

Glen Canyon Adaptive Management Work Group

Minutes of the First Work Group Meeting September 10-11, 1997

**Ramada Suites
Tempe, Arizona**

September 10, 1997

Welcome and Introductions

Stephen Magnussen, the Secretary's Designee and chairman, opened the first meeting of the Glen Canyon Dam Adaptive Management Work Group (AMWG) by welcoming everyone and introducing himself as chairman acting on behalf of the Secretary of Interior. He stated that implementation of the Adaptive Management Program described in the Operation of Glen Canyon Dam Final Environmental Impact Statement and adopted in the Record of Decision establishes another historic milestone in this evolutionary process. Attention was drawn to the handout from the Grand Canyon Monitoring and Research Center (GCMRC) which contained documents relevant to the Adaptive Management Program. As a way of setting the stage for this and future meetings, Mr. Magnussen read and paraphrased from the "Statement of Justification" for the AMWG Charter, see Attachment 1.

Roll Call

Members were asked to introduce themselves and identify whether they were the appointed member or an alternate. Twenty-two members and three alternates were present, see Attachment 2, List of Members Attending Meeting. All other attendees introduced themselves. The required 15 members needed to constitute a quorum were present, therefore Mr. Magnussen declared the meeting to be official.

Adaptive Management Work Group Organization

Scott Loveless from the Department of the Interior's Solicitor's Office in Salt Lake City, Utah, told the group the following:

- All meetings are open to the public and must follow the requirements of the Federal Advisory Committee Act (FACA) and the Sunshine Act.
- All meetings will be advertised in the *Federal Register* 15 calendar days in advance of the meeting.
- The committee members are responsible for reporting any conflicts of interest which may result from them being a member of the AMWG.

- Financial disclosure and conflict of interest forms will be sent to all federal employees under separate cover letter.
- The Charter will need to be renewed every two years. The Charter may be revised at that time to better describe the function of the committee, if required.
- Alternates are permissible if adopted in the bylaws of the group.

The General Services Administration video "First Meeting" was shown to the group.

The agenda items for the two day meeting were discussed. There was only one recommended change to the agenda, see the Public Comments section below.

Agreement: Mr. Loveless said he would provide a copy of the regulation on federal advisory groups (see Attachment 3, Federal Advisory Committee Act).

Public Comment

The first agenda item was the appropriate time to open the floor for public comment. The AMWG recommended that public comment be deferred to the end of each day in order to get through the tight schedule of the agenda. No written comments had been received prior to the meeting. Proper notice of the meeting was included in a *Federal Register* Notice, see Attachment 4.

Agreement: It was agreed the public would be allowed to comment at the beginning of the meeting to offer comments on the agenda and at the end of each day's meeting. Time will be allowed for each public commentor at the discretion of the chairman, but not less than two minutes.

Alternates

It is not practical to assume every meeting will be attended 100 percent by the appointed members, hence the Charter quorum requirement of 15. The discussion centered around two issues: (1) should alternates be allowed to attend in an official capacity for the appointed member and (2) what should be the authority of alternates if allowed to participate.

Agreement: The AMWG agreed to allow alternates to participate with the following requirements:

Alternates shall have full participation rights, be counted as a part of the quorum, and have voting privileges. Alternates shall be selected prior to a meeting by the entity they represent. A letter to the Secretary's Designee, prior

to each meeting identifying the alternate, constitutes official notice. Individuals coming to a meeting and announcing that they are an alternate does not constitute adequate notice and they will not be allowed to participate as an AMWG member.

A list of members and alternates shall be maintained.

In accordance with the Charter, regular members should attend all meetings. Should they miss two consecutive meetings, dismissal could occur. In the event that a member is dismissed, the agency or organization would be asked to submit another nomination for review and approval by the Secretary.

Would the alternate's term expire with the member? The members were chosen for their expertise and the alternate does not replace that knowledge. Mr. Magnussen suggested that should the member have trouble attending the meetings it would be incumbent on the organization to replace the member. There is a concern about continuity in the group. If members are not consistent at attending meetings or members are changed frequently, it will be difficult for the group to function efficiently.

Agreement: Alternates will serve for the same term as the member. New members would select new alternates. The same member and alternate can be reinstated after the term expires. It will not be necessary for the Secretary to designate alternates.

Discussion of Operating Procedures

Suggested operating procedure topics, developed from various other federal advisory committees' operating procedures, were handed out for discussion, see Attachment 5, Agenda and Sample Operating Procedures. The content of the AMWG operating procedures will be decided by the group and approved by the Designee.

The chairman opened the discussion on the sample topics with the resultant agreements:

Agreements: Drafting of the operating procedures centered around two options: (1) drafting by staff to the Designee and (2) drafting by a subgroup of AMWG members. It was agreed that staff to the Designee would draft the operating procedures and send them to AMWG members for review and discussion at the next AMWG meeting. There is a sense by the group to complete this assignment as soon as possible to allow more time to focus on substantive agenda items.

Approval of operating procedures could be by faxogram and/or mail.

Approval procedures should be a part of the procedures themselves.

To provide guidance to the drafters, the following prioritization was agreed to:

Agreement: All topics on the sample were considered important, but the following were chosen by the group for special emphasis:

- *Alternates*
- *Decision-making process and voting*
- *Subgroups*
- *Access to records*
- *Minutes and type of approval*
- *Location of meetings*
- *Operating procedures and their format*
- *Payment for members*

Voting and Method of Decision-Making

This is one of the key administrative areas the group dealt with. All members felt consensus was preferred to arrive at a recommendation. How consensus was identified, either by voting versus sense of the chairman, spawned considerable discussion. There were several recommendations for a two-thirds majority vote and one recommendation for a 51 percent simple majority vote. Another issue was the adding of agenda items to the agenda at or during the meeting. This moves somewhat into the requirements of proper public notice per FACA. If a motion is too far outside the purpose of the meeting, it may need to be deferred to the next meeting.

Motion: The group should try to seek consensus but, in the event consensus is not possible, a vote should be taken. The procedure would be: motions would be made, discussion on the motions with members and staff presenting pertinent information, followed by voting. Motions could be made verbally at the meeting or submitted in writing. Voting would occur only at formal meetings. A motion passes if a two-thirds majority of those members and alternates present at any meeting vote in favor. If after the vote the minority decide they would like to have their opinion submitted along with the formal recommendation to the Secretary, they may, provided one minority opinion may be moved forward on an issue.

Vote: Unanimously approved.

Motion: The group should use Robert's rules of order, but be flexible as the group's needs dictate.

Vote: A unanimous vote was received.

Motion: Ample notice of those issues requiring votes should be given so that members could come to the meeting prepared to discuss and vote. The draft agenda for the next meeting and any substantive materials on the issues would be mailed 60 days prior to the next meeting dates if possible. Other agenda items may be added after the 60-day time limit, but within sufficient time to allow issuance of the 15 calendar day notice required by FACA.

Vote: Unanimously approved.

Emergency Meetings

Emergency meetings are not expected. Some felt that if an emergency arose, there should be a procedure to handle it. Operations of the dam are changed on short notice and the work group may need to meet and have provisions in the operating procedures to do so. In these cases, a 60-day notice will not be possible. This group was formed to advise the Secretary on the overall management decisions and not the day-to-day operations. The Secretary may want to take advantage of this group as well as any subgroups to assist in making some decisions. It was recognized that the Secretary may need to make decisions outside and contrary to the recommendations of this group based upon laws and other circumstances. The Secretary may call an emergency session of the group when input and information are necessary.

Agreement: An emergency meeting would occur where a recommendation from the group cannot wait until the next scheduled meeting. The Designee, at his discretion, has the authority to call an emergency special session. The Designee shall set the agenda, but the AMWG members and alternates have the ability to request additions or deletions.

Subgroups

The AMWG can form subgroups to assist them in their recommendation process. Subgroups do fall under the rule of FACA, except a Charter is not required and members need not be appointed by the Secretary. Scott Loveless will provide a summary of the FACA requirements for subcommittees to accompany the minutes of this meeting.

Motion: Subgroups receive their charge from the AMWG, have membership designated by the AMWG and report only to the AMWG. On a case-by-case basis, the AMWG will provide direction to the subgroups on the flexibility they have in forming ad hoc groups. The operating procedures for the AMWG and the Technical Work Group (TWG) should reflect these requirements.

Vote: Unanimously approved.

Minutes

A short discussion resulted in the following motion:

Motion: The summary of the minutes shall be limited to five to 15 pages. The minutes shall contain only pertinent summaries of the discussions and motions and decisions made by the group. Minutes shall be sent out 30 days after the meeting and corrections and adoption of the minutes voted on at the next meeting.

Vote: Unanimously approved.

Payment for Members

Financial assistance to attend subgroups was felt to be required for certain organizations to attend. It was proposed that the Charter be amended to allow subgroup members to be compensated. Currently there is no financial mechanism in place to pay them. The Charter specifies that only members of the AMWG will be paid. The Solicitor's Office was asked to research the subject and report at the next meeting.

Arrangements for Meetings

One recommendation was that meetings be held in Flagstaff, Arizona. However, it was pointed out that this would be costly for the majority of members. Locations which have major airports would make travel more convenient. Salt Lake City, Utah; Phoenix, Arizona; Las Vegas, Nevada; and Flagstaff, Arizona, were recommended as possible meeting locations.

Motion: It was recommended that the locations of future meetings be rotated among the above-cited four cities.

Vote: Unanimously approved.

Public Access to Documents

Documents of the AMWG will be made available to the general public at the Library of Congress and the Bureau of Reclamation's Upper Colorado Regional Office. Reclamation is currently looking at the costs of maintaining a website. Should costs to maintain a website fit within the AMWG's budget, one will be created.

Some issues, especially issues concerning cultural resource sites, are sensitive and exempt from the Freedom of Information Act. Discussion of sensitive issues and documents may require closed sessions. It was the sense of the group that most issues could be addressed

without going into the specific details which would trigger the need for a closed meeting.

Agreement: If an entity proposes discussion of a sensitive issue they feel requires a closed session they should so state in a proposal submitted to AMWG members in sufficient time to include it in the agenda published in the Federal Register Notice announcing the meeting. An executive session could be held during a regular meeting, but should be used rarely. Any sensitive cultural issues will require consultation with Native Americans prior to meeting.

Technical Work Group

A. Formation

The TWG is an element of the preferred alternative in the FEIS. The FEIS, on page 37, contains definition of the membership, chairmanship, and charge. It states that the membership would come from the agencies represented by the AMWG. During the discussions the National Park Service requested to have two representatives because of the Grand Canyon National Park and Glen Canyon Recreational Area, and the chairman requested consideration of nominating the United States Geographical Survey (USGS). The representative of the Solicitor's Office stated that it was within the purview of the AMWG to alter the membership to the TWG if they felt it would enhance the TWG recommendation process to the AMWG.

Motion: The TWG would be formed as a subgroup of the AMWG. Membership would be comprised of one member from each agency, except the National Park Service would have two members, and there would be one member from the USGS. The TWG shall determine their own operating procedures. Their charge shall come from the AMWG, but they are encouraged to submit issues to the AMWG that they feel are worthy of consideration and discussion.

Vote: Unmamiouly approved.

A list was passed around for AMWG members to name representatives to the TWG.

The subject of the TWG chair was discussed. It was felt that the chair should be named now so that they can get to work immediately. The GCMRC was recommended for chairmanship, but was not accepted on the basis of their need to remain objective for scientific purposes.

Agreement: In an effort to get the process initiated, Stephen Magnussen enlisted Bruce Moore (previous Transition Work Group chairman) to be the initial head of the TWG with the stipulation that the selection of the official chairman be the first order of business at the first meeting.

B. TWG Charge

The AMWG discussed the following charges to the TWG:

1. The TWG will develop resource management questions and objectives, review management objectives and suggest any needed revisions, and establish criteria and standards for long-term monitoring and research in response to the Grand Canyon Protection Act (GCPA). The GCMRC will need this information for development of their annual work plans.
2. Provide information as necessary for preparing annual resource reports and other reports as required for the AMWG. They would look at the Annual Operating Plan (AOP) issues and make recommendations to the AMWG to be considered in the AOP process.
3. Develop hydrological and operational criteria related to the possible flood events next spring. The information should be related to resource implications only.
4. The TWG would work only on issues that were assigned them by the AMWG. They should not have the ability to follow other issues on their own. Instead they should bring back issues for the consideration of the AMWG. The AMWG would need to approve additional work on new issues. The AMWG may require the TWG to develop plans and direct them to come to a consensus or majority opinion at their discretion.

Annual Report/Colorado River Processes (Dr. David Garrett)

A. Coordination with the Annual Operating Plan Process

Dr. Garrett handed out a flow diagram showing the coordination plan between the AOP process and the Annual Report process under the GCPA, see Attachment 6. During the previous several months, the GCMRC has developed, in conjunction with its planning group, a process to interface the AOP process and the Annual Report process. By law, two separate reports on past and future operations of the Colorado River Basin and Glen Canyon Dam have to be produced each year for the Secretary to send to Congress. The GCMRC is charged in the FEIS with preparation of the draft Annual Report for the AMWG's review and recommendation. To produce the draft Annual Report and provide information on the resources, the GCMRC has to develop a State of the Canyon resource assessment. This assessment analyzes current conditions and identifies potential impacts to individual resources. The GCMRC feels confident they can produce a quality report on the state of the canyon's resources by December of each year and that the dates shown in the flow diagram handout

could be met. Copies of the draft State of the Canyon Report are available from the GCMRC by request.

The development of the draft Annual Report under the GCPA is a difficult task and will require approximately three months. A six-month lead time is required to work with scientists and resource managers to develop a draft.

At this point, Dr Garrett asked Larry Stevens to present an overview of the draft State of the Canyon Report included in the notebook sent to participants by the GCMRC prior to the meeting.

Questions were entertained following Mr. Steven's presentation.

This was the first time Bill Davis had heard of a decline in the humpback chub. Larry Stevens said that it was very clear that there is a decline. There was a question of whether the count was taken pre- or post-spawn, but the overall condition shows a downward trend. Factors could be sediment, natural, and river impacts related. There should be a paper out in about six months on the results of a study currently under way.

Dr. Garrett explained how the Annual Report process flow chart was developed. Charlie Calhoun stated that the AOP deals with the entire Colorado River watershed, while this group addresses only the Glen Canyon portion. Randy Peterson stated the AMWG will need to be ready to enter the AOP process in April of each year. The AMWG will require input from the GCMRC prior to that date. It is important that the AOP and the recommendations from the Adaptive Management Program be consistent for the Secretary to make good decisions.

B. Annual Report to Congress

A draft Annual Report process outline was passed out and explained, see Attachment 7. Dr. Garrett stated Item G will not be in the report. The GCMRC feels that it should not provide alternate adaptive flow regimes in the Annual Report unless requested by the AMWG. The recommendations from the AMWG to the Secretary should be simple and have the GCMRC's State of the Canyon Report attached. It is recognized that the AMWG is not on schedule for this year, but the report should be submitted to the Secretary very soon following the January 1998 AMWG meeting. In future years, the Annual Report should be submitted to Congress in January following the beginning of a water year. In the front of the binder given to each member is a list of accomplishments and target goals of the GCMRC.

The AMWG will review and make recommendations in the Annual Report to Congress. The AMWG will need to develop procedures on how they will review and approve the report in a timely manner. The Annual Report to Congress required by the GCPA and the Annual Report

on the Operation of the Colorado River required by the Law of the River (1968 Act) should be sent in final draft at the same time to the Interior Department for processing by October 1 of each year. The State of the Canyon Report is separate from the two required reports. No date has been mandated on when this report should be submitted. The current schedule will make it difficult to complete the Annual Report by January 1.

Motion: The TWG should interface with the GCMRC on development of the Annual Report for 1997-98. The final draft of the 1997-98 report should be in the hands of the members 60 calendar days prior to the next meeting if possible. The report shall be reviewed by the AMWG, then voted on and recommended to the Secretary.

Vote: Unanimously approved.

C. November High Flows

Rob Arnberger recommended that the GCMRC come up with another name for the report other than the "State of the Canyon Report" because this report only addresses resources directly impacted by the operation of the dam.

Dave Sabo said that the October 1997 test maintenance flows seem to deviate from the Record of Decision and would like to hear some discussion on how we might do it within current requirements. The Colorado River Energy Distributors Association (CREDA) would not like to see a precedent set of deviating from the AOP. Reclamation needs to look at how this might be done under the existing criteria. CREDA would also not object to the flows being increased to powerplant capacity. They would like to see this occur in the next few weeks due to the sale of power. Mark Anderson explained that the data shows that the sediment from the Paria River will be pushed out of the area should the maintenance flow not be run. The higher flows will move sediments up on the banks. The flows will be a test because there are things that the GCMRC does not know about 33,200 cubic feet per second flows. The power benefits will decline as we move into the winter. The GCMRC could use existing contracts to gather information in about three weeks. The maintenance flow may meet criteria if it were performed for research purposes. Dr. Garrett said that this was their intent because they currently do not have information at this flow rate. The GCMRC anticipates that the test maintenance flows could occur in approximately three weeks.

At this point a question arose whether the issue of maintenance flows in October could even be discussed and a decision made because it does not appear clearly on the agenda. It was determined that the issue fit into the agenda as an element of the Annual Report. Randy Peterson said that the issue was addressed last year during the AOP process in anticipation of this year's activities. Joe Hunter recommended that the report be as specific as possible and not contain very much detail. The group expressed a need to make sure that sufficient resources could be in place to monitor the resources. The word "test" should be added to the title. It was felt that reconsultation under the Endangered Species Act (ESA) and National

Environmental Policy Act (NEPA) compliance should not be necessary. Scott Loveless will verify that ESA and NEPA requirements have been met. Dave Cohen expressed his concerns about impacts on all of the resources and that they be reviewed prior to performing the test. Jeff Barnard stated that the motion was not meant to over ride any of the existing ESA laws or other laws which apply. Sam Spiller stated that he thought the endangered species issues were covered in earlier biological opinions. He will have his staff look in to it. He did not think that there would be an insurmountable difficulty which would preclude running the test.

Motion: To recommend performing a test flow in October 1997, within powerplant capacity, in order to preserve the sediment in the system from the Paria River flash floods provided that NEPA and ESA compliance could be accomplished in a timely manner.

Vote: Unanimously approved.

Annual Operating Plan Process

Randy Peterson passed out scenarios developed in the AOP work group for the 1998 plan of operation, see Attachment 8. All of the reservoirs in the system will be full. Last year they had space in the system to accommodate the runoff. Without that storage space they may have spilled last June. High releases may begin as early as January. The best way to maintain control of the operations of the dam is to begin high releases early in the year. If we wait until March, it is way too late.

On January 1 of 1998, hydrologic projections for the 1999 water year will be made available. Recommendations on flow regimes for the 1998 water year need to be provided to Reclamation by April 1.

A decision on a March-April spring spike flow needs to be made by the middle of February. Errors in the forecast were noted from the handout with their respective risk factors and scenarios. The group was asked to rigorously address these scenarios and the associated risks. The group needs to address the level of error and the risk which triggers a spike flow.

Public Comments

Bob Lynch talked about his experience in previous FACA groups. Public testimony on each of the segments of the agenda would be helpful. He suggested that we keep a continually updated computer list by title of all items provided to the group at each meeting.

Adjourn

Stephen Magnussen congratulated the group on the progress they had made and adjourned the meeting at 5:30 p.m. He announced that the meeting would be reconvened in the morning at

8:00 a.m.

September 11, 1997

Welcome

Mr. Magnussen reconvened the meeting at 8:00 a.m.

Tom Turney and Dave Sabo could not be present and they named the following alternates: Wayne Cook would be the alternate for Tom Turney and Clayton Palmer would be the alternate for Dave Sabo.

Stephen Magnussen introduced Mark Schaefer, Deputy Assistant Secretary for Water and Science. He has been involved in the decision-making process on the Colorado River and was involved with the effort to make the 1996 Beach/Habitat-Building Test Flow possible. The Secretary looks to the Assistant Secretary and the Deputy Assistant Secretary for Water and Science to take the lead for the Department regarding policy decisions on the Colorado River.

Mr. Schaefer thanked the members on behalf of the Secretary for taking the time to attend and participate in this process. It is an historic event in which many of you have participated in developing a first-rate environmental impact statement. It is now time to implement the Adaptive Management Program. This process represents a key change from the way we have operated dams and reservoirs in the past. It shows that various individuals with strong interests and concerns can get together and find a compromise. One of the Secretary's highlights in his tenure was initiating the Beach/Habitat Building Test Flow. The Adaptive Management Program is something many people have written and talked about. We are putting it in practice in a very big way. We are hoping that this will be a good example in which others will pattern management of other river systems. This is a very special place to implement adaptive management. The Grand Canyon from Glen Canyon to Lake Mead is the largest riverine corridor in the United States which has not been developed. It also has special meaning to many individuals. Your challenge is to thread the policy needle, so to speak, and try to find a way to account for and balance all of the competing interests that exist in this region. Someone told him about the political Archimedes principle, when you are getting pressure from all sides, it forces you to stand up right. Maybe that is the task at hand and will keep Stephen Magnussen and the Working Group upright.

He thanked Stephen Magnussen for taking on the chairmanship and told the group that he is a very capable individual and has the full support of the Secretary. He thanked David Garrett for the job he is doing and recognized the challenges he has in front of him. The AMWG is the focal point for resolving the controversy of how we operate the dam. All of us recognize the GCMRC as the focal point for having a sound science program. We have many new advances in technology that have been developed over the most recent years. We need to be innovative in developing a program which uses this technology to the fullest.

Secretary Babbitt said some time ago that the American people will need to decide what they want the river to be. Your task to a large degree is representing the various perspectives that the public holds. So this is a very serious process and one that we want to ensure is successful. We look forward to working with you in the months and years ahead.

Budget - Fiscal Year 1998

Bruce Moore said that expenditures will be within approximately \$25,000 of the fiscal year 1997 budget. He commended David Garrett for managing the budget this past year. He handed out a copy of a page of Reclamation's budget justification document for the fiscal year 1998 budget recently sent to Congress, see Attachment 9. On the back of the sheet are listed the activities programed for fiscal year 1998 and total dollar amounts.

Bruce Taubert would like to see a more detailed breakout on the budget figures. Bruce Moore stated that it could be provided soon after the fiscal year 1998 budget has been approved in Congress. Chris Harris asked if there would be enough funds in the budget to cover the special flows discussed in the previous day's meeting. David Garrett stated that these activities could be done with the current funding.

No funds are currently programmed for Lake Powell. That decision was made two years ago during the development of the fiscal year 1998 budget. If the group decides that Lake Powell needs to be funded, additional funding would be required. Reclamation does not think that they will have a problem should the AMWG decide it is a priority.

Bruce Taubert asked whether the budget included the AMWG, TWG, and independent review panel costs. Bruce Moore said the budget includes the operation of the AMWG and members' travel, operational costs of the TWG, with no costs for member travel, and costs of the independent review panel. The FEIS states that review panel(s) will be established in consultation with other entities including the AMWG. In the future, the AMWG will review and provide recommendations on the establishment of the independent review panels.

The fiscal year 1999 and fiscal year 2000 budgets could maybe be made available for the TWG to review and comment at the first TWG meeting. There are some constraints on providing proposed federal budgets to non-federal entities prior to Congressional approval. Reclamation did commit to provide a document showing their budget cycle.

Clayton Palmer felt that the GCMRC and Reclamation have done a good job at setting priorities for the fiscal year 1998 budget. The group would like to see the TWG have the opportunity to recommend priorities and budget amounts for perhaps the fiscal year 1999 program. The group might have the opportunity to influence individual amounts within the overall budget, but not the total amounts previously programed two years ago. The budget handout is a good summary, but the group would like to see greater detail.

The 1996 Beach/Habitat-Building Test Flow cost was \$1,500,000. When questioned, Dr. Garrett estimated the spring spike in 1998 to cost about \$1,000,000.

Bruce Toubert questioned the 51 percent and 48 percent overhead cost shown on the copy of the page from the Reclamation Budget Justification Document. Bruce Moore said that the Upper Colorado Region, Resource Management Division, is currently charging that amount on direct labor hours. Dr. Garrett explained in his experience that overheads from the universities do not include overhead items found in Reclamation's figures. The GCMRC's overhead does not include office rent and other expenses which are charged as direct expenses.

A member asked where the logistics costs show up in the totals shown on the Budget page. The answer is they are distributed throughout the budget and are \$600,000 total for 1998.

At the conclusion of his budget presentation, Bruce Moore asked that those members named to the TWG meet with him after this meeting to discuss times and dates future meetings could be held.

Grand Canyon Monitoring and Research Center Report

A. Strategic Plan

The GCMRC will produce a copy of the binder for all of the other people in the room and it will be sent to them later. David Garrett explained that several items occurred this year which were not in the original budget--the monitoring and research associated with the high steady flows which cost over \$400,000. The GCMRC is committed to a competitive process and wants the program to have an external review. They are open to refocus their efforts if the group would so recommend. The GCMRC would like the group to review the executive summary of the strategic plan. David Garrett has a sign-up list at the back of the room for anyone who would like full copies of any documents that the GCMRC has produced. The GCMRC is working on a state-of-the-art assessment of the current programs of the Center.

The GCMRC would like the AMWG to review all of the current protocols that the GCMRC has developed. They are committed to information management and making data available to the group and public. They will try to use the latest technology to make this information more available.

B. Review Process

The GCMRC has a general policy on the review process. David Garrett listed the guidelines that they have established to ensure they have a viable program which is consistent with the standards of the Department.

C. Budget

Dr. Garrett showed the GCMRC's estimated five-year budget totals on an overhead. They are: fiscal year 1998 - \$7.3 million, fiscal year 1999 - \$7.3 million, fiscal year 2000 - \$8.0 million, fiscal year 2001 - \$7.5 million, and fiscal year 2002 - \$7.0 million. The increase in fiscal year 2000 is to cover modernization in technology. Clayton Palmer questioned the difference in these numbers and the ones that Bruce Moore presented earlier. This is the GCMRC's recommended budget and not approved by the Department, hence the difference. The majority of the difference is the inclusion of continuation of the Lake Powell studies and the information technology. David Garrett feels that \$7.3 million will be needed to provide the entire program he envisions this year. Cliff Barrett would like to see program items that represent work that the GCMRC is doing over and above the GCPA work, because it makes a difference in who pays for which programs. Also, reprogramming revenue operation and maintenance funds to cover additional costs over and above original budget items is not acceptable unless they get properly credited to repayment per the GCPA. Dr. Garrett was asked if there were funds included to cover tribal involvement in cultural resource contracts. The GCMRC has asked the tribes to submit their program proposals and the \$1.1 million should cover those costs.

David Garrett explained that the lower funding amount shown in fiscal year 2002 represents a five-year program in place, primarily monitoring costs and less review and synthesis.

Barry Gold explained the process of development of the 1998 annual plan. The GCMRC started with stakeholder needs, meetings with the science and planning groups, and reviews with the National Academy of Science. This whole process is mission-oriented science. This means that the GCMRC responds to stakeholders' needs. To find the essential ecosystem mode we needed to step into conceptual modeling in order to determine all of the linkages in the system. We also had to step back and understand all of the science that has been done on the system. Much of the research has not been integrated. We need to be less intrusive in our future activities. We will be more information management conscious and turn the information over to the group and the public. The GCMRC wants to establish a process whereby they will have independent review of all programs.

D. Fiscal Year 1998 Plan and Request For Proposal Process

The GCMRC is using a request for proposal (RFP) process for selecting contractors to perform the work developed in the 1998 plan. They had about 125 organizations who requested the RFP packages. Over 700 invitations were sent out to individuals to assist in reviewing the RFPs. They reduced those respondents down to about 35 people. The review process will start this weekend with award of contracts by October 1. The science advisory board RFP was canceled due to lack of individuals submitting in all of the areas.

E. The Biological Program

RFPs for aquatic food base and native and non-native fish populations were advertised. The native fish RFP included all aspects of the biological opinion.

F. The Cultural Program

Preservation of sites is the first priority. Where this is not possible remedial action will take place. The program contains five elements: (1) synthesize the existing data, (2) develop a risk assessment for varying flow regimes, (3) test and apply a geomorphic model already developed, (4) work with tribes to develop programs to assess the resource to develop appropriate data systems and related technology, and (5) accommodate Programmatic Agreement (PA) program activities. Three RFPs were developed: (1) synthesis of existing National Park Service and tribal data bases, synthesize data on isolated occurrences to understand site formation processes, and summarizing results; (2) modeling of various flow regimes and monitoring sediment deposition at cultural resource sites; and (3) test and apply a geomorphic model related to erosion and develop risk assessment for cultural resources from varying flow regimes.

The GCMRC is looking at getting input from tribes on developing protocols of interaction with tribes. They will host a workshop in which Kurt Dongoske will be the chairman. They will look at cultural and biological data. The workshop will be held at the Central Arizona Project Office, Building 10, on October 1 from 9:00 a.m. to 4:00 p.m. The sign-up sheet is on the back table.

The socioeconomic program for recreation elements includes: synthesis of existing data on camping beaches related to flow regimes, research user preferences and attitudes for wilderness, recreation and trout interests, and evaluation of monitoring protocols for assessment of camping beaches.

G. Physical Program

Ted Mellis described the basic program as: monitoring sand bars, pre-dam river terraces, back waters, camping areas, changes in debris flows, and changes in water quality. They would like to improve: the sediment budget system wide, measure major tributary sediment influx, determine how much sediment is released in to Lake Mead, synthesize geomorphic data, develop mainstem and tributary models for movement of sediment, and optimize floods used as management tools.

They have six RFPs to track this program: (1) monitoring and research of stream flow, suspended sediment influx, changes in mainstem sediment storage, and water quality (this is the largest of all these RFPs); (2) track changes in sandbars with respect to time; (3) monitoring sediment inputs from the Paria and Lower Colorado Rivers; (4) estimation of

sediment flux from upgraded tributaries; (5) synthesis of geomorphology and historical changes in sediment resources; and (6) evaluate protocols appropriate for monitoring sediment and sediment-related features and streamflows.

The GCMRC is working on a project funded by the National Oceanic and Atmospheric Administration (NOAA). This project is a one-year study funded by NOAA to evaluate the role of variability in forecasts for the Colorado River and how that variability is taken into account in balancing the resources of the Lower and Upper Basins.

Mark Schaefer stated that the people on Capitol Hill are very interested in whether we are developing strategies which will adequately prepare us for El Nino. Charlie Calhoun stated that Randy Peterson has developed various operational scenarios for the Upper Basin.

H. Information Technology

Mike Liszewski's presentation focused on the information management program being responsive to information needs and developing an in-house library, an online website, and protocols which will make data available to the public. Sensitive and confidential information will be protected. They will provide training on how to access the data provided by the GCMRC. They hope to be able to present new data protocols within six months.

I. Lake Powell Synthesis

Susan Hueftle and Bill Vernieu made a presentation on their efforts on Lake Powell water quality. The GCMRC had criteria to look only at resources impacted by the operation of Glen Canyon Dam. Certain stakeholders questioned whether the operation of the dam had impacts on the reservoir. In order to answer these concerns a synthesis was performed which looked at the operation of Glen Canyon Dam and whether it has an impact on the resources in Lake Powell. The synthesis has been reviewed externally.

The synthesis looked at the effects on both the reservoir and water quality downstream of the dam, at both physical and chemical data collected over 33 years, at data that was collected consistently and which was available for computer analysis, and at the current operation and tried to relate that to historical operations.

The conclusion is that operational patterns of the dam have significant effect on the water quality in Lake Powell and downstream releases. These patterns do occur in conjunction with other external factors such as the presence of the dam and other hydrologic conditions. They feel these operational patterns are separate effects that tend to augment or enhance the effects of the external processes.

Meromixis is the turnover or mixing of temperature layers in a reservoir. Lake Powell does not have this turnover every year as it only goes through partial mixing. There is a meromitic

buildup of a dense body of water in the bottom of the reservoir which is unaffected by other processes in the reservoir. It has occurred at various times in the reservoir history. It has always been flushed out in time of high inflows and releases from the dam. This causes severe water quality problems where this occurs over long periods of time. Oxygen levels in this layer drop over time and could eventually create anoxic conditions which could generate hydrogen sulfide which is biologically toxic and extremely corrosive. These effects can extend 90 miles upstream of the dam.

The effects of dam releases during the spike flood increased the oxygenation in discharged water. Susan Hueftle showed before and after conditions of conductivity and dissolved oxygen which showed improvement in water quality in the reservoir. The high sustained releases in 1997 also showed improvement in water quality.

Daily fluctuation also has an effect on the conductivity and temperature of reservoir releases. Use of outlet tubes draws colder and more saline water from the reservoir. Short duration releases from the outlet tubes have an impact on the hypolimnion layer.

The following are recommendations from Susan Hueftle's and Bill Vernieu's work:

- (1) Continue the current Lake Powell monitoring program in 1998.
- (2) Conduct additional assessment of existing data.
- (3) Develop objectives and information needs for future monitoring and research for Lake Powell.
- (4) Develop monitoring and research plans for the future.

The GCMRC would like to work with the TWG in about three months when they finish the additional assessment to develop a recommendation on the level of work needed to be done in the future. The TWG would provide their recommendations to the AMWG for their review and recommendation.

The estimate of \$250,000 for the Lake Powell study contains funding for all recommendations from the GCMRC. No funds are included to perform monitoring or study hydrogen sulfide concentrations.

Motion: The above-listed recommendations from the GCMRC should be approved and the work included in the program for fiscal year 1998. The GCMRC shall report back to the AMWG on the results of any further assessment at the appropriate time. The GCMRC should coordinate with other water quality groups like the Salinity Forum.

Vote: Unanimously approved.

Biological Opinion

Christine Karas provided the following report on the status of "sufficient progress" required by the biological opinion:

- The biological opinion requires the design of a program of experimental flows to include high steady flows in the spring and low steady flows in the summer and fall during low water years to evaluate the effects on endangered species. The high steady flow requirement was met in 1996 with the running of the Beach/Habitat-Building Test Flow. Reclamation has not pursued developing a plan for the low steady flow event due to the probably of water deliveries from the dam expected to be greater than the minimum objective release of 8.23 million acre-feet for several years.
- Reclamation will very shortly be requesting reconsultation on the southwestern willow fly catcher.
- Based upon the biological opinion issued for the one-time 1996 Beach/Habitat-Building Test Flow, no future spike flows may occur until a second population of Kanab Ambersnail has been established. Due to the possibility of a spike flow event occurring in 1998, the Fish and Wildlife Service and Reclamation are discussing how to meet the requirements of the 1996 biological opinion. Bruce Taubert questioned if a second spike would cause detrimental effects to the population where it has not recovered from the first. Debra Bills said that there has not been full recovery of the habitat. They are working on growing the two host plants in a lab. Evaluation of sites throughout the canyon is continuing for available habitat which would not displace other resources. Consideration is being given to the lawn on the roof of the Glen Canyon Dam Powerplant for establishment of a second population. Work is also ongoing with the Phoenix Zoo and Arizona Game and Fish and looks promising.
- Other requirements of the biological opinion include: The completion of the razorback sucker workshop. The management report on the Little Colorado River is complete and has been sent to the GCMRC. After the GCMRC has completed the review, this report will be available to the group. Establishment of an Adaptive Management Program is complete.
- The fish integration report has been received and the draft is out for review.
- The current status of how Reclamation is making "sufficient progress" will be updated by Christine Karas and sent to the group in the near future.

Dave Cohen said that we should be concerned about El Nino and its affects on the Lower Colorado River and the chub population. Ms. Karas explained that while the Lower Colorado River is very important to the humpback chub, Reclamation has no control of its waters. Monitoring or research in the Lower Colorado River is outside of the operations of Glen Canyon Dam and the biological opinion.

Reclamation has had discussions with fish biologists and is currently looking at getting some humpback chubs into a refugium prior to a catastrophic event. The work on establishing a second spawning population is proceeding slowly. The Fish and Wildlife Service has performed a reconnaissance and has identified Havasu Creek on the Havasupai Reservation as a possible suitable site based on habitat studies. The Havasupai are not enthusiastic about the introduction of an endangered species on their reservation and discussions are continuing. Also the mainstem has been considered, but will require warming of the river.

The GCMRC has made two trips to discuss coordination with the Havasupai. They are not happy with the decision to develop a second population. They are offended that they have not been consulted on this issue.

Next Meeting

Motion: The next meeting will be held January 15-16, 1998, in Phoenix, Arizona.

Vote: Unanimously approved.

Possible agenda items for the next meeting:

Report from the TWG
Budget
Biological Opinion
Hydrology (El Nino)
1998 Contract Status
Temperature Control Device
Programmatic Agreement
Lake Powell

Programmatic Agreement

Signa Larralde presented an overview of the National Historic Preservation Act, Section 106, which deals primarily with site specific impacts and Section 110 dealing with long-term management. Glen Canyon Dam operations come under Section 106 and are the responsibility of Reclamation. Long-term management is the responsibility of the National Park Service.

The PA and the GCPA have the same goals: identification of sites, evaluation, monitoring and remedial action, and long-term management.

Current status of work completed through the end of 1997 are archeological inventories of the river corridor, ethnographic inventories by tribes, development of monitoring and remedial action plans, and geomorphic mapping of terraces and modeling of terrace erosion. The Historic Preservation Plan is currently in final draft and will be finalized this fall.

The 1998 plan includes finalizing the Historic Preservation Plan, continued monitoring, small scale remedial action plan, evaluation and fine tuning of the geomorphic model, and synthesis of all monitoring/data recovery information.

The Hopi would like protocols developed on how the tribes will work with the GCMRC; specifically with the synthesis and other RFP contracts.

Legal responsibility for PA work lies outside the GCMRC's responsibility. Reclamation sees the GCMRC as a key player in getting the PA done, and provides input and reviews to ensure that the work meets legal requirements. Kurt Dongoske and Loretta Jackson feel that the GCMRC should be included in the PA or possibly as a concurring party. Further discussions will occur on roles in the future.

Glen Canyon Dam Temperature Control Device

David Trueman, Manager of the Glen Canyon Temperature Control Studies, provided a handout to the group, see Attachment 10, and discussed the status. The hypothesis is that warm water releases from the dam may help in the recovery of the endangered humpback chub.

To meet the requirements of the FEIS and the biological opinion, Reclamation committed to evaluating the feasibility of temperature controls. In scoping the issues and potential impacts, Reclamation has found that the majority of scientists believe that temperature control will be an effective tool, but there are complex ecological interactions that defy prediction. Warm water may encourage competitors, change food bases, or have unexpected impacts. Given the hypothesis that warm water will help the humpback chub, Reclamation would like to consider testing this hypothesis. Reclamation has found a relatively simple modification to the penstocks that would provide a plausible test of temperature controls.

Based on draft feasibility cost estimates, a typical selective withdrawal structure would cost between \$40 and \$140 million, depending upon the type of design. At a cost of about \$10 to \$15 million, the proposed test withdrawal structures would take advantage of the existing trashrack structure and bulkhead gate rails. Each penstock would be able to individually draw water from either its original elevation or at a fixed elevation near the surface. In the summer months of years when the reservoir is near full, the intakes could be opened near the surface to allow warm water to enter the penstocks. Some penstocks may be used to cool the releases if needed. Blending would be used to adjust the release temperatures.

Reclamation feels it does not at this time need the AMWG to make a recommendation to proceed with an environmental assessment of the proposed test withdrawal structures.

Public Comments

There were no comments from the public.

Conclusion

Stephen Magnussen concluded the meeting at 1:10 p.m. He thanked everyone for their work.