Glen Canyon Dam Technical Work Group Meeting
January 20, 2011

Conducting: Shane Capron, Chairperson **Convened:** 8:25 a.m.

Committee Members/Alternates Present:
Jan Balsom, NPS/GRCA
Cliff Barrett, UAMPS
Charley Bulletts, So. Paiute Consortium
Kerry Christensen, Hualapai Tribe
Jerry Lee Cox, Grand Canyon River Guides
Bill Davis, CREDA
Kurt Dongoske, Pueblo of Zuni
Garry Cantley, BIA (alternate)
Paul Harms, NM Interstate Stream Commission
Christopher Harris, Colorado River Board/CA
Norm Henderson, NPS
Rick Johnson, Grand Canyon Trust
John Jordan, Federation of Fly Fishers
Robert King, UDWR
Glen Knowles, U.S. Bureau of Reclamation
Ted Kowalski, CWCB (alternate)
Tricia McCraw, ADWR
Don Ostler, UCRC (alternate for WY)
S. Clayton Palmer, WAPA
Sam Spiller, USFWS (alternate)
Larry Stevens, Grand Canyon Wildlands Council
Bill Stewart, AGFD
Jason Thiriot, Colo. River Commission/NV
Michael Yeatts, Hopi Tribe

Committee Members Absent:
Amy Heuslein, BIA
Pam Sponholtz, USFWS
Tony H. Joe, Jr., Navajo Nation
John Shields, Wyoming State Engineer's Office

InterestedPersons:
Perri Benemelis, ADWR
Todd Chaudhry, NPS/GRCA
Marianne Crawford, USBR
Helen Fairley, USGS/GCMRC
Dave Garrett, M^3Research
Paul Grams, USGS/GCMRC
John Hamill, USGS/GCMRC
Leslie James, CREDA
Sam Jansen, Grand Canyon River Guides
Ted Melis, USGS/GCMRC
Colby Pellegrino, Southern Nevada Water Auth.
Barbara Ralston, USGS/GCMRC

Meeting Recorder: Linda Whetton

Administrative. The agenda was adjusted by switching the time blocks for the socioeconomics update and the core monitoring plan as Shane didn't feel the CMP would require all the time allotted to it.

Approval of the Nov. 15-16, 2010, Meeting Minutes. Approval of these meeting minutes will be moved to the next meeting.

Review of Action Items. Since there were a number of related action items, Shane suggested talking about the tribal issues in general. The action items (***Attachment 1***) were updated.

Old Business. Shane reviewed the status of the current ad hoc groups.

Budget Ad Hoc Group (BAHG). Shane said he would like to see a BAHG conference call scheduled when they go through the budget discussion today.

Cultural Resources Ad Hoc Group (CRAHG). Shane said the CRAHG hasn't met since last November and don't have anything specifically on their charge now. If the TWG wants them to do any work, they need to give that assignment today. Shane said the CRAHG normally reviews budget items and make recommendations to the BAHG and so the TWG may want to ask them to do that along with other cultural issues as well. Helen said GCMRC is putting together a workshop in mid-February that will address cultural issues and would like CRAHG members to participate. Jan said that NPS and GCMRC had agreed to convene a small group of experts in the field of remote sensing and monitoring techniques to evaluate the different ways in which GCMRC has been looking at developing the protocols and how

effective they are in developing a long-term set of monitoring protocols. Shane encouraged Helen to talk with other people to see how the CRAHG should be involved and deal with that later today.

Species of Concern Ad Hoc Group (SCAHG). Larry said he is trying to set up a meeting with the group, but there has been quite a bit of turnover in the membership. He would like to have a conference call within the next 10 days. He will talk with the members at lunch on their availability. Sam Spiller indicated he would like to be an alternate on the group.

Socioeconomics Ad Hoc Group (SEAHG). Shane said the group has been working quite a bit and would provide an update later today.

New Business. Shane said he converted all the PPTs into pdf files for each day of the Annual Reporting Meeting (***Attachments 2a and 2b***). They're about 7MB each and he invited people to download them onto their flash drives if they wanted. Responding to a question from Norm about using documents that weren't approved, Shane said the information could be used *provisionally* but not cited. John Hamill said the information would not be released until the report are finalized.

GCMRC Updates

HFE Synthesis. Ted Melis distributed copies of a briefing memo from John Hamill to Anne Castle dated January 12, 2011, subject: Summary of upcoming USGS circular on the results of three high-flow experiments released from Glen Canyon Dam, Arizona (***Attachment 3a***) and passed out copies of the corresponding fact sheet (***Attachment 3b***). He said USGS Circular 1366, "Effects of Three High-Flow Experiments on the Colorado River Ecosystem Downstream from Glen Canyon Dam, Arizona" (***Attachment 3c***) will be released on February 8, 2011, and is similar to the SCORE report. He relayed the five key sediment conclusions that have important implications for designing HFEs:

1. HFEs effectively build sandbars by transferring sand from riverbed to sandbars either by eroding existing low-elevation sandbars or by using tributary-supplied sand.
2. HFEs conducted soon after tributary flooding accompanied by sand enrichment are effective at increasing sandbar area and volume and less likely to result in the erosion of low-elevation parts of sandbars.
3. Sandbars are rebuilt relatively quickly (hours to a few days) under sand-enriched conditions but then also tend to erode quickly over days to months following an HFE.
4. Monitoring data show that sandbars erode more quickly as release volumes and daily fluctuations increase; the rate of erosion reduced when tributary sand production occurs following sandbar building.
5. From February 1996 and October 2008 many of the sandbars at long term study sites in Grand Canyon experienced slight increases in size (both area and volume) over that period despite ongoing erosion of the deposits. This increase occurred during a period of variable basin hydrology which included 6 years of above normal minimum releases and 7 years of minimum annual releases.

He also reviewed the four biological conclusions which have important implications for designing future HFEs (refer to the briefing memo). He distributed copies of the USGS Fact Sheet, "The Effects of Glen Canyon Dam Operations on Early Life Stages of Rainbow Trout in the Colorado River" (***Attachment 3d***).

Clayton expressed two concerns: 1) if the HFE is a document intended for public consumption, will GCMRC hold a press conference like they did for the SCORE report, and 2) why didn't the TWG and GCMRC work with Reclamation on the HFE Protocol EA. Shane there would be some time to discuss the HFE EA protocol later in the meeting.

Bureau of Reclamation Updates. Glen gave a PowerPoint presentation (***Attachment 4a***) that covered the following updates.

High Flow Experimental Protocol EA. Glen said the intent was to improve sand in downstream resources and improve on past results. He went through the steps that were involved to produce the HFE Protocol EA that was sent to the public on January 18. There is a 30-day review period that will end on February

14, 2011. If there were additional questions on the EA, they should be directed to Dennis Kubly. Comments on the HFE EA can be e-mailed to protocol@usbr.gov. Should conditions be appropriate to be able to in a position to conduct an HFE the spring, Glen said it would likely be late April if it took place.

Following up on a question from Sam Spiller at the AR meeting yesterday, Ted said they have all the pre-dam information at Lee's Ferry summarized in one figure (***Attachment 4b***) that addresses Sam's question about HFE timing relative to the accrual and release strategy. The next slide addressed Larry's concern about timing/magnitude of pre-dam Colorado River floods and is based on all the instantaneous flow data they have from the Lee's Ferry station for each month. It quantifies the timing of when floods occurred between about 1921 and 1963 and how many exceptional occurrence floods there were outside of a median range. The plot illustrated the strong snowmelt signal from April-July as well as the higher flows in the late summer and early fall.

Due to limited constraints, Shane asked if the TWG wanted to adjust the agenda to allow for more discussion or possibly have a webinar with Reclamation and GCMRC available to answer questions. He said one of the primary tasks of today's meeting was to give a charge to the BAHG to consider changes to the budget and work plan. There was general agreement that the TWG wanted a webinar at a future date.

Non-native Fish Control EA. In an attempt to facilitate greater understanding and developing alternatives to test, Glen said Reclamation utilized structured decision making (SDM) workshops and invited the cooperating agencies to participate. The USGS prepared an open file report, "Non-Native Fish Control below Glen Canyon Dam—Report from a Structured Decision-Making Project" (***Attachment 4c***). This is a companion document to the HFE Protocol EA as there is strong effect that high flow experiments benefit rainbow trout.

Q*: What's the plan at the LCR as far as controlling trout in that area? (Jordan)*
A*: The proposal is to do up to six removal trips at the LCR and up to ten removal trips 10 removal trips at the Paria River to Badger Reach. We want to have flexibility in terms of the number of trips we're able to do through this EA and want to be able to do this adaptively so that as we learn, we can shift effort upstream if that proves effective. (Knowles)*
Q*: There was a lot of support and interest for a trigger of some kind down at the LCR that would be a factor measured against how many trips you'd do or what you'd do at the LCR, where are we at as far as a recovery goal or knowing what a recovery goal is in the area of the river below GCD? (Jordan)*
A*: We do have a 1200 trout trigger and we've used a lot of literature to come up with this. We've had this target number in the LCR as one mechanism that we look at for conducting removal and just a target for the overall effort. Your question about whether HBC are close to being recovered and do we need to undertake this action is a very good question. The FWS is the agency to answer that question. (Knowles)*
C*: Region 6 is the lead for big river fish including HBC and several years now they have been revising the recovery goals. I talked with them in early December and was told "as soon as possible." (Spiller)*
Q*: How are costs be accommodated in this? (Garrett)*
A*: It has to be part of the process and we'll be talking about that more today. The EA was more explicit about that. It's clearly part of this EA as well and we have to look at what budgets we have available to conduct these actions as we go. Costs were also considered in the SDM process as well. One of the objectives was to try and minimize costs with alternatives so that factored into selection of the alternative. (Knowles)*
Q*: How will these two EAs fit together with the NN EA being behind an HFE EA? How will you be able to do a FONSI on the HFE EA if the NN EA is not yet final and wouldn't part of that action? (Ostler)*
A*: We're trying to match these up as closely as we can. The decision documents point to one another so we expect those to happen about the same time. We want to get these in place to be able to conduct a HFE in that spring window. In terms of a decision document, I think the timing will come together. (Knowles)*
Q*: If you were able to pull the BT, RBT removal would not needed. In other words, the BT having such a significant effect at the LCR, we wouldn't need to worry about the RBT. If that is the case and in terms of your purpose and need and the alternative you come up, it seems to me that those need to be revised. Has anyone seen that information? (Davis)*
A*: It was a key part of the evaluation in the SDM process. It's not part of our EA because the NPS is already doing it, but it is a key piece. The goal is to reduce the abundance of both RBT and BT in the LCR Reach. If NPS weren't already engaged in Bright Angel Creek activities, it would likely be part of our action but they've already done it and*

they've done NEPA on it so we don't have to deal with it. In terms of just doing BT removal, that was part of some alternatives in the SDM process and they didn't perform that well. Using the models developed by Josh Korman and Lew Coggins, you couldn't get there with BT removal alone. (Knowles)
***Q**: What do you plan on doing to incorporate fish suppression flows? (Spiller)*
***A**: We haven't really defined that, but I want to get started as soon as possible with folks that are interested in that along with FWS and WAPA. A number of the cooperating agencies said they are really concerned that it's not a concrete part of the EA. Our commitment is to explore that through adaptive management over the 10-year period. (Knowles)*
***C**: There may be some things we could do in the current operations, based on the hydrology next year that we could consider for a recommendation this year to AMWG. (Capron)*
***Q**: What would they look like? (Spiller)*
***A**: In the SDM process, we came up with trying to test some concepts that Josh Korman came up with as a result of the fish suppression flows that we already did. There are two things you can do, try to desecrate redds and kill fish or you can try and strand small fish as juvenile trout in Lee's Ferry. Both actions affect trout directly in Lee's Ferry, increasing mortality and reducing recruitment. The idea is that you run at some higher flow to get fish acclimated to a higher flow and spawning at a higher flow and then you drop that flow out from underneath for a certain time to desecrate them or strand fish. (Knowles) **Q**: Yesterday morning we heard from Pine and Haden who suggested that the young HBC were doing pretty well in the reach they were studying which was the reach below the LCR and that the young HBC would go in and out of the LCR and into the mainstem. In the summary work sheet that was produced by GCMRC there is one by Carl Walters which is Grand Canyon ecosystem modeling to identify critical ecosystem interaction and data gaps. In one of their summary statements it said based on the 2010 modeling workshop, the modeling team recommended that stakeholders may consider. That would be hugely valuable for informing future policy, not to control RBT at the LCR between 2011-2012. It also suggests that an HFE before the summer of 2011 might be impair our ability to interpret survival estimates from the nearshore ecology projects and that's it possible that negative effects of sand along rocky shorelines may lead to reduced carrying capacities, habitats for juvenile HBC. There seems to be a conflict here. Can you help me understand? Is there not a conflict? Are you moving forward with these actions even though knowing that it might impact ongoing scientific studies? I'm at a loss to understand the logic here. (Dongoske)*
***A**: This action is to meet a conservation measure. It is driven by tribal concerns and trying to come up with an action that better addresses the serious concerns expressed by the tribes. Science in a vacuum is great and if we were fortunate enough to focus on science, that would be what the scientists said would be the best approach. We don't live in a vacuum in terms of science and part of what we're trying to do here is conserve HBC. This action is designed to do that. It may not be the best approach in terms of science, but we feel it's the best approach in terms of science and management. (Knowles)*
***C**: That answer isn't sufficient for me. It seems to me that you may be impacting a science study that's been going on for several years, the nearshore ecology project, and you may impact how they are able to understand what's going on in the system because you're punctuating that system with a high flow and mechanical removal so you're not really understanding the cause and effect. (Dongoske)*
***R**: And as I understand it, that's not exactly accurate. My interpretation of our questions to Bill Pine about this yesterday were that he really can't tell you anything about trout predation, not directly, and you'd really have to alter a study designed to do that. The study that he's doing was to look at the effect of stable flows on native fish and non-native fish in those nearshore habitats. But the recommendation from scientists that given our monitoring programs overall, if you really want to test this, the best thing you could do is hit it with a big hammer, let all those trout go to town and see this big drop in HBC and there you go, right? Unfortunately we're not in a position to do that. As managers, we have to look at a bigger picture. We can't just run this program for science alone. (Knowles)*
***C**: Encourage you to not fall prey to the single species or the single resource mindset but to keep the flexibility, support for science high and strong, and keep the creative thinking going. The windows of March-April and the background and bias there has been all about tamarisk; tamarisk survival in the Grand Canyon is the second biggest impact in that system next to the dam and this year we'll see that. (Stevens)*
***Q**: Is the Department committed to getting the FONSI's done on these before a HFE can be conducted? (Johnson)*
***A**: We're committed to getting decision documents in place before we'll conduct an HFE. (Knowles)*
***C**: There was a lot of sidebar discussion yesterday and the SA's big concern is this seems to be a great window of opportunity with what the managers are doing, but also a big challenge for the costs involved. The SAs see it as a great opportunity but see it as being very expensive. (Garrett)*
***Q**: Are the activities that are here, are they being analyzed for impacts – the science activities that would be evaluating the NN or the HFE? (Henderson)*
***A**: No. (Knowles)*
***C**: That's done in a different process along with what other things are required, i.e., permitting, that would be done outside the EA process. (Capron)*

***C**: It looks like we really are moving towards an adaptive management and all of this information will then feed into the LTEMP process. It just seems like at this point we have two smaller EAs to bring that gap between what we've done in the past and where this group is moving. The only thing we haven't done is the protocol for repeated high flows and again, all of that should be rolled into the LTEMP planning. (Balsom)*

Shane said he thought there would need to be more follow up with the TWG, BOR, and GCMRC to get into the details. He advised the members to review the presentations and possibly bring in some of the cooperators to assist in future discussions. He said the AMWG will be discussing the issues at their February meeting. He also said that any budget and workplan changes would also need to be approved by the AMWG.

Basin Hydrology. As a result of all the precipitation in the system, Glen said that as of January 13th snowpack was 134% of average. Inflow into Lake Powell jumped from 6.6 maf to 9.5 maf. The mid-month Apr-Jul forecast was issued on Jan. 13th and was decreased to 9.3 maf. This small reduction does not change the projected operation for WY 2011. The probability of receiving sufficient inflow trigger equalization in WY 2011 increased from 48% in December to 76% in January. The determination of an equalization release will not be final until April and it is possible that the forecast could decrease between now and April enough to result in a release scenario that would not include equalization releases. It is approximately a 1 in 4 probability that this could happen and the annual release volume would likely be 9.0 maf if this were to happen.

ACTION ITEM: Glen will send the web link to John Jordan on the water forecasts.
(Update: The URL for the 24-month study is http://www.usbr.gov/uc/water/crsp/studies/index.html and the URL for the Colorado River Operating Plans is http://www.usbr.gov/lc/region/g4000/aop/index.html).

Programmatic Agreement and Related Cultural Issues. Glen provided background information on the history of the PA, signatories, and responsibilities under Section 106. Because the parties could not agree on resolution of effect in 2010, Reclamation is currently completing Section 106 review for each individual undertaking that otherwise would be covered by an agreement document, in accordance with 36 CFR 800.4 through 800.6 and the Advisory Council's guidance. The next PA meeting is scheduled for January 31 to discuss whether to use the 1994 PA or put a new one in place.

Revision of FY 2011-12 Budget and Workplan. Shane said the focus will be on the FY12 budget but there may be implications for FY11. He said the Biennial Budget Process Paper (***Attachment 5a***) was approved by the AMWG in May 2010. He referenced Section 3.9 about making revisions to the budget and said it will be very important to engage the BAHG soon because it's going to be a very involved process. He walked through the issues he captured at the AR Meeting along with his thoughts as to what he felt needed to happen. (***Attachment 5b***):

1. Channel mapping – TWG will need to provide input on which reach to repeat.
2. Campable area issue – Is there going to be a way to tease out the issue between campable area and encroachment by vegetation. Need to have some follow up to understand the relationship between what is being tracked as far as a campable area and the isuses that are related to vegetation.
3. ___ Project – Confused whether this project should be repeated when there is an LSSF of 8 maf to continue that dataset. There may be a need to continue that work if a LSSF is recommended
4. Aeolian sand effects related to wind flow – Some questions about the implications to management of future projects.
5. Sediment accumulation in western GRCA – need to know what's going on down there and do we want to increase some of our sediment monitoring to include these western GRCA areas.
6. Flow issue – Given that we're going to have high flows in 2011 and those redds will be deposited at pretty high levels, there is more than likely an opportunity to, according to Korman, to drop the flows during the time periods that redds could be vulnerable and have some significant mortality on those redds. This might a good opportunity to have a test where we could propose changes in flow operations that would be within current operation capability. That would be a change to the current hydrograph for FY11.
7. Foodbase – Competition for higher trout scenarios and questions about whether our foodbase program might capture what might be happening over the next couple of years. This is to insure we have the type of

sampling necessary to capture some of these changing trout scenarios and looking at the potential for competition at these different population trajectories of fish.

8. Trout assessment and funding – Concern about where this falls in the FY11 and FY12 workplan.
9. Pit fall sample for arthropods pilot study – Shane said he wasn't sure what more was going to happen on the study. He thought it was part of a workplan study that got dropped. He would like more follow-up on that. In FY11 Barbara Ralston will be going on a rive trip to determine 80 sites for use as far as the vegetation sampling program. We may want to have more follow up on how the core monitoring is fitting and where we're going with the vegetation program specifically for FY12.
10. Nearshore Ecology work by Bill Pine – There were several items that came out this. First, should be continue with current project in FY11, which is the last year of the field work? Given that they haven't detected a signal in steady flows or should the project be changed to reflect changes in the research needs for non-native fish or should the steady flow be altered to have more of an effect. So either keep doing what is being done with nearshore ecology, proposed changes that better reflect research needs that we implement non-native removal in HFE, or alter the flow patterns so that we can have a bigger hammer to see if we can have a bigger effect to test the original goal of the project which was to see if steady flows would have an impact on native fish. presentation. There are a lot of research questions that will come out of this work and the TWG will need to consider if we want to implement them as part of the research program. High survival rates in the nearshore ecology and reaches implies low predation on size classes and in that location how the trout effect juvenile HBC in smaller sizes and in-between movement from the LCR down to that NSE study area.
11. How can nearshore ecology methods for juvenile survival rates be used for other experiments to track juvenile survival in the mainstem and LCR? We heard that FWS is using these methods in the LCR as well and that some of those results and some of the fish may move between the nearshore ecology study and FWS's study but I don't know that's very well described in the work plan and not sure we have a good research plan to consider using these techniques in the future. There needs to be some follow-up. The question of integration between the foodbase folks and the nearshore ecology work and whether or not changes need to be made in the work plan, more money, or more synthesis, or what needs to happen there. There should be more collaboration between the foodbase and nearshore ecology folks.
12. Translocations – There are pretty high numbers of fish, age 0 fish were taken and age 1 fish taken this year for translocations above the 5% goal. We've asked for and need to revisit the workplan to make sure that in there is a process for developing a science or management plan with clear objectives for the translocation program with Chute Falls. We need to move that along as well as the Park Service's non-native fish plan as well.
13. VIE tag marking with juveniles to try and get a juvenile survival rate. Some of this has been done on a preliminary process but we need to see how the workplan includes these elements. Are we going to continue marking juveniles given that juvenile's survival and how that fits in with the assessment, costs, impacts to HBC, etc., and how those things fit into the work plan.
14. Game and Fish is doing some non-native removal and there have been some changes in Lee's Ferry work.
15. Downstream fish monitoring – there are relatively high numbers of trout in the LCR reach. I think they only had one successful trip in 2010 due to turbidity. If only one trip, then they might miss sampling down there so that's one of their concerns. It's part of the tradeoff we've been doing with implementing some of the analysis requested in the fish PEP and trying to come up with a core monitoring plan. There is $300K in FY12 for non-native fish which is one downstream trip. There is only one mainstem trip in FY11 and we need to check what was proposed and what we may need given the actions we may be implementing.
16. Aggregation sampling – There wasn't a write-up on the sampling that occurred in FY10 and so Bill Persons is going to follow up and provide us with an annual report for that aggregation trip and describe that trip that occurred this year that wasn't part of the annual reporting process.
17. Non-native trigger – If the trigger is 1200 trout in the LCR reach, right now our sampling provides data for catch per unit (CPE) or it doesn't provide a population estimate which the 1200 is and so if we want to use that as a trigger, our current sampling regimen doesn't provide that so Korman thought maybe we could provide a relationship between CPE and abundance based on their 2003-06 work. John also pointed that if we are doing removals, we'll be getting good abundance estimates from them. If you're doing that and already had the trigger, so we need to think about our sampling regime and how we would provide the data necessary to decide if that trigger had been met.
18. Josh Korman brought up the potential for moving that high spring flood back. He thought about a May 15th flood might really impact those juvenile trout as they're swimming up. They would be really susceptible at that point to a flood. By moving that flood, you might have a big negative impact on that first year class. If you assume two big year classes from a flood, you might knock the first one out but you might actually have the potential to impact of those HFEs on trout productivities.

John Hamill gave a PPT, "FY11-12 Budget Assessment" (***Attachment 5c***) on what he thought the big budget issues for FY11 and FY12 to help facilitate the discussion. He provided statistics on available funding, potential for unplanned expenditures, and potential funding shortfalls. In conclusion, he stated there will be many budget uncertainties and funding the new initiatives within the existing AMP budget will adversely impact research and monitoring efforts aimed at evaluating the status of resources and the effectiveness of proposed actions (HFE protocol and NN control).

Q*: You said that in FY11 you could cover the two Paria to Badger River (PBR) trips and the four LCR trips with that $820K. Does that allow you to still do the study you're proposing? (Henderson)*
A*: No. If the intent is to actually start doing removal in PBR this year, there is going to be sampling going on to do that. We would still want to tag a lot of fish and see how those fish show up in the PBR reach and how they move further downstream and when they show up in the LCR and in what numbers. If there is going to be aggressive removal in that reach, that would essentially replace what we had originally proposed which was to investigate fish size classes and movement without doing any removal. (Hamill)*
C*: Given the uncertainty and that the science plans should be out in the next couple of weeks, the BAHG should get together as soon as possible with a focus on how the workplan will need to be adjusted and what tradeoffs will need to be made. (Capron)*
Q*: Wondering if we can look to John to help ferret out which studies are already ongoing and could be re-focused or tweaked to answer some of those ongoing questions. I'm not seeing as being a shortfall but that a lot of what we're looking at right now is set up through the long-term program to answer those questions. (Balsom)*
A*: To fund some of the new initiatives like an EIS, extensive non-native fish control, that's money that comes out of the current monitoring programs that we're relying on to do these assessment. If the monitoring programs were to stay intact, then we're in good shape. You're talking of throwing $1-2 million of the current science budget and you're only going to do that by impacting some of those existing, ongoing monitoring programs which are fundamental to assessing the effectiveness of these actions. (Hamill)*
C*: After seeing the presentations this year, the SA would agree that we've seen some scientists moving close to some real decision points on some fairly profound questions that you've been struggling with. With the interaction on some of the sediment issues, the managers move like they did more rapidly that we thought they would to create almost an experimental capability that if paired correctly with science, and if there was more integration of the science, there seems to be a tremendous opportunity for both scientists and managers to go through the next five years and get some profound answers to some of the questions you're struggling with. The SA would hope that you would think a little out of the box for the next five years. (Garrett)*

Shane asked if there was any opposition to the list. After the EAs are published, he will work with Shane on forwarding the list to the BAHG along with the items added today:

- trout tagging
- experimentation with flows
- implications of HFE EA and NNF Control EA
- develop Initial Budget Concerns/Priorities

Hydrograph Development for FY 2012. Shane said they're trying to have a more deliberative process this year for developing an FY 12 hydrograph recommendation. He reviewed the following schedule he would like to propose to the AMWG:

TWG	January	Consider initial hydrograph proposals. We expect to hear from DOI/DOE and Grand Canyon Trust at a minimum and we will be prepared to describe those at the February AMWG.
AMWG	February	Presentation of hydrograph proposals, consideration of development process and comments. Other proposals may be offered.
TWG	March	Refinement of proposals, discussion of resource benefits/costs/effects.
	March – June	Resource analysis conducted, final proposals developed. Potential additional analyses by GCMRC and use of GCMRC expertise in developing resource effects from proposals.
TWG	June	Recommendation to AMWG on FY2012 hydrograph
AMWG	August	Recommendation to the Secretary on WY2012 hydrograph

DOI/DOE Hydrograph Proposal. Glen said that within Interior and Reclamation, they're starting to look at the results of the FY11 hydrograph and using those to form the FY12 hydrograph. He said there should be a draft proposal for the TWG to consider at their March meeting.

Grand Canyon Trust Proposal. Rick said he will work with Glen and Shane on developing a hydrograph for consideration.

Other Proposals. Shane said he talked with Deanna and Anne about the submission process and stated that DOE will do their work ahead of time. He also felt there wouldn't be much sympathy for proposals that come into the process late. The hydrographs should be refined at the March TWG meeting.

Suggestions:

- *This is a public process and individuals should be allowed to participate and provide comments on hydrograph proposals. If they're aware of the schedule (posted to the web), they'll know when to attend the meeting. (Stevens)*
- *If there is an HFE, need to evaluate the possibility of looking at stranding fluctuating flows to effect the fish just emerging and that be considered and evaluated as part of the mitigation of what has been identified as a cloud of baby trout after an HFE. We should start looking at it now so we're prepared for it. (King)*
- *Assess what the hydrograph impacts will be on all the resources. Would like to see some analysis of the impact assessment and GCMRC should do that. Need to watch for hydrograph to stay within terms of the ROD. (Barrett)*
- *The HBC population is increasing at this time but that could change at some point. We've not a non-native fish control that if it goes through unchanged, it's going to have up to six removal trips down at the LCR, two within the PBR and now we're discussing suppression flows for trout redds and trout eggs. You really need to think what could be potentially overkill in that area. Also, something that was discussed at Saguaro Lake Ranch workshop is that at some point you need to open up the possibility of opening a stocking program in the event that you're more successful than you may intend to be with suppression flows. (Jordan)*

General Core Monitoring Plan TWG Review. Shane said there weren't a lot of changes made to the main part of the document and were playing to a low, medium, and high scenario for levels of implementation. He said Appendix B which describes the TWG decision-making process on how the information from the CMP goes into the structured decision-making process. It's hopeful that the CMP could be approved at the March TWG meeting.

Helen said they had a meeting in November and brought back a substantially revised draft that addressed approximately 240 comments. She gave a PPT, "Core Monitoring Plan: Final Steps" (***Attachment 6a***). She went through what changes were made in the chapters and said chapter 3 was fleshed out and more detail added. The first part is in the Introduction section (***Attachment 6b***). She said there were also changes to page 40, "3.3.4 Core Monitoring Program Costs" (***Attachment 6c***). She said that fundamentally they need to decide on what is high, medium, and low or be more specific. Shane said it might change between projects and goals, for example implementing more in fish than in vegetation. She said the new chapter 4 wording changes were made and added in the CMINs and hoped they addressed the bulk of concerns that were raised. She said that Norm raised the concern of there not being an economics component. She reminded people to keep in mind that the plan was created around the goals and some economic issues can apply to the goals. They were used in Hydropower and explicitly in goal 10. Shane said he thought the last time this was discussed and Norm was going to submit some text. Helen said she feels there is enough flexibility that the door isn't closed on that issue. Shane said he thought that could be done at a later time.

Shane said he has comments from the SAs and wants to integrate that into Appendix B and really defining Appendix B and creating a process to make realistic work and have the funding to do the core monitoring. Helen said that if the rest of the work needs to happen there, then is the plan acceptable at this point. She would like to have closure on that part of the plan.

***Q**: How do we interpret the Appendix in relationship to the body when there are contradictions? It's the 40-60% of the GCMRC budget -- (Henderson)*
***A**: That was talked about and GCMRC disagrees with that text in the main part, but I haven't heard that GCMRC is going to veto anything. My feeling is that we can work it out and they're relatively willing to let us put reasonable stuff in that appendix. (Capron)*
***Q**: How do you go across the disciplines? You may find that one goal is considered to be a high priority item but it actually falls out below a goal for another goal if you compare one against the other. (Davis)*
***A**: In reference to funding? That's going to be hard. We had the prioritization in Appendix 1 which is the revised SPG prioritized CMINs. They're ranked and so that's one policy document that we have to make those decisions. If you feel that one goal should be scaled back, we'll now the ability to say okay I choose the low option and these are the values I'm using to make that choice. (Capron)*
***C**: Appendix A and B gives you a two-step process and to deal with that very issue. It allows you to go back. As we go through these and because they're low priorities, we're likely not to rank them and go to Appendix B. Anyone of them are bumped. That structured process will do a lot for you. (Garrett)*
***C**: It looks like we could actually focus on the resource we're trying to improve and the reports over the past couple of days have been really insightful in terms of showing that we may be able to move beyond some of the things as opposed to answering the same questions over and over again. I'm hoping that as we move forward that that information actually gets integrated and start looking at through the process you're talking about. (Balsom)*
***C**: My concern is that some parts of the plan do deserve to be core monitoring because we know enough about what those are and other elements are so far out there that we can't get there. I'm not satisfied where we are in terms of understanding especially biological processes. (Stevens)*

Shane said he needed to read all the changes and incorporate an economic placeholder. He said once the TWG can accept the changes in the appendix, the TWG should be able to approve the plan.

Socioeconomics Ad Hoc Group Update. Shane said the SEAHG was tasked by the AMWG to develop an implementation plan based on the Socio-economics Panel report from December 2009. He said the SEAHG has developed a series of two tables; the first table is a description of what they thought the Panel presented. They tried to be as close to what the panel wanted. They developed a TWG comments column for all the comments they received about each of those projects. It's a tracking document for the TWG to see what was recommended and what the TWG comments were. Table 2 (***Attachment 7a***) in in the report and was part of Mary Orton's report from the workshop and shows the socio-economic questions and their ranking by the participants and TWG members. The SEAHG worked on Table 3 which is a description of basically the main components of the Implementation Plan and what they think should be implemented based on what came out of the panel and their version based on their recommendations.

Helen passed out copies of a PPT, "Final Revision Accomplished" (***Attachment 7b***). She went through the changes on Table 3 (***Attachment 7c***). She said that the Economics 101 Training is currently scheduled for March 7, 2011 in Phoenix. It is an educational course and not intended to cover non-use economics in-depth as that will be covered during the non-use workshop scheduled for sometime in FY 2012. Western may provide support for the Economics 101 workshop and to help GCRMC to identify presenters specifically to address power system economics. CREDA will also provide a professional opinion to GCRMC on potential power system experts. WAPA is offering a course on the GTMax Model. Dave said the SAs were assigned to review the GTMax Model and suggested the TWG decide what model they want.

Mike Yeatts expressed concerns that the tribes have separate values. Shane said that was line 8 and said they were trying to figure out if it should be rolled into the non-use values. Helen said there was some debate about whether the tribes would be comfortable doing things like willingness to pay for things that they feel cannot be put into a dollars and cents value.

Respectfully submitted,

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Public Comment. None

Adjourned: 2:45 p.m.

General Key to Adaptive Management Program Acronyms

ADWR – Arizona Dept. of Water Resources
AF – Acre Feet
AGFD – Arizona Game and Fish Department
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
BCOM – Biological Conservation Measure
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
CAHG – Charter Ad Hoc Group
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
DAHG – Desired Future Conditions Ad Hoc Group
DASA - Data Acquisition, Storage and Analysis
CWCB – Colorado Water Conservation Board
DBMS – Data Base Management System
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
HBC – Humpback Chub (endangered native fish)
HMF – Habitat Maintenance Flow
HPP – Historic Preservation Plan
INs – Information Needs
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
MATA – Multi-Attribute Trade-Off Analysis
MLFF – Modified Low Fluctuating Flow
MO – Management Objective
MRP – Monitoring and Research Plan
NAU – Northern Arizona University (Flagstaff, AZ)
NEPA – National Environmental Policy Act
NHPA – National Historic Preservation Act
NPS – National Park Service
NRC – National Research Council
O&M – Operations & Maintenance (USBR funding)
PA – Programmatic Agreement
PEP – Protocol Evaluation Panel
POAHG – Public Outreach Ad Hoc Group
Powerplant Capacity = 31,000 cfs
R&D – Research and Development
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/**A**nswer/**C**omment/**R**esponse

Updated: May 12, 2010