with the model, they could more accurately predict when to do another HFE.

Mr. Caan also asked about the media coverage and said that Las Vegas received a lot of good coverage on the HFE. Given the vigorous debates the AMWG has had on conducting a HFE, he questioned why more AMWG members were included in discussions with the media. He felt AMWG members could've provided more perspectives and the issues the AMWG wrestles with being a Federal advisory group. Mr. Steve Martin said that there were only so many slots available for people on the river trips. He concurred and said that if another trip were planned, more AMWG members should be included.

Grand Canyon National Park Science and Resource Management Program. (***Attachment 3: AIF and PPT***). Steve Martin said they were asked to put a program in place using the context of the AMP relative to the management of Grand Canyon National Park and their science and resource management program. He distributed copies of his PPT presentation, "An Overview of Science and Resource Management." He said they're also responsible for managing the Canyon and making determinations of when they need adequate science in order to move forward with management. He reviewed the NPS Management Policies established in 2006:

1. Improving resource conditions within the Parks
2. Protection and preservation of cultural resources
3. Wilderness Resource Management
4. Management of threatened or endangered plants and animals
5. Management of recreation use

Larry Stevens asked Steve to clarify the relationship between Grand Canyon National Park and the Grand Canyon Recreational Area, particularly Lake Mead and whether the three parks are all co-managing the Colorado River. Steve said the NPS works closely with all the units along the Colorado River. To help coordinate that work, NPS established Norm Henderson's position which is the Colorado River Coordinator. In addition, those areas are managed under the same policies and practices as Grand Canyon. They're all separate units but share boundaries and work really close especially on Colorado River issues, but also on all the other land management, recreation, and science issues.

Ms. Martha Hahn provided the following NPS handouts: ***Attachment 4a***: Tamarisk Management and Tributary Restoration; ***Attachment 4b***: Vegetation Management-Exotic Plan Species, and ***Attachment 4c***: Invasive Plant Species Observation.

Randy Seaholm said the parks are dynamic economic systems and they're always going to be in some time flux or change and since the NPS directive is to restore and leave them unimpaired, he asked how they philosophically look at that. Steve said they try to maintain the natural and ecological process and where they've had a major impact to the park by conditions or circumstances, take Glen Canyon Dam, they work to restore it as reasonably as possible to natural conditions but recognizing that there are circumstances beyond their control.

Basin Hydrology (***Attachment 5a: AIF and PPT***). Mr. Tom Ryan reported there were increases in precipitation in the basin from December through February. The spring was cool with slightly below average precipitation but the cool weather has been very favorable for projected runoff. One of the characteristics for the drought was warm, dry springs and those really eroded away the snowpack which resulted in less inflow to Lake Powell. This will be the ninth year of below average inflow into Flaming Gorge. There has been very good snow and the snowpack has been doing very well in the Yampa. Looking at 2008 in relationship to the dry years starting in 2000, he presented a slide depicting the natural flow with the driest years being 1977 and 1984. Currently they're looking at a year that's slightly wetter than 2005. As of yesterday, Tom said Lake Powell storage was at 3,602 feet and the Lake came up 112 feet after the high flow test and is

projected to come up another 34 feet. He reviewed the storage levels between lakes Powell and Mead. The picture is pretty favorable for Lake Powell but Lake Mead drops less drastically during the drought because it's continuing to get the 8.23 maf release from Lake Powell so Lake Mead continues to drop. In 2005 it went up because of high tributary inflows in the lower basin. After 2005, Lake Mead continued to go down while Lake Powell remained stable. This year in dealing with equalization releases, Lake Mead will lose some storage. Tom reported that in December 2007 Secretary Dirk Kempthorne signed a Record of Decision on the shortage for coordinated operations in the Shortage EIS which implemented interim guidelines that are in effect for a 19-year period, from 2008 through 2026. Part of the interim guidelines deals with the coordinated operations of lakes Powell and Mead. The interim guidelines provide a little bit more on specifics on how the system is operated for equalization. There are two parameters to keep in mind that trigger equalization, one if the August 24 month projects Lake Powell to be above a specified equalization trigger line, or if the April 1 forecast projects a September 30 elevation into Lake Powell to be above a specified equalization line. Those equalization lines change with time. For 2008 it's 3,036 feet at Lake Powell. In April, Lake Powell was forecasted to be above 3,036 feet which triggered going into equalization for Water Year 2008. Currently we're in a situation where Lake Mead was projected to be below elevation 1,105 feet on Sept. 30th so their operation then becomes a three-pronged attack. They try to maintain the 3,336 elevation line but if Lake Mead is dropping below 1,105 feet, the release is increased such that the 1,105 feet is maintained or you try to fully equalize the reservoirs. He said the criteria for controlling the operation this year is maintaining the 1,105 feet at Lake Mead. He said the projected water releases from Lake Powell for WY08 is 8,954 KAF which is 724 KAF of equalization over and above the 8.23 maf. He said that if anyone wants more information, they can contact Rick Clayton (rclayton@uc.usbr.gov).

Equalization Concern. Mr. Nikolai Lash said Grant Canyon Trust wrote a letter (***Attachment 5b***) to Secretary Kempthorne on the issue of equalization and how the flows might happen and what some of the projections might be. Given that more water might be released than had been thought of at the beginning of the water year, consideration should be given to the impacts on Grand Canyon resources and the impacts to the sediment-related resources are minimized to the extent possible and that fluctuations be reduced to steady flows, not just September and October, but throughout the remainder of the water year so the sediment is conserved as much as possible with equalized monthly volumes and steady flows.

Humpback Chub Comprehensive Plan and Recovery Implementation Plan Updates. (***Attachment 6: AIF and PPT***). Mr. Sam Spiller gave a PPT on the Humpback Chub Comprehensive Plan. He reported that Glen Knowles told him the Plan is essentially finished but the TWG needs to include a response to the Science Advisors' comments document in the final draft. He highlighted the projects included in the Plan and said he would be calling Randy Seaholm, Nikolai Lash, and encouraging other members to participate in determining what is in and out of the plan. If there is anything that is "out," then he feels strongly that more work needs to be done to develop a lower Colorado RIP and eventually recover the humpback chub. Randy Seaholm said he supported the approach being taken and thinks there does need to be a recovery effort between Glen Canyon Dam and Lake Mead. He said a lot of the actions that would need to occur under that are really appropriate for a recovery program because they're well beyond the scope of what was intended for the adaptive management program.

2008 Colorado River Basin Science and Management Symposium. (*Attachment 7: AIF, PPT and Prospectus*) John Hamill distributed copies of his "2008 Colorado River Basin Science and Resource Management Symposium" PPT presentation. The symposium is scheduled for November 18-20, 2008, in Scottsdale, Arizona. The purpose is to promote an exchange of information on research and management activities related to the restoration/conservation of the Colorado River in the USA.

Ms. Loretta Jackson-Kelly said she would like to see a session on Native American traditional ecological monitoring and also see outside expertise to run that session. She also wants to see someone present adaptive management strategies and that there are other ideas and practices that are occurring around the world. John said that Sam and Helen are working on this and that Loretta should provide names of potential presenters to them.

Experimental Action – Next Steps (***Attachment 8a: AIF***). Mr. Randy Peterson said this section would have to do with things that are happening on the ground right now, things that are in discussion in terms of key policy issues, and also plans that are being made for further science.

Biological Opinion Conservation Measures. Mr. Spiller referred to the attachment included with the above AIF in the meeting packet and gave a PPT, "Conservation Measures from the 2007-2008 AMP Biological Opinion" (***Attachment 8b***).

Mr. Lash commented that having a humpback chub is not a back-up measure to any extent and that a refuge that is artificially growing fish is not a recovery effort. Mr. Spiller said the Service is concerned with natural warming in Lake Powell and is afraid that at some point there's going to be a build-up of fish eating warm water species so this isn't about maintaining a minimum population in the Colorado River. The Service is concerned with not losing HBC in the canyon and that relates to recovery.

Mr. Larry Stevens asked what the overall plan was for the LCR. Mr. Dennis Kubly said that Dr. Rich Valdez is working on a report that should be available in September.

Environmental Assessment Mitigation Measures. Mr. Spiller said there was a need expressed from the river guides and fishermen with regard to potential effects to trout as a result of the high flow test that was carried out in March. They met with them in late November and provided a summary report to the Secretary's Designee in December. As a result, he recommended a couple of items on behalf of the Arizona Game and Fish Department and they were incorporated into Reclamation's NEPA document. He proposed the following motion:

Proposed Motion from U.S. Fish and Wildlife Service and Arizona Game and Fish Department:
That the AMWG form a "Lees Ferry Trout Fishery Ad Hoc Group" to make a recommendation to the AMWG by its next meeting on the following two Environmental Assessment (EA) mitigation commitment items:

1. How the AMWG, consistent with the EA, might facilitate discussion among trout fishing guides and anglers, Marble Canyon business owners, recreational rafting companies, and other interested parties regarding proposed experimental actions affecting these resources, to include a projected schedule for meetings, cost-effective location, and whether Federal and State agencies should serve as support to the work of this ad hoc group, and
2. Whether and how AMWG should be involved in updating the Lees Ferry Trout Management Plan, including whether the AMP should sponsor workshops that could be used to help develop the specific aspects of the management plan, and including an assessment of work, projected schedule, and cost-effective locations.

Motion seconded by Bill Werner.
Hearing no objection, the motion was passed by consensus.

Action Item: Members who wish to participate in this new ad hoc group (Lees Ferry AHG) should provide their names to Mary Orton by the close of tomorrow's meeting.

BHBF Policy Issues Ad Hoc Group. Mr. Larry Stevens gave a PPT (***Attachment 8c***) on the progress of the ad hoc group. He said there were 38 issues raised and said that rather than tackle the entire list was to formulate some leading questions to help focus the discussion:

1. What high flow scenario best serves the resources and mandates of existing policies?
2. What policy issues are involved in shifting BHBFs from management experiments to management actions, and how do policy priorities shift under such a transition?
3. What policy issues need to be included in the development of a revised BHBF triggering criteria?

Larry said on their last conference call they talked about a facilitated sit-down face-to-face meeting for the stakeholders to describe their concerns on each of the policy topics and perhaps rank by importance or the controversial nature of the topics so they could get at what policy issues could be resolved and if not, why not. He said this could be the conclusion of the ad hoc group because they were asked to provide a list to

the AMWG or they could be asked to pursue the meeting but that would require additional funding and some organization planning to start it. With that, he asked where the process should be cut off.

It was decided that the ad hoc group would continue to work through the issues and seek to have the meeting facilitated. Due to lack of funds this fiscal year to secure a facilitator, it was determined that funds would be sought from the Bureau of Reclamation for next fiscal year.

Science Plan for Near Shore Ecology and Fall Steady Flows. Dr. Matthew Andersen gave a PPT on the "Science Plan for Near Shore Ecology and Fall Steady Flows" (***Attachment 8d***). He went over the dates involved and said they should have a new cooperator on by possibly late August/early September.

Mr. Brad Warren said he wanted to give some background information as to why they submitted a motion. WAPA was hearing that the steady flows studies would basically be the near shore ecology portion and that's about it. Their concern was that they didn't believe that was robust enough. He said it's clear in the EA and BO that this is a 5-year plan that included two components, one being a high flow experiment and the other being 5 years of September-October steady flows. From their view the HFE was placed on a pedestal whereas what they saw was the steady flow portion being kind of an "add on." They feel that it's one proposal and that both components should have equal importance and equal emphasis on studying the effects not only the high flow but the steady flows. He said that WAPA has had further discussions with GCMRC but they also believe that a memo outlining some experimentation or studies is not quite the same as the package that GCMRC put together for a science plan associated with the HFE. They had a very comprehensive document and a single document on what the plan would entail and the details that went with it. So based on the discussion with GCMRC, the new information, the status of where it's at right now as they've seen, they revised the motion from what was originally on the agenda to the following:

Proposed Motion from Western Area Power Administration, Colorado River Energy Distributors Association, and Federation of Fly Fishers: Consistent with the requirements of the 2008 Environmental Assessment and 2008 Biological Opinion, the AMWG recommends that the Department of the Interior proceed with the scientific work identified to study the steady flows plans for September and October, 2008 as outlined in the May 20, 2008 memo from the Chief, GCMRC to the GCDAMP stakeholders. The AMWG further recommends to the Secretary that the appropriate federal agencies confer and identify the anticipated of releases for September and October 2009-2012, and associated measures of success for the experimental flows. The anticipated flow releases and measures of success should be delivered at the first AMWG meeting of 2009. By August 2009, GCMRC should complete development of a September/October Steady Flow Science Plan for 2009-2012. Reporting on the projects included in the Science Plan should be prepared for review by the AMWG by June 1 of each year.

Matthew added that GCMRC is pleased to be working with WAPA and the other stakeholders to develop the science portion of this but pointed out that the anticipated flow releases are really something that water users, Reclamation, etc., need to be involved in and GCMRC can't be directing that. He said it would helpful to GCMRC if it could be identified what would make this a successful scientific experiment.

The members discussed text changes and decided further work was needed on the motion so it was postponed until tomorrow.

Stakeholders' Perspectives and Interest in the AMP: Southern Paiute Consortium (*Attachment 9: AIF and PPT*). Ms. Burman said that in looking at the Adaptive Management Program and talking to people, one of the things that would be very helpful to the program to new and old members was to hear from the AMWG stakeholders about their interest in the river, the AMP, and hear what their hopes were for the process. She said Charley Bulletts was very nice to be the first one to volunteer for this assignment. She said she wanted to try and have a stakeholder presentation at every meeting. Mr. Bulletts thanked Ms. Burman for allowing the Southern Paiute Consortium to be the first. By way of history, he said he's been involved with the program for the past two years and has come to understand a lot of the representations

and that everyone has a say with regard to adaptive management. He said he didn't think people would be on the committee if they didn't feel passionate about the ecosystem and the work that has to be done. With that, he gave a PPT presentation. He added there are reports available and he would be happy to provide those to the members. He also said they are working on a website where people could access information about them.

Larry Stevens asked if there are resources of concern to that are not being addressed by the program. Charley their main concern is that the water is flowing. All the elders say is that as long as the water is flowing, it's going to be fine. It's in a bad situation now but the concern is how the water is going to be managed for their children. They tell their children to drink at least a half a cup of water and pray to it because it's a life. Without water, there would be no life or rapid growth.

Public Comments: None

Adjourned: 4:40 p.m.

Glen Canyon Dam Adaptive Management Work Group Meeting
May 23, 2008

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Facilitator: Mary Orton

Committee Members on the Conference Call:
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Bill Persons
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Don Ostler, Upper Colorado River Commission

For:
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Glenn Bennett, USGS/GCMRC
Mike Berry, USBR
Shane Capron, WAPA
James Cason, DOI Secretary's Office
William Davis, CREDA
Kurt Dongoske, TWG Chair
Michelle Drury, ASU
Helen Fairley, USGS/GCMRC
Joe Feller, ASU Professor
Catherine Werick-Fine, ASU
Dave & Pam Garrett, M^3Research
Jennifer Gimbel, State of Colorado
Paul Grams, USGS/GCMRC
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Scott Rogers, AGFD
Tom Ryan, USBR
Rod Smith, DOI Solicitor's Office
Bob Snow, DOI Solicitor's Office
Pam Sponholtz, USFWS
Tim Steffen, Federation of Fly Fishers
Eric Templeton, ASU
Larry Walkoviak, USBR
Brian Webb, ASU
Palma Wilson, NPS/GRCA

Meeting Recorder: Linda Whetton, USBR

Welcome and Administrative: Ms. Brenda Burman welcomed the AMWG members, AMWG alternates, members of the public, and students from the ASU Law School. A roll call was taken and a quorum was established.

Lees Ferry Fishery Ad Hoc Group. Ms. Mary Orton said there were a couple of people who wanted to participate in that. If other members want to participate, they should contact her today.

Proposed Motion from Western Area Power Administration, Colorado River Energy Distributors Association, and Federation of Fly Fishers. Ms. Orton said there was one item not completed yesterday which was the proposed motion from WAPA, CREDA, and the Federation of Fly Fishers. The motion was worked on last night and Mary asked Brad Warren to present the revised motion:

Motion (proposed by Brad Warren, WAPA): Consistent with the requirements of the "Final Environmental Assessment: Experimental Releases from Glen Canyon Dam, Arizona, 2008 through 2012" dated February 29, 2008, and the "Final Biological Opinion for the Operation of Glen Canyon Dam" dated February 27, 2008, the AMWG recommends to the Secretary of the Interior that the Department of the Interior proceed with the scientific work identified to study the steady flows planning for September and October 2008 as outlined in the May 20, 2008, memorandum from the Chief of the Grand Canyon Monitoring and Research Center (GCMRC) to the Glen Canyon Dam Adaptive Management Program stakeholders. AMWG further recommends to the Secretary that he direct the GCMRC to, by July 2009,

- Complete the design and development of a September/October Steady Flow Science Plan for 2009-2012, including a recommended range of flow parameters,
- Work with the AMWG and TWG to establish measures of scientific success as part of the Science Plan, and
- Report to AMWG by June 1 of each year on the projects included in the Science Plan for review and possible revision.

Motion seconded by: Larry Stevens

The following concerns were expressed:

- The motion didn't include a range of flow parameters. Brad said they would be September /October.
- The motion didn't specify a certain date in July - should it be the 1st, 15th, or 30th? Brad said that by leaving it blank it was intended to imply by July 31, 2009
- Data should be gathered on the impact of the low flows on recreational users and suggests that a signal there might be easier to get than the ecological and biological signal from the experiment. The TWG should work with GCMRC to get recreational data.
- The issue of measures of scientific success. Science works, in this context, with understanding what the controls are and you measure your change away from a control situation. Therefore, it's not sufficient to just study the two months or recreation impacts. You really need to have what happens to recreation under normal operations.
- If this is a steady flow, are we talking about a range of magnitude of steady flows in October varying throughout the 5-year period? Or is it a range in September-October? We're only talking about one parameter and that is the actual steady flow regime for that month.
- One of the criticisms of the EA and BA was the parsing of the hydrograph and that we concentrated on the high flow component and a Sept-Oct component and we somehow forgot about the MLFF in between. I just want to make sure and that no one intends for there to be a separate stand alone steady flow of just Sept and October, that the real value is in the contrast with the other months.
- From the Science Advisors' perspective you add the words "and resources" after flow parameters so tht the TWG and AMWG can deal with that issue.

Ms. Burman asked if there was any objection to consensus on this motion.

Mr. Lash said he would be voting no and proposed a change from where it says Sept and October that it say "April – October." He added that he thinks the experiment is illegal and that doesn't do enough to improve the habitat in the mainstem for the humpback chub.

Motion (proposed by Brad Warren, WAPA): **Consistent with the requirements of the "Final Environmental Assessment: Experimental Releases from Glen Canyon Dam, Arizona, 2008 through 2012" dated February 29, 2008, and the "Final Biological Opinion for the Operation of Glen Canyon Dam" dated February 27, 2008, the AMWG recommends to the Secretary of the Interior that the Department of the Interior proceed with the scientific work identified to study the steady flows planned for September and October 2008 as outlined in the May 20, 2008 memorandum from the Chief of the Grand Canyon Monitoring and Research Center (GCMRC) to the Glen Canyon Dam Adaptive Management Program stakeholders. AMWG further recommends to the Secretary that he direct the GMCRC to, by July 31, 2009,**

- **Complete the design and development of a September/October Steady Flow Science Plan for 2009-2012, including a recommended range of flow parameters and resources,**
- **Work with the AMWG and TWG to establish measures of scientific success as part of the Science Plan, and**
- **Report to AMWG by June 1 of each year on the projects included in the Science Plan, for review and possible revision.**

Motion seconded by Larry Stevens

Stakeholder	Vote	Stakeholder	Vote
Arizona Game and Fish Department	Y	Hualapai Tribe	Y
State of Arizona	Y	National Park Service	Y
Bureau of Indian Affairs	Y	Navajo Nation	Y
Bureau of Reclamation	Y	State of Nevada	Y
State of California	Y	State of New Mexico	Y
Colorado River Energy Distributors Assn.	Y	Southern Paiute Consortium	Y
State of Colorado	Y	U.S. Fish and Wildlife Service	Y
Federation of Fly Fishers	Y	Utah Associated Municipal Power Systems	Y
Grand Canyon River Guides	A	State of Utah	Y
Grand Canyon Trust	N	Western Area Power Administration	Y
Grand Canyon Wildlands Council	Y	State of Wyoming	Y
Hopi Tribe	absent	Pueblo of Zuni	absent
		Total Yes	20
		Total No	1
		Total Abstaining	1
		Total Voting	22
		Motion Passes	

John O'Brien (abstaining): I just want to give a preliminary heads up in 3-5 years when we start to see the results from the Biological Assessment of these expensive, yet short experiments, that it says "we wish to caution GCDAMP stakeholders not to have unrealistic expectations regarding what can be learned and how the biotic community will respond to these experimental flows." It's unfortunate we're foregoing a significant amount of hydropower revenue to do these experiments. I just wonder if we could've combined all those months of steady flows into one year. I don't know how palatable that would've been but we had the problem before in 2005. When you do these short experiments and then you ask biologists to come us with some physically significant results and I remember the disappointment at the TWG meeting when GCMRC came in with their reports and said well based on the short thing, we don't know if it's a signal or not, and there was a lot of disappointment and people were saying we should've never done such a short experiment. I haven't been in the program as long as some of the people but I've been in enough discussions to see some of the things repeated so Larry Stevens may be on his fourth or fifth lap on that. Just a heads up please don't say GCMRC didn't tell us because it's right there on page 2 of their memo.

Withdrawal of BHBF 2009 Motion. Mr. Lash said he was withdrawing the motion saying that he didn't think it was timely.

Annual Report to Congress. (*Attachment 10: AIF*) Mr. Lash referenced the proposed motion language on the AIF and said that the language mirrors the requirement in the Grand Canyon Protection Act for an annual report to Congress. He reminded the AMWG of their responsibility to review the report. Nikolai said he wanted to make one change to the motion language where it says that the Secretary direct the Bureau of Reclamation, it's actually the Dept. of the Interior. It's meant to be inclusive of all the agencies involved in the Colorado River actions. He said the language that's reflected in the motion comes from the GCPA and the AMWG Charter so the GCPA gives the Secretary this responsibility. He quoted from Section 1804(c) 2 "Each year after the date of the adoption of criteria and operating plans pursuant to paragraph 1, the Secretary shall transmit to the Congress and the governors of the Colorado River Basin states a report separate from and in addition to the report specified in Section 602b of the Colorado River Basin Project Act of 1968 on the preceding year and the projected year operations undertaken pursuant to this Act." So while that addresses the responsibility to the Secretary, there is no mention of the AMWG. However, the AMWG Charter states: "The duties or roles and functions of the Adaptive Management Work Group are in an advisory capacity only. They are to review and provide input on the report to the Secretary, the Congress, and the governors of the Colorado River Basin states. The report will include discussion of dam operations, the operation of the AMP, status of resources, and measures taken to protect, mitigate, and improve the resources defined in the Act." He said the report was done in 1998 and 2002 but nothing since.

MOTION: The AMWG recommends to the Secretary of the Interior that he direct the Department of the Interior to produce by March 31, 2009, with review and input from the AMWG, the Annual Report to Congress for Water Year 08 to include discussion of dam operations, the operation of the AMP, status of resources, and measures taken to protect, mitigate, and improve the resources defined in the Act.
Motion seconded by: Larry Stevens

Mr. Dave Sabo asked Tom Ryan to provide an overview on the status of the report. Tom said that Reclamation is currently working on a draft report which will cover the years 2003 through 2007. The report was transmitted to the GCMRC for their review earlier in the week. Once that review has been completed, Reclamation will send to the AMWG for review and/or revision before it is sent to the Secretary.

After much discussion and the fact that the report is in draft along with Reclamation's commitment to provide the report in annually and in a timely manner for the AMWG's review, Mr. Lash withdrew his motion.

FY08 Mid-year USBR Expenditures (*Attachment 11a: AIF and PPT*). Dennis Kubly distributed copies of Reclamation's mid-year expenditure report and directed the members to look at the bottom amount of $2,299,748. He said 47% of that was expended as of mid-year, $1,219,373. He pointed out that since there haven't been that many AMWG and TWG meetings, a lot of the travel funds are still remaining. On the other hand and because of the high flow experiment and associated compliance and contracting responsibilities for that, there was an over expenditure of 106%. The POAHG budget has largely been spent because of the media attention and additional work involved in that effort.

FY08 Mid-Year USBR expenditures. John Hamill distributed copies of a May 23, 2008 memo from Andrea Alpine and himself which included GCMRC's FY08 mid-year expenses (***Attachment 11b***) and said that it replaced the May 21, 2008 memo. He gave a PPT presentation (***Attachment 11c***) which included a breakdown of their FY08 funding sources along with expenses for the high flow experiment. He said the spreadsheet details where they're at on spending on each of the projects. He said at this point in time there are no significant budget issues to report, however, there will be a number of projects that will be delayed because of the high flow experiment and those are outlined on the table he provided. He said some of the monies dedicated to those activities will be carried over into FY09 and in some cases they will be spent later in FY08.

Review of FY09 Priorities and Preliminary Budget (*Attachment 12a=AIF*).

USBR FY 09 Budget Proposal (***Attachment 12b*** = AIF and PPT). Dennis Kubly provided copies of his PPT presentation and said that back in 2004 the AMWG identified a set of priorities for budget preparation which has been followed. He said last year the AMWG approved a monitoring and research plan that has contained in it a set of set of core questions, critical science questions, and information needs which has set the foundation for developing budgets for each fiscal year. He provided the following GCDAMP FY09 funding sources:

- Base Program Revenues
  - $9,702,600 estimated hydropower revenues
  - $1,475,000 DOI agency appropriations
    - $1,095,000 USGS
    - $95,000 each FWS, BIA, NPS, Reclamation
- Ancillary Project Revenues
  - $261,000 NPS funds for archaeological excavations
  - $361,000 Reclamation O&M (L. Powell)
  - $685,000 Reclamation appropriations (CMs)
- Total $12,484,600

GCMRC FY09 Budget Proposal. John Hamill continued on with the PPT and presented GCMRC's FY09 Work Plan Emphasis (***Attachment 12c***) and said they intend to continue on with a lot of projects that were started in previous years. They had a meeting with the tribes about the workplan. There is a desire among the tribes to meet with GCMRC because they didn't feel their concerns were given equal consideration and adequate funding. Their funding gets $95K for participation and they don't feel the work is commensurate with the work to be done. They also talked about the need for a tribal liaison with GCMRC to make sure their concerns are being addressed. John said he talked with Helen Fairley about providing that liaison assistance. They also talked about having more tribal focus in the SCORE report when it comes out again.

By the middle of June John said they would have a draft budget and all the conservation measures will be included draft budget. He provided the next steps/dates for the budget:

- AMWG review and comment (May 23)
- BOR/GCMRC drafts work plan (June 20)
- BAHG and TWG Review (August 1)
- Final Work Plan to AMWG (August 8)
- AMWG Review and recommendation (September 9-10)

TWG Chair Report. Kurt Dongoske said there were further points of discussion the TWG wanted to have with the GCMRC. He gave a PPT presentation (***Attachment 12d***).

Comments on the budget:

- Timeline for the next SCORE Report and AMWG would like to give input before next one. (James)
- Synopsis of all the studies will comprise the Management Symposium, not the Science Symposium (Werner)
- Tribal liaison status. GCMRC and tribes should consider a potential Intergovernmental Personal Act (IPA) position at the Center. That person could be detailed to the Center to learn more about what goes on at the Center. (Heuslein)
- Want someone in the tribal liaison position to be directly affiliated with GCMRC. The tribes should not be carrying that burden. The $95K would like to see put up to $120K just for the functions of our offices and what we have to do. There is a need for the liaison position has to have a lot of background experience to interact with the different GCMRC program managers. (Jackson-Kelly)

- Mechanical removal of trout has been experimentation in this program. It's a conservation measure in the BO and perhaps doing in FY09 is still science and experimentation. My reaction to what we heard yesterday and while we're thinking about FY09, it seems like a reaction to the trout numbers are coming back up so we need to get out there and start removing trout again. If that's the case, it's becoming a management action versus experimentation and science and so my comment is that at some point this group has to deal with how we're going to hand off management actions to outside the program. (Warren)
- It's not JUST trout that are being killed. In that area around the LCR other fish have been killed. From what I've seen the numbers of trout have gone up but also the numbers of bullhead catfish and bullheads are even more serious that trout. They may go in and out of the LCR whereas trout do not go into the LCR. We haven't seen the final presentation on the predation analysis and I just don't feel the experiment has been done. I would say, however, that there are some reasons why I would like to support this but there are more reasons why I would not want to support it. Until I see the details, I'm going to have to oppose it and may have to write my first minority report. For the record, this mechanical removal program does not just kill trout. There are literally thousands of other fish killed. Thousands of bullhead catfish were killed. Scott Rogers can probably provide more details. So to constantly refer to it as trout really, really annoys me. (Steffen)
- Building on both those comments is the science issue behind this experiment. What started out as a 4-year experiment then to be a block of 4 years without treatment, followed by a block of 4 years with additional treatment. The issue in science is understanding the control and sufficient replication to actually understand what you know what the effect of your treatment is on the target population and we don't. Yes, we have a huge amount of information. GCMRC ran a really remarkable program to control non-native fish and some very compelling results complicated by the fact that trout were crashing throughout the duration of that experiment. I have not seen an understanding of that and how results from the LCR play against that story. The issue of whether or not trout actually eat HBC, I need to see that in a peer-reviewed publication before I can respect those results. In lieu of having definitive answers to that, the first half of a replication of the experiment, all I can say is to keep on course with the experiment and try to follow that through and then we can gain the insight we need to be able to understand. It looks like our trout populations are back up to where they were with the first year of controlled trout so we've dropped down quite a bit population-wise in the LCR and now they're back up to where they were after the first year of treatment. This year that population should come up above that level and if we follow the experiment and we can expect to see that same potential response of HBC to that. We still don't know what the response is really predation or competition and that part of the experiment still needs to be resolved and that element tested. (Stevens)
- A couple of items of observation here. In the San Juan program upstream, the predation by non-native species on native species is very, very clear. There are a number of pictures documenting that. The second item is it seems to me that controlling trout in the area immediately around the LCR was proving to be beneficial. I do share Mark's concerns but it does seem that right around the LCR there is some benefit. (Seaholm)

Dennis stated there is likely to be a continuing resolution this year which won't affect power revenues but it may affect the appropriate dollars that have been identified that would be available to the program. He said the subject of management action versus experiment comes up over and over again and he asked if it was important enough to put funding towards in the FY09 budget from the Science Advisors or a convened panel. He asked the AMWG if they wanted some outside advice on resolving that issue. He asked what criteria would be used to determine when moving from an experiment to a management action.

Sam Spiller said he would like to see the Science Advisors work with GCMRC and advising AMWG but he would like to have AMWG discuss and make a recommendation to the Secretary and have sufficient time to address it.

Kurt asked if the AMWG feels the TWG is moving in the right direction. Hearing no objections, the TWG will continue doing their work.

Loretta Jackson-Kelly said she wanted to propose the following motion with regard to the tribal liaison position:

Motion (proposed by Loretta Jackson): AMWG recommends to the Secretary of the Interior to direct DOI agencies to commit to establish and fund, FY09, a tribal liaison position and its functions that will represent

tribal concerns and interests in the Glen Canyon Dam Adaptive Management Program in collaboration with the tribes.
Motion seconded by Amy Heuslein.

There was concern about creating a position without knowing where the funding would come from. Brad suggested tabling the discussion until the next meeting because this is a new item in the budget and more details are needed. Loretta said she didn't want it tabled. The protocol for any new budget item is that it needs to go through the TWG first and then up to the AMWG. Jan suggested this is an issue for the regional directions to discuss because funding would need to come from the DOI level. Several text changes were made and the motion was presented for vote:

Motion (proposed by Brad Warren, WAPA): **AMWG recommends to the Secretary of the Interior to direct the DOI agencies, in collaboration with the tribes, to commit to establish, beginning in FY09 a tribal liaison position and its functions that will represent tribal concerns and interests in the Glen Canyon Dam Adaptive Management Program.**
Motion seconded by Am Heuslein

Stakeholder	Vote	Stakeholder	Vote
Arizona Game and Fish Department	Y	Hualapai Tribe	Y
State of Arizona	Y	National Park Service	Y
Bureau of Indian Affairs	Y	Navajo Nation	absent
Bureau of Reclamation	Y	State of Nevada	Y
State of California	A	State of New Mexico	absent
Colorado River Energy Distributors Assn.	Y	Southern Paiute Consortium	Y
State of Colorado	Y	U.S. Fish and Wildlife Service	Y
Federation of Fly Fishers	Y	Utah Associated Municipal Power Systems	Y
Grand Canyon River Guides	Y	State of Utah	Y
Grand Canyon Trust	Y	Western Area Power Administration	Y
Grand Canyon Wildlands Council	Y	State of Wyoming	Y
Hopi Tribe	absent	Pueblo of Zuni	absent
		Total Yes	19
		Total No	0
		Total Abstaining	1
		Total Voting	20
		Motion Passes	

Jerry Zimmerman (abstaining): In California you cannot establish a position without having a funding associated with it. We do not have the funding associated with this and so I feel uncomfortable establishing what is viewed I believe by everyone as a very important position without having associated funding.

Strategic Plan and Desired Future Conditions (***Attachment 13a: AIF***) Ms. Burman said the idea for having this on the agenda is that it is a big issue, whether the AMWG chooses to revisit the Strategic Plan and also desired future conditions have been mentioned in a number of different ways. She said Mary Orton, who has been part of the Strategic Plan process in the past, will provide some background information, and the current status.

Mary Orton referred the members to her memorandum (***Attachment 13b***) and directed them to look at the timeline on page 3. She focused her comments on the first two pages and said she wanted to define the term successful as being a process that culminated in a unanimous recommendation to the Secretary of the Interior in January 2002 and the final approval came in January 2003 came only with one "no" vote and that "no" vote was not due to concerns about the Strategic Plan itself. She reviewed the elements of success as listed on the AIF and reviewed the actions that have been taken to date. She suggested the AMWG give a good amount of thought as to how they want to proceed before moving forward. She thinks the AMWG

learned how to reach consensus on difficult issues during the prior strategic planning process and the Desired Future Conditions AHG also did some learning. She said there are lots of other adaptive management programs that can be surveyed and find out what they've done to help develop a model the AMWG may want to adopt.

Lessons Learned from Other Adaptive Management Groups. Ms. Burman introduced Dr. Lance Gunderson and said that he has world recognized expertise in adaptive management. He started his career with degrees in botany and environmental engineering sciences from the University of Florida. He was a botanist with the National Park Service in the Everglades and the Big Cyprus region for over a decade. He is a research scientist with the Dept. of Zoology at the University of Florida and is the founding chair of the Dept. of Environmental Studies at Emery University. His ongoing research seeks to understand how ecosystem processes and structures interact across the space of time scales and how scientific understanding influences resource policy and management.

Dr. Gunderson presented a PPT titled "Strategic Plans and Adaptive Management" (***Attachment 13c***). He talked about the dynamics of ecological systems, managing regimes, and that managers must deal with different problem domains. He provided the following conclusions:

- **Strategic Plans and Adaptive Management**
  - Re-evaluate plans and change as needed
  - Develop shared views of possible futures
  - Differences are good, polarization is bad
  - Discourses and collaborations, not fixed structures.
  - Focus on new ideas, solutions
  - Getting to Maybe
  - **Leadership across scales is needed**
  - One person can do it for a time, but several are better locally, regionally and politically.

Q*: For me having a fairly visual perspective of life, one thought I keep coming back to is if we have pictures of a few different reaches of the river and apply our management possibilities, our desired future conditions to those images to help guide us, has that kind exercise been done to your knowledge and would it be useful? (Stevens)*
A*: Yes, I think those are excellent ways of communicating with people who work with those visual pictures and it is a good way to get these ideas across. One of the things I may not have underscored it really is not easy. The Kruger example took years to develop these ideas of regime suppression. It's not a task for the faint of heart. (Gunderson)*
Q*: How do you see or what kind of difference do you see between thresholds of potential concern and the description of the parameters of desired future conditions that the TWG was given to start off on? (James)*
A*: My sense was that exercise was really about trying to describe the central tendency rather than to look at, and this is why I use the Kruger example, that is look at the sort of the outside of distribution that you may or may not know but to think about it in different ways. I think this is relevant. (Gunderson)*
Q*: How does that take into consideration attainability versus desirability, or feasibility versus practical? (James)*
Q*: That's really what led to adaptive management. That's really what the guess is. You can get there but you really don't know unless you try and I think that's really what's been happening over the last 8-10 years that I've been observing this program. (Gunderson)*
Q*: You shared with us that you had a community, an organization, and politics and science. Do you see something missing in that picture at all with this adaptive management approach especially with this program that maybe we haven't seen yet or need to incorporate in our processes? (Heuslein)*
A*: The general answer is no. I personally think that and hold up the AMP program as kind of a real flagship for adaptive management. Well lots of my experiences have been in the Everglades. The Everglades has tons of money, $15 billion, and they haven't done any adaptive management. They say they have but they really haven't. The reason is because of these complex social interactions that happen down there and what I call adaptive governance. It really provides the context within this more technical, scientific phase that adaptive management occurred. I don't see any big gaps. It's easy to get bogged down. It's easy to think you're not doing anything. It's easy to try and reflect on progress but I still think this is a successful program. (Gunderson)*
Q*: I was actually surprised to hear you say that this was a real successful program because one of the things that has occurred to me over the years is that one of the difficulties in this program is that many of us define adaptive management differently and so I'm curious what your elevator talk, what is adaptive management, and how do you see this program fitting into this? (Johnson)*

***A**: To me the short answer to that is that if you are doing active interventions in the system to learn, you're doing adaptive management, as well as meet these other kinds of societal goals - endangered species protection, power production, etc. It doesn't replace those but it really was set up to help figure out how you deal in this kind of non-linear world where there are these abrupt transitions, you never know when the threshold is on. That's what I see as the quick answer to that. If you're intervening through warning, which I think you'll have been doing, and continue to do, that's why I say it's been a successful adaptive management program. (Gunderson)*
***Q**: In your example in Africa, do they an endangered species act, or I'm wondering how do threshold values means there's a number and how does that, let's use HBC, how do we work with a threshold value rather than a legal requirement? I think a lot of times when we have some constraints about how we use the Law of the River, our constraint of hydropower, delivery of water, and ESA and those drive a lot of things and have bounds for us that may not allow us to come up with these threshold values. (Alpine)*
***A**: I agree with that. That's part of this sort of juggling problem and that's why I put that model up there because that's what you are all dealing with. In risk of offending a fish biologist, chub populations don't care, right? We care. We are the ones in view of safe populations versus populations that are at risk of becoming extinct and that's something that we as society has said, we don't want to happen. (Gunderson)*
***Q**: There has been a lot of talk about it's taking us so long to get to where we're at and I know the science advisors have a lot of discussions and you've led a lot of those discussions where we've looked at these ecological states and their dynamics and we looked at the social states and the adaptive governance that has to interact on that and those become very complex when the tradeoffs and conflicts are high on very high stake resources. Here we are in the Grand Canyon with all of those factors and we've counseled there are no quick solutions and move slowly and do good risk assessment. You continue to look at other systems. Do you still feel that way, that we need to be very measured and not necessarily slow but give sufficient time to all parties to go through such desired future conditions? (Garrett)*
***A**: I think one notion is getting to "maybe," and where do you need to get to in order to do collaborative activities. The other way of thinking about it is a much more in reaction to Andrea's point is you're dealing with multiple dimensions here and the more dimensions you add to these problems, the more complicated they become. I think part of this notion of adaptive governance is about how to test those constraints. How do you provide or insert flexibility that allows you to test those because there have been ones that have been statements by people about the system? How are you going to do this or that, but can we do all of these sort of things. Are we forced to have some tradeoffs and how do you look at those tradeoffs? And I think all of that's happened. (Gunderson)*
***Q**: Is there any substantial difference between the concept of thresholds of potential concern and the notion of limits of successful change that are sometimes used in resource management approaches in terms of kind of defining the boundaries where you need to be taking some action? (Fairley)*
***A**: This has been a big debate in the ecological literature and in other literature as well and this notion of resilience. I think when you look at these ranges of variability and allowable variation, it's essentially a kind of single equilibrium centered model or view of the world that is that every thing sort of operates around these very conditions that can be defined to standard statistical approaches or that really focus on things like central tendencies. But the notion and the idea of resilience was introduced was that these ecological systems exist in very different states in which the processes, controls, and self-organized behavior and all those new ecology words that people use are really where the action is. That's really a different way of conceptualizing and thinking about the system. I think there's enough evidence now and it's taken 30 years to show that in system after system. It doesn't really matter whether it's aquatic, terrestrial, that they do undergo these kinds of regime shifts. (Gunderson)*
***Q**: You're saying that adaptive management was implementing actions to increase learning and I guess that's sort of contrary to the way I've always thought of it as you take these actions to provide the anticipated results or improved resource conditions and you learn through that process but that the primary focus is not learning. The primary focus is to improve resource conditions or get the desired result on the management action. (Henderson)*
***A**: That's right. It doesn't remove those kinds of defined social objectives or desired future conditions and are we getting there but it acknowledges that that's not as easy as it seems at face value in that if it were easy to get those desired future conditions, it would've happened. So then the challenge is how do you develop a system that allows you to sort of learn your way into making those actions. You really never know when these flips occur until after they've happened. (Gunderson)*
***Q**: You say that the program is successful because it's led to some active experimental intervention in the management of the Dam and the river. Maybe my perspective is twisted because I'm a lawyer and a law teacher but the history I've observed is that about 13 or 14 years ago the FWS identified certain changes or you might call them interventions in dam management that by law needed to occur to comply with the ESA and the history over the last 13 or so years has been the Bureau of Reclamation saying "Well, we're working on doing some of those things but we have this very cumbersome thing called the adaptive management program and that takes a long time and so for that reason we're not doing the interventions yet that you say we need to make." Eventually some of those interventions*

that have occurred but they've been much smaller and much slower to come as a result of the adaptive management program. (Feller)
***A**: And this has been the source of failure of lots and lots of adaptive management. (Gunderson)*
***C**: One of the disappointments for me with this program is the general failure of the process to engage in smaller scale experiments. The difference between this and Kruger is they aren't subjecting the entirety of Kruger National Park to an adaptive management experiment which we do willy-nilly in a way whereas in the smaller background experiments could be very informative about how to improve large scale treatments. That's a failing here that I haven't seen firmly enough addressed in the science planning. (Stevens)*
***R**: I think that kind of scale seeking has gone on. I think that's what happened in the Columbia River Basin in what they tried to do almost 30 years ago thinking that the experiments had to be ___ river. There are lots of reasons why you can't do that so you can see that kind of decreasing the science. Sometimes and this is part of the problem that you have to experiment on the system to get anywhere. There are no other ways you can manipulate. (Gunderson)*
***Q**: This program is operating under a paradigm. At some point you learn enough about the system to move from what are called experiments to what they call management actions. Those would be rather rote and participate in cause and effect relationships. Have you seen programs that understand systems well enough that they can get to that point where they get to management actions? (Kubly)*
***A**: I think about the adaptive waterfowl harvest program that's being done where it's basically an agreed upon structured model representative of the system seems to work and so it has become more routine in terms of setting those limits. (Gunderson)*
***C**: This group has struggled with defining desired future conditions and I wonder what you might give us as the next steps. You could hear some of the frustration amongst the group that we're not doing enough or maybe you think this is good but there is still a lot of frustration that's too slow for folks. What could the AMP program do to get that going? The desired future conditions I know from the scientific point where you keep asking the managers to give us that and we can see that's a really difficult thing to get consensus on so do you have some examples or suggestions on how to start getting there? (Alpine)*
***A**: That was one of the ideas with thinking about these things as thresholds rather than. One reason for the frustration and this sort of log jam or however you want to describe it, lack of progress, is the way in which they've been thought about. One idea is to re-conceptualize and think about things in other ways. The second thing is recognizing that it's okay to go back and re-think those things. That's part of the ongoing review and what did you learn from this process of trying to define those that you would do things differently. (Gunderson)*

Update of Monitoring and Research Plan. Due to time running out on the agenda, Ms. Burman asked if the members were comfortable passing the motion as listed on the AIF (***Attachment 14***):

Proposed Motion: AMWG authorizes the TWG to work with GCMRC to update the Monitoring and Research Plan to reflect the new priorities and provisions of the 2007 Biological Opinion concerning the shortage guidelines and coordinated operations of lakes Powell and Mead, the 2008 Biological Opinion on the Operation of Glen Canyon Dam, and the associated Environmental Assessment; and to report recommended MRP changes to the AMWG for review and approval by its Fall/Winter 2008 meeting.

Mary said it was her understanding that this is a recommendation from the TWG and it is to enable the TWG to work with GCMRC and the TWG can't do so without permission from AMWG.

Mary asked if there was consensus on the motion. Rick Johnson said he would abstain on the motion but would not block consensus.
Motion passed.

Status on Desired Future Conditions Motion. Norm Henderson asked if there would be a vote taken on the motion listed under the Strategic Plan item on the agenda. Ms. Burman said it was not a proposed motion offered by an AMWG member so no action would be taken. She said she believes the regional directors will be having a lot of meetings about that and she expects something will come up at the September meeting.

Attachment 15 = Memorandum from John Hamill to AMWG dated May 20, 2008, Subject: Evaluation of the September-October Steady Flows.

Attachment 16 = USGS Workshop on Scientific Aspects of a Long-Term Experimental Plan for Glen Canyon Dam, April 10-11, 2007, Flagstaff, Arizona (Open-File Report 2008-1153)

Attachment 17 = Letter from DOI Secretary Dirk Kempthorne dated May 20, 2008, to Don Ostler, Executive Director and Secretary with the Upper Colorado River Commission re: ongoing period of experimental releases from Glen Canyon Dam.

Adjourned: 1:45 p.m.

Respectfully submitted,

Linda Whetton
U.S. Bureau of Reclamation
Salt Lake City, Utah

General Key to Adaptive Management Program Acronyms

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

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

Updated: 7/27/07