United States Department of the Interior
U.S. GEOLOGICAL SURVEY
SOUTHWEST BIOLOGICAL SCIENCE CENTER
GRAND CANYON MONITORING AND RESEARCH CENTER
2255 NORTH GEMINI DRIVE, MS-9394
FLAGSTAFF, ARIZONA 86001
928 556-7094 Telephone
928 556-7092 Fax

April 6, 2010

MEMORANDUM

To: Adaptive Management Work Group

From: John Hamill, Chief, Grand Canyon Monitoring and Research Center, Southwest Biological Science Center, US Geological Survey, Flagstaff, Arizona

Subject: Preliminary Fiscal Year 2011-12 Glen Canyon Dam Adaptive Management Program Budget

Attachment 1 is the subject preliminary draft budget for your consideration. **Attachment 2** provides a summary of the projects and activities included in the budget. The draft budget was developed based on guidance provided in the Monitoring and Research Plan (MRP) to Support the Glen Canyon Dam (GCD) Adaptive Management Program (AMP) which was updated last year to reflect the March 2008 Environmental Assessment and Conservation Measures included in Fish and Wildlife Service Biological Opinions related to the operation of GCD. In addition, GCMRC considered TWG input provided at the GCMRC's annual reporting meeting held in January 2010.

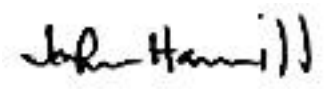
To achieve a balanced budget, a number of projects had to be scaled back or deferred to accommodate the budget shortfall incurred by the negative 1.3% CPI adjustment that occurred in FY10 and the anticipated 0% CPI adjustment for FY11. There are approximately $2.6 million and $2.8 million in deferred projects or project components in FY11 and FY12, respectively (**Attachment 3**). On March 15-16, 2010, GCMRC met with the TWG to review the preliminary budget. Our responses to the concerns raised by the TWG are shown in **Attachment 4**. **Attachment 5** identifies the several proposed changes to the FY 11-12 preliminary budget based on discussions with the TWG at their March meeting.

In the last two years, a flat budget along with an increased emphasis on funding management and compliance actions has greatly increased competition for funding in the AMP. GCMRC is concerned that this shift in emphasis will adversely impact the AMP monitoring and research program. GCMRC supports implementation of compliance and management actions, but believes they should be carried out by management agencies with funding from sources other than the current capped AMP hydropower revenues. In our view, a strategy is needed to seek Federal appropriations, additional power revenues, and/or potential voluntary financial contributions to meet the growing demands for science and management in the AMP. A logical

first step would be to undertake a process to identify the scope, objectives, schedule, cost and potential funding sources for research, monitoring, management, and compliance actions that need to be addressed over the next 10-15 years. We believe that DOI and the AMWG need to work together to address this issue.

After considering recommendations from the TWG, AMWG and DOI agencies, GCMRC, consistent with the established budget process, will develop detailed work plans for each of the projects that will be submitted to the Budget Ad hoc Group, TWG and AMWG for final review and consideration.

Your participation in this review process is appreciated.



JOHN HAMILL
Chief, GCMRC

Attachments:

1- FY11-12 Preliminary Budget
2- FY11-12 Project Summary Table
3- List of deferred projects
4- GCMRC response to TWG concerns
5- GCMRC proposed changed to the FY11-12 Preliminary Budget

cc: TWG
Secretary's Designee

Attachment 2 GCMRC FY11-12 Project Summaries

Project	FY11 Summary	FY12 Summary
1. Food Base		
Aquatic Foodbase monitoring	Focus on completion of research, reports, PEP review, and development of core monitoring plan; All field sampling deferred	Implementation of core monitoring plan subject to approval
2. Native Fishes		
Mainstem & LCR Monitoring	Repeat FY10 monitoring, revise based on analysis of PEP recommendations; Defer increased mainstem monitoring	Repeat FY10 monitoring, revise based on analysis of PEP recommendations; Defer increased mainstem monitoring
HBC Translocation & Monitoring	Monitor HBC status above Chute Falls; Defer translocation	Project deferred; Assumes monitoring HBC status above Chute Falls and HBC translocation will be funded with an alternative funding source
Stock Assessment of Native Fish	Continued analysis of fish stock data; Complete & publish ASMR analysis	Continued analysis of fish stock data; No ASMR
Remote PIT Tag Reading	Operate & maintain equipment and analyze data; Defer expansion of the system	Operate & maintain equipment and analyze data; Defer expansion of the system
Near Shore Ecology	Implement project per work plan; Increase logistics funding	Implement project per work plan; Field work ends in October, 2011; Increase logistics funding for October river trip
Mainstem Nonnative Fish Control	Implement one LCR control trip (experimental fund); Defer 2nd trip	Project deferred; Provide alternative funding source for 1 to 6 removal trips near LCR at $150k per trip (as needed)
Nonnative Control Plan Science Support	Implement priority research & monitoring recommendations; Reduce staff support by 25%	Implement priority research & monitoring recommendations; Maintain FY11 staff support level
NEW Evaluation of Trout Movement, Natal Origins and Alternatives for Controlling Rainbow Trout Populations Near the LCR	Implement priority research projects within available budget (experimental fund)	Implement priority research projects within available budget (experimental fund)
Biometrics & General Analysis (Vice Coggins)	ASMR / modeling support	Deferred due to lack of funding

Project	FY11 Summary	FY12 Summary
3. Extirpated Species		
	No funded projects	No funded projects
4. Rainbow Trout		
	Continue adult RBT monitoring; Defer monitoring of early life stages unless HFE is conducted (subject to available funds)	Continue adult RBT monitoring; Defer monitoring of early life stages unless HFE is conducted (subject to available funds)
5. Kanab Ambersnail	Continue annual monitoring	Continue annual monitoring
6. Springs / Riparian	Implement vegetation transect monitoring (assumes approval of core monitoring plan); Analyze 2009 imagery for vegetation change	Analyze 2009 imagery; Defer bird and/or arthropod monitoring
7. Quality of Water		
Lake Powell & Tailwaters	Continue monitoring; PEP review; Increase emphasis on analysis and modeling	Continue monitoring; Implement PEP findings; Increase emphasis on analysis and modeling
Downstream	Continue monitoring flow, temperature and sediment, etc.; PEP review	Continue monitoring flow, temperature and sediment, etc.; Implement PEP findings
Integrated Flow, Temperature & Sediment Modeling	Operate & maintain models; Defer further development	Operate & maintain models; Defer further development
8. Sediment		
	Evaluate channel mapping results; Additional mapping contingent on findings; Monitor sandbars area & volume	Resume channel mapping (contingent on FY11 findings & recommendations)
9. Recreation		
	Conduct biennial campsite monitoring; Continue river guide monitoring; Analyze campsite atlas data as part of integrated image analysis project; Update & maintain campsite atlas on website	Camp area field monitoring does not resume until FY13; Continue river guide monitoring; Analyze campsite atlas data as part of integrated image analysis project; Update & maintain campsite atlas on website; Campsite PEP review
10. Hydropower		
	Serve data via website; Annual report	Serve data via website; Annual report
11. Cultural		
	Implement pilot monitoring with reduced scope (fewer sites, etc), which may extend length of project	Implement pilot monitoring with reduced scope (fewer sites, etc), which may extend length of project

Project	FY11 Summary	FY12 Summary
12. DASA		
Overflights	Contribute $71k to overflight fund	Contribute $129k to overflight fund
Oracle Database	Update & maintain database	Update & maintain database
Library Operations / Scanning	Maintain GCMRC library reduced to ½ time position; Defer online library system	Maintain GCMRC library reduced to ½ time position; Defer online library system
GIS Support	Provide GIS support to GCMRC projects; Defer hiring term appointment (use student)	Provide GIS support to GCMRC projects; Defer hiring term appointment (use student)
Integrated Image Analysis & Change Detection	Coordinate analysis of 2009 imagery; Map & analyze sandbars, campsites, backwaters & vegetation	Final reporting of 2009 imagery; Plan for 2013 overflight
12. Planning		
Ecosystem Modeling	Working with senior ecologist, continue to update & refine ecosystem models, focusing on aquatic resources; Defer model expansion, publication of results, & MATA workshop	Working with senior ecologist, continue to update & refine ecosystem models, focusing on aquatic resources; Defer model expansion, publication of results, & MATA workshop
Knowledge Assessment & SCORE Report	Complete KA & initiate S.C.O.R.E. report	Finalize S.C.O.R.E. report
NEW Desired Future Conditions (DFCs)	Facilitation and decision support deferred due to lack of funding. Recommend funding from Reclamation's portion of budget	Provides $50k for facilitation & decision support to develop quantitative DFCs;
12. Support		
Logistics Base	Provide base logistics support to field operations	Provide base logistics support to field operations
Survey & Control Network	Provide survey support to GCMRC projects (through contract); Maintain & expand network as needed	Provide survey support to GCMRC projects (through contract); Maintain & expand network as needed
12. Administrative		
Operations	Continue to provide administrative support	Continue to provide administrative support
Program Planning & Management	Continue to provide planning & management support	Continue to provide planning & management support
AMWG/TWG Travel	Continue to provide funding to attend AMWG & TWG meetings	Continue to provide funding to attend AMWG & TWG meetings

Project	FY11 Summary	FY12 Summary
Independent Reviews	Peer review all publications; Integrated Water Quality and Food Base PEP & KAS PEP	Peer review all publications; Campsite & Sediment PEPs
Science Advisors	Maintain current SA support	Maintain current SA support
Computer Systems Support	Maintain IT support for GCMRC	Maintain IT support for GCMRC
Synthesis of High Flow Experiment	Complete HFE synthesis by 01/01/11	

Attachment 3 GCMRC Proposed FY11 and FY12 Deferred or Scaled Back Projects

FY11 & FY12 Deferred or Scaled Back Projects				
DEFERRED / Unfunded Projects		**Deferred / Unfunded GROSS FY11 Budget**	**Deferred / Unfunded GROSS FY12 Budget**	**Comments**
BIO 1.M1.11	Aquatic Food Base Monitoring	84,185	84,185	Deferred field work including sampling at Diamond Creek and Lees Ferry in FY11 & FY12
BIO 2.M4.11	Increased Monitoring of Mainstem Fishes	239,319	239,319	Deferred increased mainstem monitoring in FY11, FY12. subject to change based on fish data analyses
BIO 6.M2.11	Bird Monitoring / Alternating Years with Vegetation Transect Monitoring	-	53,045	Defer bird monitoring FY12
DASA 12.D1.11	Hyperspectral Overflight for Vegetation Mapping	95,176	95,176	Deferred FY10, FY11, FY12
Sub-total Deferred Monitoring		**418,680**	**471,725**	
BIO 2.tbd	NEW Near Shore Ecology / Fall Steady Flows Thermal Imaging	86,200	86,200	Deferred FY11, FY12
BIO 4.E2.11	Monitoring Lees Ferry Fishes for Annual Recruitment	79,568	79,568	Deferred except in year's with a High Flow Experiment
Sub-total Deferred Experimental Research		**165,768**	**165,768**	
BIO 2.M3.11	Humpback Chub Translocation Above Chute Falls	93,922	145,494	**BOCM** Defer translocation above Chute Falls in FY11, FY12 (monitoring will continue in FY 11). Seek alternative funding source
BIO 2.R16.11	Mainstem Nonnative Fish Control (One Removal Trip)	149,903	150,000	**BOCM** Deferred due to tribal concerns and because one removal trip will be ineffective. Seek alternative funding source.
Sub-total Deferred Management Actions		**243,825**	**295,494**	
BIO 2.R19.11	Biometrics & General Analysis (Replace Coggins)	-	149,626	Deferred FY12-- GCMRC proposes to fund this position in FY 12. See **Attachment 5.**

FY11 & FY12 Deferred or Scaled Back Projects				
DEFERRED / Unfunded Projects		**Deferred / Unfunded GROSS FY11 Budget**	**Deferred / Unfunded GROSS FY12 Budget**	**Comments**
BIO 6.R4.11	Arthropod Monitoring Research & Development	95,395	95,395	Proposed by PEP to be implemented in alternating years (FY10 & FY12);
PHY 7.R2.11	Further Develop Integrated Flow, Temperature & Sediment Model	145,200	145,200	Defer further model research and development; funding provided for model maintenance and application
REC 9.R5.11	Evaluate Relation between Flows and Recreation Experience	225,000	225,000	Deferred in FY09, FY10, FY11, FY12
REC 9.R6.11	1973 Weeden Campsite Survey Revisited	75,000	75,000	Deferred in FY09, FY10, FY11, FY12
REC 9.R7.11	Update Regional Recreation Economic Study	250,000	250,000	Deferred in FY09, FY10, FY11, FY12
HYD 10. tbd	NEW Phase I - Results of Economic Value Workshop	117,273	117,273	Deferred FY11, FY12
CUL 11.R1.11	Cultural Research & Development towards Core Monitoring, Phase II	45,000	45,000	Reduced scope of work in FY11, FY12
CUL 11.R3.11	Geomorphic Model of Archaeological Site Vulnerability	266,120	266,120	Deferred in FY09, FY10, FY11, FY12
PLAN 12.P1.11	Expanded Ecosystem Modeling (Walters, et al)	109,732	109,732	Defer model expansion & publication of results FY11, FY12
DASA 12.D9.11	1984 Sandbar Image Analysis	89,568	89,568	Deferred FY10, FY11, FY12
Sub-total Deferred Research & Development		**1,418,288**	**1,567,914**	
PLAN 12.P1.11	Multi-Attribute Trade-off Analysis Workshop	33,169	33,169	Defer workshop FY10, FY11, FY12
PLAN 12.P5.11	NEW Desired Future Conditions Facilitation & Decision Support (FY11--FY12)	60,500	-	Deferred FY11. Propose that FY 11 funding be provided by Reclamation
Sub-total Deferred Program Planning		**93,669**	**33,169**	
SUP 12.S2.11	NEW Assessment of Vertical Accuracy & Precision for High-resolution Topographic Surfaces (Survey Ops)	31,276	31,276	Deferred FY11, FY12
DASA 12.D3.11	Library Operations Support	39,355	39,355	Deferred 1/2 time position FY11, FY12

FY11 & FY12 Deferred or Scaled Back Projects				
DEFERRED / Unfunded Projects		**Deferred / Unfunded GROSS FY11 Budget**	**Deferred / Unfunded GROSS FY12 Budget**	**Comments**
DASA 12.D3.11	Implement New GCMRC Library System	24,200	24,200	Defer online library system FY11, FY12
ADM 12.A5.11	NEW Expanded Website Development (Component of SBSC Sys Admin Support)	72,903	72,903	Deferred 1/2 time position FY11, FY12
ADM 12.A4.11 (A)	Independent Reviews	12,705	-	Deferred Campsite Monitoring PEP FY11, FY12
ADM 12.A tbd	NEW Tribal Consultation Staff Support	119,609	119,609	Deferred FY11, FY12
Sub-total Deferred Administrative and Program Management		**300,048**	**287,343**	
Total GCMRC Deferred Projects Sub-total Deferred Research & Development		**2,640,278**	**2,821,413**	

Attachment 4 GCMRC Response FY 2011-12 Preliminary Budget Recommendation to the Adaptive Management Work Group - April 6, 2010

MOTION: TWG has reviewed the preliminary FY 2011-12 biennial budget provided by GCMRC and Reclamation and is forwarding that budget to AMWG along with a list of concerns for AMWG consideration and feedback. This recommendation is based a two-year biennial budget as requested by AMWG at their August 2009 meeting. The TWG will work with GCMRC and Reclamation to develop a final biennial budget recommendation for FY 2011-12 and a proposed work plan and hydrograph over the summer, incorporating input from AMWG, using the recommended biennial budget process.

TWG requests either AMWG concurrence with the TWG recommendations on the "Issues of Concern" or further direction on how to resolve these.

***GCMRC General Comment**: In the last two years, a flat budget along with an increased emphasis on funding management and compliance actions has greatly increased competition for funding in the AMP. GCMRC is concerned that this shift in emphasis will adversely impact the AMP monitoring and research program. GCMRC supports implementation of compliance and management actions, but believes they should be carried out by management agencies with funding from sources other than the current capped AMP hydropower revenues. In our view, a strategy is needed to seek Federal appropriations, additional power revenues, and/or potential voluntary financial contributions to meet the growing demands for science and management in the AMP. A logical first step would be to undertake a process to identify the scope, objectives, schedule, cost and potential funding sources for research, monitoring, management, and compliance actions that need to be addressed over the next 10-15 years. We believe that DOI and the AMWG need to work together to address this issue in a timely manner.*

Issues of Concern:

1. Implement a new start in the work plan for power economics which will be carried out by WAPA in FY 2011 and 2012, as described in the proposal provided by WAPA dated 3/15/10. WAPA will perform these tasks with no cost to the GCDAMP, and will provide the actual cost as a cooperator in the budget spreadsheet. The work will be part of the work plan and coordinated and reviewed by GCMRC. The work plan would be developed by GCRMC and WAPA in coordination with the TWG. This will result in costs to GCMRC that will need to be provided to oversee and provide peer review of this project. (10/3/3)

***GCMRC Response**: An additional $30-50K/year would be needed for GCMRC to acquire the expertise to develop and coordinate the work plan and provide peer review for this new initiative, and coordinate timely publication of findings pursuant to USGS publication standards. The relative priority and funding source for this initiative is unclear. In more general terms, the AMWG or DOI needs to determine whether additional economic analysis capacity is an AMP priority. It has been clearly identified as a priority by the Science Advisors and by previous NAS/NRC reviews of the program. However, it is currently not reflected in the AMWG priority questions or called for in the Monitoring and Research Plan.*

2. (Line 175) Humpback chub translocations above Chute Falls have been deferred by GCMRC. TWG believes this is an important compliance requirement, and a project that has shown great potential for positive effects on the LCR population and should be funded in FY 2011 and 2012. (No objection)

***GCMRC Response**: This project has being carried out as a biological opinion conservation measure. It has been designed and implemented by FWS with little oversight from GCMRC and without an experimental plan that has been subjected to peer review. No final report has been developed on the project. Other translocation projects (Shinamu, Havasu Creek) are being implemented in a similar fashion with alternative (non AMP) funding. GCMRC believes that alternative funding should be obtained to carry out this activity since it is being carried out as a management action. If it is an experimental activity, a long term study plan should be developed by GCMRC in coordination with FWS. Continued funding of this activity by the AMP will impact other elements of the AMP science program.*

3. TWG is concerned about the continued use of the experimental fund for other purposes within the budget. Without setting aside the experimental fund, it may be difficult to carry out flow experiments in the future. Should there be an HFE in FY 11 or 12, having this small amount of money available for data gathering and analysis would mean no meaningful study. The default would be determining the effect of an HFE through the monitoring program alone. An HFE should only be conducted to answer direct science questions. Therefore, a science plan should be developed and funding should be identified for this purpose. (10/3/3)

***GCMRC Response**: GCMRC does not believe that the use of the experimental fund was or should be limited only to high flow experiments. GCMRC agrees that the experimental fund is insufficient to meet all the competing demands for experimental work in the program. A summary table showing the experimental fund expenditure and balances for FY 2010, 2011 and 2012 is attached (**Attachment 4a)**. Historically, HFE's science activities have been funded largely with Experimental Funds. In the future, the evaluation of the effects of future HFE's will be accomplished primarily though existing monitoring programs. For example, existing quality of water, sediment, and other resource monitoring projects will provide a great deal of information on the effects of future high flow. Some of the monitoring efforts may need to be expanded to evaluate the effects of the HFE. For example, it may be necessary to conduct additional vegetation, sandbar, campsite, trout or food base monitoring around the next HFE event. In addition, the response of the Lee's Ferry rainbow trout population to the last HFE, indicates that additional biological studies may be needed/prudent The science costs associated with additional HFE's have not been determined, but it should be substantially less than the March 2008 experiment (~$3.5M); we expect the science costs will be defined through the HFE protocol NEPA process. In any event, approximately, $300-400K of the cost could be offset by deferring work that would not take place in a HFE year (e.g., channel mapping).*

4. (Line 24) TWG is concerned about the continued use of the warm water nonnative fish contingency fund for other purposes within the budget. (no objection)

***GCMRC Response**: The warm water nonnative fish contingency fund was established without consideration of the impact that establishment of the fund would have on the AMP science budget. GCMRC's draft nonnative fish technical report (Hilwig et al, 2010) recommends establishment of a $900K nonnative fish contingency fund over a 3 year period using an alternative(non AMP) funding source. Given the current demand on the AMP budget, GCMRC does not believe it is reasonable or prudent to fund this out of the AMP science budget. Nonnative fish control (including both cold and warm water fishes) represents a potentially very costly undertaking in the program ($1M/year). The AMWG and DOI agencies need to determine how this and other management/compliance actions will be funded without jeopardizing the AMP science program.*

5. (Line 166) GCMRC has moved numerous projects out of the budget to an unfunded projects list. Many of these issues represent compliance requirements or other important projects that should be carried out to further the goals of the GCDAMP. The AMWG should consider other mechanisms for acquiring funding for these projects, such as identified in the biennial budget process paper. (13/2/2)

***GCMRC Response**: See GCMRC General Comment above. GCMRC agrees with the TWG that this is a significant issue that needs to be addressed by the AMWG.*

6. Although GCMRC has designated projects in the spreadsheet as core monitoring (COR), TWG has only provisionally approved the sediment-related programs at this time and will be considering the other programs over the next few years. (no objection)

***GCMRC Response**: All such Core Monitoring designations are made with the understanding that they are subject to TWG and AMWG review in accordance with the Step 4 approval process in the general core monitoring plan.*

7. (Line 115) Add funding in FY 2011 for DFC support (60k), including facilitation and decision support. (No objection)

***GCMRC Response**: GCMRC believes this is an important need and supports this recommendation. GCMRC's science budget includes $60K for this activity in FY 12. GCMRC believes a work plan or scope of work is needed for the DFC project that defines facilitation, decision support, and GCMRC science support needs (including the project that is being recommended under item 9 below). GCRMC believes this is primarily a program management function that should be funded by BOR. Accordingly, GCMRC recommends that any FY 11 funding for this project be derived from the BOR portion of the budget w/o any impact to GCMRC's science budget.*

8. (Line 71) The FY11-12 budget/work plan should include $25,000 to fund an Extirpated Species Workshop to achieve the following:

a. Finalize and prioritize species list
b. Assess current compliance environment for various implementation strategies
c. Develop a strategic framework for implement extirpated species goal within AMP

This work could be funded by reducing the DASA 12.D5.10 cooperative agreement by $25,000. (12/3/1)

***GCMRC Response**: The AMWG or DOI needs to determine whether funding for extirpated species work (Goal 3) is an AMP priority. It is currently not reflected in the AMWG priority questions or called for in the Monitoring and Research Plan. Funding this out of DASA 12.D5.10 will impact a variety projects which need GIS support.*

GCMRC is willing to assist with planning and organizing this workshop if the AMP decides to sponsor this activity. However, the direct costs for the workshop (i.e. conference room rental, travel reimbursements, speakers' fees, facilitators' fees, etc.) will not be covered by GCMRC.

9. (Line 188) The FY11-12 budget/work plan should include $89,568 to fund deferred project DASA 12.D9.10-11. This one-time study is needed to aid the AMP in quantifying a desired future condition for sediment resources. This work could be funded by reducing the DASA 12.D5.10 cooperative agreement by $89,568 for one year or $45,000 over two years. (11/3/2)

***GCMRC Response**: Funding this work seems premature until the DFC process determines that this analysis is needed. Funding this out of DASA 12.D5.10 will impact GIS support to a variety of projects and delay project deliverables. Also see GCMRC Response 7, above*

10. (Line 160) Evaluation of rainbow and brown trout movement . . . this funding is inadequate for the purpose of studying and implementing possible alternatives to lethal fish removal. We suggest an increase to $200 to $300 k. Alternatively, we suggest a budget correction after tribal consultation and resulting actions identified. (No objection)

***GCMRC Response**: The scope and the cost of this activity have yet to be determined. GCMRC budget includes a $111K and 126K placeholder in FY 11 and FY 12, respectively to support this activity. Additional funding may be beneficial but would occur at the expense of other experimental fund activities. We assume that the scope of this science support for this activity will be defined as part of the NEPA process related to the nonnative fish/ mechanical removal project.*

11. (Line 168) Increased mainstem monitoring should be funded in FY 11 and 12. (no objection)

***GCMRC Response**: GCMRC recommends revisiting this suggestion following the completion of the Fish PEP analysis in the summer of 2010. Our hope is that increased mainstem monitoring could be accomplished by shifting work from the LCR to the mainstem. However, we do not support additional mainstem monitoring if it is accomplished at the expense of other aspects of the fish program or other program goals.*

12. (Line 186) Since this geomorphological modeling project assists in the identification of the impacts of dam operations vs. the impacts of natural effects, this project should be funded. (no objection)

***GCMRC Response**: We believe a geomorphic model may potentially assist in the identification of the impacts of dam operations on cultural sites and be useful to frame the future monitoring program. The geomorphic workshop planned for later this year will better define the scope and benefits of a model. Due to the relatively high expected cost (~$250K) and program funding constraints, GCMRC does not support model development in FY 11 or 12.*

13. (Lines 38-42) Recommend that DOI and DOE meet with the tribes to discuss including a CPI increase for tribal participation to those tribes that utilize their allocation, consultation and tribal monitoring programs. Another tribal entity may participate in FY 11 and additional funding may be necessary. (No objection)

***GCMRC Response**: Funding for tribal participation is not within the purview of GCMRC. This is provided with DOI appropriated funds outside the scope of the AMP science budget*

14. (Line 29) Develop methodologies to integrate tribal perspectives into the treatment plan. (no objection)

***GCMRC Response**: N/A. This project is managed by BOR.*

15. The budget spreadsheet and work plan should include other projects being undertaken by cooperators using funds outside of the GCDAMP funding. (7/6/3)

***GCMRC Response**: We recommend that ancillary project descriptions, deliverables and associated cost should be indentified in an appendix to the BWP. We agree with Robert King's comment at the last TWG meeting that the AMP budget/spreadsheet should not include funding being provided by other cooperators for GCDAMP ancillary projects*

16. TWG advises the AMWG that if a long term experimental management plan EIS is undertaken in FY11 or 12 the amount of power revenues requested in the budget will increase. (No objection)

***GCMRC Response**: GCMRC believes the cost for a LTEMP EIS could be substantial and should be funded outside of **the** current AMP budget.*

17. TWG recognizes that it does not have a formal process for evaluating and identifying a proposed hydrograph to the AMWG, and intends to undertake that development in this budget cycle. (8/7/1)

***GCMRC Response**: GCMRC staff support for the hydrograph development "process" should be factored into this discussion.*

Failed TWG "issues of concern"

1. (Line 184) The FY11-12 budget/work plan should include $117,273 to fund deferred project HYD 10.tbd, "Phase I – Results of Economic Value Workshop". (6/7/3)

***GCMRC Response**: We support this work. However, the AMWG or DOI needs to determine whether additional economic analysis capacity is an AMP priority. It has been clearly identified as a priority by the Science Advisors and by previous NAS/NRC reviews of the program. However, it is currently not reflected in the AMWG priority questions or called for in the Monitoring and Research Plan. If this work is a priority it's not apparent where the funding will come from.*

2. (Line 66) The FY11-12 budget/work plan should initiate the development of a non-native fish control implementation plan that will include elements that will be scoped at the March 31st 2010 NNF workshop, but include the following elements:

    - Define Cooperating Groups and Roles
        - Agencies and tribes involved
        - Roles of agencies and tribes in plan development
        - Roles of agencies and tribes in plan implementation
        - Role of conservation measures
    - Define geographic and programmatic scope of plan
    - Outline possible control alternatives for inclusion in plan
    - Compliance and consultation and science needs
    - Completion schedule and deadlines
    - Funding needs for implementation
    - Draft outline of chapters of plan

***GCMRC Response**: GCMRC supports this initiative and believes that if the plan is developed collaboratively and with AMP support, it will facilitate implementation of nonnative fish management actions. Except for GCMRC science support to develop the plan, funding for developing this management plan should not be taken from the AMP science budget. Also the development of this plan should be coordinated with ongoing tribal consultation and the NEPA activities related to nonnative fish management.*

3. (Line 143 & 161): SCORE report – FY 11 & 12 are "tight" budget years. We suggest deferring this project. (3/13/0)

***GCMRC Response**: GCMRC supports the development of a SCORE report and Knowledge Assessment in FY 11 and 12. We believe they are needed inform the LTEMP EIS and GCMRC and AMP strategic planning.*

Attachment 4A Projected Experimental Fund Expenditures in FY10, FY11, and FY12 With and Without the Near Shore Ecology

WITH Near Shore Ecology Supplemental Funding FY10 - FY12				
BOR Experimental Fund Summary		**FY10 Experimental Fund**	**FY11 Experimental Fund**	**FY12 Experimental Fund**
Beginning Balance at Start of Fiscal Year		**-**	**261,174**	**302,473**
Contributions from Bureau of Reclamation		**493,500**	**493,500**	**508,305**
BIO 2.R15.11	Near Shore Ecology / Fall Steady Flows These costs for add'l logistics likely funded by appropriated funds; if so, these funds would remain in the Experimental Fund	166,000	166,000	72,600
BIO 2.E18.11	NEW Evaluation of Trout Movement, Natal Origins and Alternatives for Controlling Rainbow Trout Populations Near the Lower Colorado River	-	111,201	126,466
PLAN 12.E4.11	S.C.O.R.E. & Knowledge Assessment Updates	-	175,000	100,138
EXP 7	HFE Synthesis of Knowledge (Study 7)	66,326	-	-
Total Expenditures		**232,326**	**452,201**	**299,204**
Balance at End of Fiscal Years		**261,174**	**302,473**	**511,574**

WITHOUT Near Shore Ecology Supplemental Funding				
BOR Experimental Fund Summary		**FY10 Experimental Fund**	**FY11 Experimental Fund**	**FY12 Experimental Fund**
Beginning Balance at Start of Fiscal Year		**-**	**427,174**	**634,473**
Contributions from Bureau of Reclamation		**493,500**	**493,500**	**508,305**
BIO 2.E18.11	NEW Evaluation of Trout Movement, Natal Origins and Alternatives for Controlling Rainbow Trout Populations Near the Lower Colorado River	-	111,201	126,466
PLAN 12.E4.11	S.C.O.R.E. & Knowledge Assessment Updates	-	175,000	100,138
EXP 7	HFE Synthesis of Knowledge (Study 7)	66,326	-	-
Total Expenditures		**66,326**	**286,201**	**226,604**
Balance at End of Fiscal Years		**427,174**	**634,473**	**916,174**

Attachment 5 GCMRC Proposed Budget Changes FY 2011-12 Preliminary Budget (March 3, 2010)

Based in the discussion at the TWG meeting on March 15-16, 2010, GCMRC proposes the following budget changes (additions and deletions) from its FY 2011-12 Preliminary Budget dated March 3, 2010. GCMRC welcomes TWG/AMWG comments on these proposed changes

FY 11

Delete mainstem mechanical removal (1 trip) ($-150K)-- based on current data and immigration rates, up to 6 trips may be needed in both FY 11 and FY 12 to effectively reduce nonnative fish (mostly trout) numbers near the LCR. We believe that one trip will provide little benefit based on the large numbers of trout that now occupy the LCR reach. In addition, there is no indication how or when tribal objections to the mechanical removal in the LCR reach will be resolved. The cost of this expanded mechanical removal effort could be up to $900K /year (6 trips at $150k per removal trip) using the current removal methods (more if live removal or other mitigation is required). GCMRC does not believe that it is reasonable or prudent to absorb into this cost in existing budget w/o eliminating several major components of the science program. An alternative funding source for this activity needs to be developed if it is pursued in the future. In addition, a full range of alternatives to the current removal project should be investigated. The $150k of experimental funds that was included in GCMRC preliminary budget for mechanical removal could be redirected to evaluating upstream nonnative fish control alternatives or used to support future HFE science activities.

FY 12

An additional $150K will be added to support GCMRC's biometric/modeling position. (funding for this position was not included in GCMRC preliminary budget). Potential funding sources include:

- CPI adjustment ($0 to +$240K depending on FY 10 CPI)
- Delete Science Symposium (-30k-one time cost savings) (ADM 12.A6.11)
- Reduce SA by 10-20k/year (ADM 12.A4.11)
- Reduce GCMRC program management by -30k/year(ADM 12.A2.11)
- Delete hydropower monitoring (-9k/year) (HYD 10.M1.11)
- Reduce GCMRC travel by $10k/ year (various projects)
- Reduce Aquatics Food Base Monitoring by $50k/year (BIO1.M1.11)