

Glen Canyon Dam Adaptive Management Work Group
May 22, 2007

Conducting: Rick Gold, Secretary's Designee Alternate
Facilitator: Mary Orton

Convened: 10 a.m. (MDT)
Adjourned: 12:15 p.m.

Committee Members:

Charley Bullets, Kaibab Band of Paiute Indians
Jay Groseclose, NM Interstate Stream Comm.
Loretta Jackson-Kelly, Hualapai Tribe
Leslie James, CREDA
Phillip S. Lehr, Colorado River Comm./NV
Steve Martin, NPS/GRCA
Ted Rampton, UAMPS
Nikolai Ramsey, Grand Canyon Trust

John Shields, WY State Engineers Office
Sam Spiller, USFWS
Mark Steffen, Federation of Fly Fishers
Larry Stevens, Grand Canyon Wildlands Council
Dennis Strong, UDWR
Brad Warren, WAPA
Bill Werner, ADWR
Gerald Zimmerman, State of California

Committee Members Absent:

Steven Begay, Navajo Nation
Bob Broscheid, Arizona Game & Fish Dept.
Amy Heuslein, BIA
Rod Kuharich, State of Colorado

Leigh Kuwanwisiwma, The Hopi Tribe
Andre Potochnik, GCRG
Dave Sabo, Bureau of Reclamation

Alternates Present:

Randy Peterson
Bill Persons
Mike Yeatts

For:

Dave Sabo, Bureau of Reclamation
Bob Broscheid, Arizona Game & Fish Dept.
Leigh Kuwanwisiwma, The Hopi Tribe

Interested Persons:

Andrea Alpine, USGS
Jason Alberts, DOI
Matthew Andersen, USGS/GCMRC
Jan Balsom, NPS/GCNP
Glenn Bennett, USGS/GCMRC
Mike Berry, USBR
Brenda Burman, DOI
Stacey Carroll, USBR
Tara Conrad, DOI
Wayne Cook, WAPA
Kurt Dongoske, TWG Chair
Helen Fairley, USGS/GCMRC
Dave Garrett, M³Research (Science Advisors)
Roxanne George, Sierra Club/Flagstaff
Lynn Hamilton, GCRG
John Hamill, USGS/GCMRC
Christopher Harris, State of California
Burt Hawks WAPA

Norm Henderson, NPS
Rick Johnson, Grand Canyon Trust
Jayne Kelleher, USBR
Robert King, UDWR
J.D. Kite, USGS/GCMRC
Glen Knowles, USFWS
Dennis Kubly, USBR
Ken McMullen, GCNP
Ted Melis, USGS/GCMRC
Don Ostler, Upper Colorado River Comm.
S. Clayton Palmer, WAPA
Ken Rice, USBR Glen Canyon Dam
Larry Riley, AGFD
Bob Snow, DOI
Barbara Steffen, Federation of Fly Fishers
Laura Stroup, University of South Carolina
Pat Wood, U.S. Institute for Environmental
Conflict Resolution

Meeting Recorder: Linda Whetton, USBR

Introductions and Determination of Quorum. Mr. Rick Gold welcomed the members, alternates, and members of the public. He stated the purpose of the conference call was to review the FY08 Draft Budget and also receive updates on current AMWG/TWG issues. The members introduced themselves and a quorum was established. Mr. Gold welcomed two new members: Steve Martin with the National Park Service and Larry Stevens representing the Grand Canyon Wildlands Council. He then asked Mary Orton to facilitate the meeting.

Old/New Business. None.

Review of Ground Rules. Mary directed the participants to read the conference call ground rules as listed on the back of the agenda.

USBR Portion of the Draft FY08 Budget. Dennis Kubly referred the members to the Agenda Information Form (AIF) and PowerPoint handout (**Attachment 1a**) along with the FY08 Draft Budget spreadsheet (**Attachment 1b**). He reminded the AMWG that in August 2004 they requested a draft budget to focus on specific priorities within the program. The first five were: 1) humpback chub, 2) cultural resources, 3) fine sediment, 4) the hydrology or releases from the dam, and 5) a temperature control device. The TWG used those priorities as guidelines for developing the FY08 budget. He and John Hamill would like feedback on those priorities and whether the budget is oriented in the direction the AMWG wants it to be.

The budget was developed by the Budget Ad Hoc Group working together with GCMRC. The BAHG held three conference calls to discuss the FY08 draft budget and it was presented to the TWG at their April 2-3, 2007 meeting. The FY08 budget is largely a continuation of existing projects. However, Dennis noted one major change and that was the inception of the treatment plan for the National Historic Preservation Act remediation under the Bureau of Reclamation's commitment. He said the breakdown in the budget has about \$9.5 million from hydropower revenues and approximately another \$1.5 million coming from appropriated dollars from the five DOI agencies. The National Park Service has begun excavation of sites under 106 Compliance in Grand Canyon and so there is a contribution of \$261,000 shown in the budget. In addition, Operations and Maintenance (O&M) dollars are from Reclamation for monitoring at Lake Powell. As a result, there is approximately \$11.4 million programmed for FY08. When they formulated the draft budget, they identified \$300,000 for the treatment plan work in FY08 but that now appears to be an underestimate because the Cultural Resources Ad Hoc Group (CRAHG) believes the amount is closer to \$560,000. Consequently, one of the challenges in moving to the final stage of the budget is resolving the difference of approximately \$260,000. If it's agreed to go ahead with work at that level, the money will have to come from some other part of the budget. He listed three possible solutions: (1) remove difference from other projects, (2) take money from the Long-Term Experimental Plan fund, and (3) reduce funding for treatments.

GCMRC Portion of the Draft FY08 Budget. John Hamill referenced his May 4, 2007, memorandum regarding GCMRC's approach to the budget and other documents included in the meeting packet. He reminded the AMWG that they approved the Monitoring and Research Plan as a working document at their December 2006 meeting to help guide the development of the FY08 Budget. Consequently, GCMRC developed their program around the priorities that were in the MRP. GCMRC first looked at projects that were slated to continue from FY07 to FY08. They had initiated a number of multi-year projects that began in FY07 and after looking at those, they concluded there was little or no discretionary money left in the budget. They allocated \$300,000 initially for the archeological site treatment plan and included an additional \$95,000 to implement the sediment core monitoring program which is slated for TWG action. John said this was basically a balanced budget that includes the estimated 3% cost of living adjustments along with some additional non-discretionary increases in salary and other costs that they didn't have control over. There were several projects identified in the MRP with no funding available in FY08 and John said these should be the first ones funded if any discretionary dollars become available:

1. Expanding/updating the Conceptual Ecosystem Model
2. Hiring a visiting ecosystem scientist to pursue specific integrated ecosystem science strategies.
3. Compilation and analysis of existing recreation safety data (deferred from FY 2007)
4. Evaluation of the relative importance and effects of different flows on the recreation experience

GCMRC is also seeking outside funding for a couple of initiatives in the MRP: 1) synthesis of data gathered at Lake Powell, and 2) additional work on the Little Colorado River upstream of the current boundaries of the CRE looking at effects of climate change and drought. Unfortunately they did not receive funding in the proposed FY08 budget for those activities. This draft budget also doesn't include additional funding that may be needed for GCMRC's involvement in the Long-term Experimental Plan Environmental Impact Study (LTEP EIS) in FY08. There was \$100,000 set aside in FY06 carryover but at this point they don't know whether that will be sufficient to cover all their costs and he alerted the AMWG that this is a potential area which may require some adjustment. He noted one major difference in the area of Goal 12 where they saw a significant reduction in overhead costs or administrative/operations costs now being paid directly by the USGS Southwest Biological Center. The majority of funds are currently going into either core monitoring research and development, namely developing those projects that will provide the basis for the long-term monitoring program and some administrative support functions.

John requested feedback on any new projects or initiatives that the AMWG may have in mind for consideration in FY08. He pointed out there is a \$250,000 shortfall to consider for the archeological program. If there are projects AMWG members want to be considered for FY08, those work plans need to be submitted as soon as possible so they could be vetted through the BAHG and TWG.

Concerns:

- *Ability to spend the whole \$560K in FY08 for archeological site treatment. (Werner)*
- *Ability to keep sites treated in 2008 from becoming impaired in subsequent years by loss of sediment or lack of a BHBF. TWG should evaluate in the context of sediment management. (Ramsey)*
- *WAPA: 1) would like the budget to include emphasis on the foodbase study, 2) does not support increasing the cultural resources budget from \$300K until the targeted sites to be treated are known and those sites can be tied to dam operations, 3) concerned for \$100K carryover to be used for non-salary expenses. (Warren)*
- *NPS would like to see greater emphasis on saving money in the program by developing efficiencies on a variety of levels, i.e., consider using CESUs and other options and focus on reducing overhead costs. (Martin)*
- *Need to have the ecosystem model well developed and include in the budget. (Stevens)*
- *Need to consider using funds in FY08 to develop a methodology to address flow and fish relationships. (Spiller)*

Quagga Mussel Invasion Issue. Kurt Dongoske said this issue was brought to the TWG by Larry Stevens who presented his concerns regarding the recent discovery of Quagga mussels in Lake Mead and specifically what their impacts could be to the Colorado River ecosystem. Kurt said it was his understanding that the quagga mussel, like the zebra mussel, is very prolific once it gets into a system and can have negative impacts by altering the makeup of the ecosystem. Ted Kennedy had provided more specific information to the TWG at their last meeting and the Arizona Game Fish Department's also published information on their website (**Attachment 2**). Kurt said there was a general concern by the TWG but also an understanding that the issue of dealing with the quagga mussel and the zebra mussel extends beyond the ecosystem that the AMP is concerned with. Consequently, the TWG passed a motion on April 3 with a vote of 19 in favor and two members abstaining (USBR and GRNP) which read:

"The TWG considers the impacts of quagga mussel invasion to be a serious threat to the Colorado River system and water management facilities throughout the Colorado River Basin. This problem is beyond the geographical and financial responsibilities of the GCD AMP; however, we recognize that all AMP

organizations may be negatively affected by this new invasion. Therefore, the TWG requests that the AMWG recommend to the Secretary that he secure resources to direct the development and prompt implementation of risk assessment, education, prevention/containment, and science elements in order to limit the wide-ranging damages that may be caused by quagga mussel invasion of the Colorado River system.”

Jason Alberts with the Dept. of the Interior said that DOI officials in Washington have been holding discussions regarding the zebra and quagga mussel invasion. The Department is involved in this and continues to monitor the issue.

Larry Stevens proposed the following motion:

“The AWWG considers the impacts of quagga mussel invasion to be a serious threat to the Colorado River system and water management facilities throughout the Colorado River Basin. This problem is beyond the geographical and financial responsibilities of the GCD AMP; however, we recognize that all AMP organizations may be negatively affected by this new invasion. The AMWG recommends to the Secretary that he secure resources to direct the development and prompt implementation of risk assessment, education, prevention/containment, and science elements in order to limit the wide-ranging damages that may be caused by a quagga mussel invasion of the Colorado River system.”

Bill Werner seconded the motion.

Mr. Gold asked if there was anyone opposed to the motion. Hearing none, the motion was passed by consensus.

Roles Ad Hoc Group and Recommendations Update. Randy Peterson said the purpose for providing an update on the Roles Ad Hoc Group Report (**Attachment 3a**) on the agenda was to receive comments on the report from the AMWG by the end of June with the goal of bringing this to the AMWG for potential recommendation to the Secretary this fall. They sent out a draft report about a year and a half ago and received a few comments back and incorporated those into the next draft. Then the Secretary’s Designee remanded the draft back to a reconstituted Roles Ad Hoc Group (Randy Peterson, Kurt Dongoske, John Hamill, and Dave Garrett). The report was revised again and sent out to the AMWG for review and comment. Randy highlighted a few of the changes and the key findings from the new report:

- **Collaboration and AMP Effectiveness.** This section gets to the heart of the purpose of the AMP, that of providing a participatory and fair process for making recommendations to the Secretary. This section has a portion of it that identifies the need to define future resource objectives or conditions. As part of the AMP Strategic Plan, there were specific management objectives listed under the twelve goals but those objectives have yet to be completed and for the most part have not been quantified or have enough detail so they specifically identify the desired future conditions. They suspect that the completion of the AMP Strategic Plan is very important and would be very helpful to the LTEP EIS and it would also help guide many of the monitoring and research efforts. They would like the AMWG and the TWG to consider preparing a recommendation for the Secretary so the Department can start working together to define what those objectives might be.
- **Establishment of a single, comprehensive charter for the AMP.** The Roles AHG isn’t talking about a charter from the Department but rather an internal document that would show how all the groups work together.
- **Process.** Randy said a lot of the report covers processes within the AMP, not only between groups but also in terms of the DOI responding to AMWG recommendations. It makes more specific how these various processes would function. Randy feels great progress has been made within the AMP in the last two years with respect to what functions the BAHG, CRAHG, etc. perform and interact together.

- Technical Focus. The report also speaks to the technical and scientific role or focus of the TWG. The group spent considerable time reviewing that section and hope that it will highlight the important responsibilities of the TWG.
- Contracting and Procurement Responsibilities. This section focuses on the contracting and procurement responsibilities of Reclamation and USGS.

Randy said he would like the AMWG to provide comments on the Roles Report by June 29, 2007. Because there are topics that involve more than the AMWG, the TWG might also consider providing their insights and comments to their AMWG members. Randy said that many of the issues raised in the report speak to the effectiveness of the AMP and asked John to explain more about the workshop.

AMP Effectiveness Workshop. John Hamill said the FY06 budget had \$46K approved placed in GCMRC's budget to do an "AMP Effectiveness Workshop." The Roles AHG talked about how that workshop could be used to facilitate implementation and agreement on some of the broader issues that were raised in the Roles Report. He referenced the "Statement of Work for the GCDAMP Effectiveness Workshop" (**Attachment 3b**) for implementation later this year consistent with the workplan that was approved. He asked the AMWG to review the Scope of Work and provide comments to him by June 15, 2007. John said he would also like to see the establishment of a project planning group that would help facilitate implementation of the workshop. While GCMRC is considered the lead for the workshop, John sees them more in a facilitation capacity and not responsible for designing or directing the workshop. They intend to work very closely with this project planning group which would include members from all the major elements of the program (AMWG, TWG, SAs, GCRMC, and the Secretary's Office) to help provide guidance in designing the workshop and oversee the overall conduct of it. In addition, they would hire an outside facilitator to conduct the meeting. He has had some preliminary discussions with Pat Lewis from the U.S. Institute of Environmental Conflict Resolution, a federal agency based out of Tucson. The proposed primary focus of the workshop is to deal with some of the broader, conceptual issues related to the program, to provide a renewed commitment to the overall spirit and intent of the adaptive management program, to look at how issues can be tackled like desired future resource conditions, to look at the overall structure and management of the program, and to try build some consensus to move forward in addressing those broader issues.

John said he would like to have some volunteers to serve on the project planning group. The following individuals offered to assist him: Steve Martin (AMWG), Kurt Dongoske and Dennis Kubly (TWG), and Dave Garrett (Science Advisors).

Beach/Habitat Building Flow Update (Attachment 4). Ted Melis said GCMRC followed the recommendation that came from an AMWG motion to the Department in early December 2006. Throughout December and January GCMRC continued their planning process around the basic elements of a BHBF science plan that would relate to sediment as well as other resource aspects related to fisheries, foodbase, cultural resources, as well as quality of water and impacts on Lake Powell. They had several meetings with their staff, and their cooperator scientists at several different venues and also had some discussions with some of their DOI partners about various elements of the plan as it was coming together. Around February 8th, they had a draft plan ready for external peer review so they forwarded that to the Science Advisors and within 10 days, they received comments back and proceeded to revise the plan. On May 14th they were ready to distribute a draft to the TWG and asked for written comments from them during the period of May 15-June 8. They thought that was an appropriate time for them to review and comment and also give GCMRC about two weeks to make revisions again based on those comments before the upcoming TWG meeting in June. In the appendices attached to the actual science plan, they studied the minutes from the December 2006 AMWG meeting and were instructed in a motion to respond to the concerns of the members about future BHBF implementation as tests. They did that in Appendix A. They also tried to estimate costs based on FY07 projections with the full knowledge that they weren't sure when it would be implemented in the future but they needed to get some general cost estimates for the various elements of the plan. They also tried to take on the various

pros and cons of doing BHBF experimental work with respect to all the resources of consideration. They also looked at some alternative durations for BHBF peaks in the future in trying to look at the various pros and cons of doing perhaps shorter BHBF tests versus replicating the duration that was actually tested in 2004, which was 60 hours.

Once the TWG provides feedback to GCMRC, then they will make decisions based on those comments and will be seeking approval of the science plan by the AMWG in August. They would also like to have as much clarification as possible on a time frame for when the earliest implementation could occur as there is a sizable amount of work that needs to be done.

Concerns:

- *USFWS wants to see the BHBFs used to further help us define what they can do positively to benefit those structural sediment type components of the habitat for HBC and other native fish. (Spiller)*
- *USFWS did a biological opinion on the 2004 BHBF experiment and as part of that experiment, the action agencies agreed to develop a report on the effects to native fish specifically to HBC and to native fish in general as well on the effects of the experiment on physical habitat, foodbase, and displacement. We still need that report and it would really help with compliance for this 2007 plan. (Knowles)*
- *I have questions on how the BHBF plan fits in with the LTEP as to which comes first but it seems to me that maybe the LTEP should come before the BHBF plan. I'm also concerned that the biological studies within the BHBF are going to be consistent with the kinds of experiments called for in the LTEP because I don't know what those are going to be. (Persons)*
- *In the background section on page 3 it talked about one to several additional BHBF tests that may be needed and I'm curious what that means. Is that recognizing that there may be different alternatives when the LTEP, one alternative would be a single BHBF test over the lifetime of the LTEP and other alternatives would have several? How does that statement fit into the LTEP process? (Henderson)*

Randy reminded the members that GCMRC is doing what they were asked to do by the Secretary's Designee and that was to prepare a plan should there be a trigger. The plan will be helpful in terms of preparing the EIS and there could be a number of different approaches as far as alternatives. Those issues will be discussed in the cooperating agency meetings in the near term and by the time the alternatives are developed, he believes GCMRC will have a BHBF plan to help in the design of the science.

The Long-Term Experimental Plan Update (Attachment 5). Randy Peterson said they established a scoping process earlier last fall and winter and actually had four months for the public to provide comments in terms of the scope and nature of the proposed federal action. They received a broad range of very good comments although there weren't a lot of comments, perhaps 160, but they put those into a scoping report which has been posted to Reclamation's website. All the individual comment letters are also available on the website. Randy believes they established an excellent cross-section of cooperating agencies to help in the process. Currently there are 16 entities involved. They've had a number of conference calls to discuss scoping comments and the scope of the proposed federal action, and are moving into a discussion of the alternatives.

In mid-April GCMRC sponsored a science workshop and brought in about a dozen high level external experts which was very valuable in terms of listening to their opinions and discussions. While they were in the middle of that workshop, they designed some of their own thinking regarding a possible alternative. Reclamation will consider that as they develop the alternatives for the EIS along with any AMWG options proposed. They've had some initial discussions with some non-governmental organizations regarding their thoughts on an alternative that might be included. The original target was to have the alternatives well defined by May but now it appears it won't be until possibly late June before the alternatives are ready to be released to the public and they can begin work on the impacts analysis.

Their target release date for the Draft is probably February 2008 so that means they'll spend this summer doing the modeling for the hydrologic impacts. They anticipate using the preferred alternative from the shortage EIS as the baseline of the no action for that modeling and will have hourly and monthly models to run and be able to then feed into their impacts analysis. They expect to begin in September or October. Their overall target for the EIS to be released to the public is the fall of 2008 and a Record of Decision to be signed in December 2008.

Concerns:

- Whether the LTEP will lock in a hydrograph for a period of 10+ years and whether the AMWG will be able to tweak that hydrograph at any point during that time. AMWG's ability to modify the hydrograph during the duration of the LTEP. (Steffen)
- Start of Section 106 activities and preparing an MOA or PA for compliance on the process. (Yeatts)
- Opportunities for face-to-face discussions on the LTEP and work needed in conjunction with the desired future conditions. (Martin)

Randy said he appreciated the interaction with the science advisors and especially the responses to follow-up questions received yesterday. As they begin formulating the alternatives, they're going to move into the definition of the monitoring and research associated with those alternatives and will be further engaged with the science advisors.

Monitoring and Research Plan Update (Attachment 6). John Hamill said there were several concerns related to the MRP and he listed how GCRMC was dealing with those:

1. GCRMC developed a crosswalk table that looked at the gaps in the MRP and made recommendations to fill those gaps.
2. WAPA had expressed concern whether the monitoring protocols were consistent with the recovery goals. As such, they held several meetings and John believes everyone is now in agreement in terms of what needs to be done. WAPA had also raised policy questions in the past and some clarity needs to be brought forward.
3. There were also concerns about addressing sediment in the MRP and GCMRC is going back to see if those are relevant.
4. Regarding foodbase, WAPA wants to conduct a study versus stable and fluctuating flows. There continues to be ongoing discussions on what should be done.

John said the MRP will be revised and he will be meeting with the Minority report members and bringing revisions to the AMWG at their summer or fall meeting.

Response from Department on AMWG Recommendations.

Mr. Gold said during the course of this call, he received a memo (**Attachment 7**) from Deputy Secretary Lynn Scarlett responding to the AMWG's recommendations from its December 5-6, 2006, meeting. He said he hasn't had a chance to read the memo but will have it sent via e-mail to the AMWG by Linda Whetton following the call.

Recap of Key Dates/Assignments. Mary reviewed the following items requiring response/action from AMWG members:

1. Due Friday, May 25 to Dennis Kubly: Feedback on the FY08 Draft Budget
2. Due Friday, May 25 to John Hamill: Volunteers willing to participate in the Planning Committee for the AMP Effectiveness Workshop. John is looking for volunteers from the AWMG, TWG, GCMRC, and the Science Advisors. So far, Steve Martin (NPS) is the only AMWG member who has volunteered. If you have any questions, please give John a call (928-556-7364).

3. Due Friday, May 25 to Linda Whetton: AMWG member and alternate availability for the last two weeks in August (20-31) and the first two weeks in September (4-14).
4. Due Friday, June 15 to John Hamill: Comments on the Scope of Work for the AMP Effectiveness Workshop
5. Due Friday, June 29 to Randy Peterson: Comments on the Roles Ad Hoc Group Report

Respectfully submitted,

Linda Whetton
U.S. Bureau of Reclamation

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	MLFF – Modified Low Fluctuating Flow
BA – Biological Assessment	MO – Management Objective
BAHG – Budget Ad Hoc Group	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
CAPA – Central Arizona Project Association	NWS – National Weather Service
GCT – Grand Canyon Trust	O&M – Operations & Maintenance (USBR funding)
CESU – Cooperative Ecosystems Studies Unit	PA – Programmatic Agreement
cfs – cubic feet per second	PEP – Protocol Evaluation Panel
CMINs – Core Monitoring Information Needs	POAHG – Public Outreach Ad Hoc Group
CRBC – Colorado River Board of California	Powerplant Capacity = 31,000 cfs
CRAHG - Cultural Resources Ad Hoc Group	PPT – PowerPoint (presentation)
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
CWCB – Colorado Water Conservation Board	ROD Flows – Record of Decision Flows
DBMS – Data Base Management System	RPA – Reasonable and Prudent Alternative
DFCAHG – Desired Future Conditions Ad Hoc Group	SA – Science Advisors
DOE – Department of Energy	Secretary – Secretary of the Interior
DOI – Department of the Interior	SCORE = S tate of the C olorado R iver E cosystem
EA – Environmental Assessment	SHPO – State Historic Preservation Office(r)
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