

**GCMRC's
FY 2010-11 Biennial Work Plan
for the Glen Canyon Dam Adaptive
Management Program**

John Hamill, Chief, GCMRC
Technical Work Group Meeting
June 22-23, 2009

**FY09 Anticipated Carry Over and
Sources**

BIO 1.R1.09 Aquatic Food Base	\$ 20,000
BIO 2.R15.09 Near Shore Ecology	536,641
BIO tbd Nonnative Fish Contingency Fund	36,818
BIO 6.R2.09 Vegetation Transects	41,777
BIO 6.R3.09 Vegetation Synthesis	5,000
CUL 11.R1.09 Cultural R&D towards Core Monitoring	287,904
DASA 12.D1.09 Data Acquisition (Remote Sensing)	160,928
DASA 12.D5.09 GIS Support	32,860
PLAN 12.P3.09 LSSF Data & Research	18,067
ADM 12.A1.09(A) Administrative Operations	23,930
ADM 12.A4.09 Independent Reviews	8,663
ADM 12.A5.09 GCMRC System Support (IT)	5,150
<u>HFE Project 7 Synthesis of Knowledge</u>	<u>66,326</u>
TOTAL FY09 Anticipated Carry Over Funds	\$1,244,064

GCMRC FY 10-11 Focus Areas

- > Science support for EA and conservation measures
- > Increased emphasis on data analysis and reporting
- > Move several projects from R&D to Core Monitoring

**GCMRC FY10-11
Anticipated Revenues & Sources**

	FY10	FY11
Hydropower Capped Revenues	\$7,967,420	\$8,206,442
Experimental Funds	258,674	484,251
Nonnative Contingency Funds	96,966	0
FY09 Carry Over	1,244,064	0
Ancillary Project Revenues		
BOR - Lake Powell	275,502	286,342
USGS Appropriations		
Reduced Overhead	1,000,000	1,000,000
Appropriations to Tribes	95,000	95,000
<u>BOR Appropriations - Near Shore Ecology</u>	<u>16,185</u>	<u>556,912</u>
TOTAL Anticipated Funds	\$10,950,000	\$10,533,947

Note: Assumes 0% CPI in FY 2010; 3% CPI in FY 2011

FY 10-11 Budget Guidance

- Strategic Science Plan and Monitoring and Research Plan, as amended
- Budget Ad Hoc Group Conference Calls and TWG meeting
- AMWG budget motion

Major Analysis and Reports FY 10-11 BWP

- 2008 HFE projects 1 – 5 reporting
- HFE synthesis of results 1996, 2004 and 2008 tests
- Camp site monitoring data analysis and reporting
- Channel mapping data analysis and reporting
- Aquatic Food Web research findings
- Coordinated image analysis of terrestrial resources
- Ecosystem modeling and stakeholder workshops
- Integrated sediment, flow, and temp modeling
- Riparian vegetation synthesis
- 2000 Low Summer Steady Flow synthesis
- Knowledge assessment workshops and SCORE II

Schedule for PEP/ Core Monitoring Plans

- Aquatic Foodbase, Lake Powell and Downstream Water Quality Monitoring
 - PEP and CMP in FY 2011
- Native and Nonnative Fish Monitoring
 - Lees Ferry Trout CMP in FY 2010
 - LCR and Mainstem CMP in FY 2011
- Vegetation
 - CMP in FY 2010
- Camping Beaches
 - PEP and CMP in FY 2011

FY 10-11 Hydrograph Assumptions

- MLFF operations with steady flows in September and October
- Possible High Flow Experiment (subject to AMWG review and/or approval by DOI)

**Biology Program Highlights
GCMRC FY 10-11 BWP**

Goal 1: Aquatic Food base

- Complete R & D project in FY 10 (analysis and reporting)
- Transition from R&D phase into Core Monitoring in FY 11
- Limited data collection in FY 10-11

**Biology Program Highlights
GCMRC FY 10-11 BWP**

Goal 2: Native fish

- Fish Monitoring
 - FY 10: similar to 2009 monitoring
 - FY 11: Adjust program to incorporate PEP recommendations
- HBC stock assessment (annual reporting; ASMR in FY 11)
- Expand mainstem monitoring to improve native and nonnative fish detection
- Implement mainstem nonnative removal as experimental action
 - Utilize experimental and NN contingency funds
- Provide science support for implementation of NN control plan
- Implement Nearshore Ecology/Fall Steady Flow science plan
- Expand remote PIT tag reading project
- Continue Chute Falls translocation

**Biology Program Highlights
GCMRC FY 10-11 BWP**

> Goal 3: Extirpated Species

- Participate in TWG extirpated species ad hoc group
- Participate in Lake Mead razorback sucker assessment work group

> Goal 4: Rainbow trout

- Continue with adult monitoring (scaled back)
- Continue with larval and redd survey as part of FSF science plan

**Biology Program Highlights
GCMRC FY 10-11 BWP**

> Goal 5: Kanab Ambersnail:

- Continue annual monitoring (AZGFD); reassess after FWS status review

> Goal 6: Riparian and Springs

- Complete vegetation synthesis in FY 10
- Analysis and reporting of 2009 imagery
- Vegetation transects in FY2011
- Deferred projects
 - Arthropod monitoring
 - Hyperspectral imagery acquisition and analysis

**Physical Program Highlights
GCMRC FY 10-11 BWP**

- > **Goal 7: Quality of Water**
 - Water quality monitoring
 - Lake Powell
 - Downstream
 - Integrated flow, temperature, sediment modeling
 - Phase 1 ends in FY 10; additional model development subject to review of phase 1 results
 - Includes staff support for model maintenance and updating beginning in FY 11

**Physical Program Highlights
GCMRC FY 10-11BWP**

- > **Goal 8: Sediment**
 - "Provisional" Core Monitoring project
 - Defer channel mapping in FY 10; focus on data analysis and reporting; resume field work in FY 11
 - Defer sandbar mapping in FY 10; focus on data analysis and reporting; resume on biannual basis beginning in FY 11

**Socio-Cultural Program Highlights
GCMRC FY 10-11BWP**

- Goal 9: Recreation**
 - Defer camp site mapping in FY 10; focus on data analysis and reporting
 - Maintain/update campsite atlas; analyze data
 - Final report: recreation safety study in FY 11
- Goal 10: Hydropower**
 - Serve hydropower data from WAPA; produce annual report

**Socio-Cultural Program Highlights
GCMRC FY 10-11 BWP**

- Goal 11: Cultural**
 - Reduce funding for effort (NPS funding and cooperator involvement)
 - Focus on integration with NPS CRMP monitoring
 - Pilot test monitoring protocols in FY 10/11
 - Assumes resolution of NPS permitting concerns

DASA Program Highlights GCMRC FY 10-11 BWP

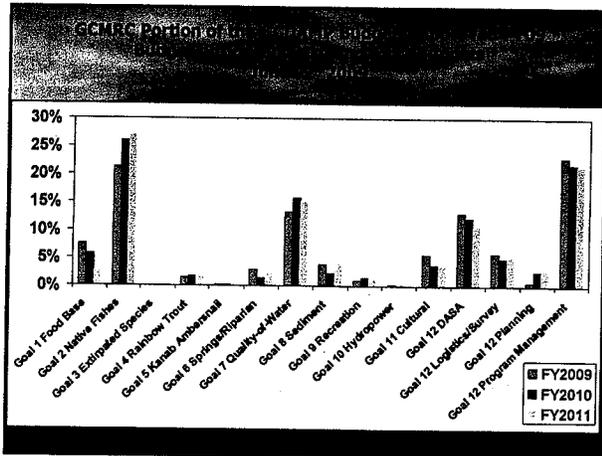
Goal 12: DASA

2013

- \$200K contribution to 2403 overflight fund in FY 10; defer FY 11 contribution
- Establish integrated image analysis and change detection project (Phil Davis)
 - Made up of existing projects and staff (legacy; integrated analysis)
 - Focus on analysis and processing of 2009 imagery
- Biometrics and analysis support (Lew Coggins)
- Library operations
- GIS support
- Database management

Other Goal 12 Highlights GCMRC FY 10-11 BWP

- > Continue ecosystem initiative started in FY 08
 - Senior ecologist (Carl Walters) with Biology Program staff support
 - Develop or refine ecosystem models
 - Conduct stakeholder workshops (April 2010)
- > Annual Reporting meeting – each January
- > SA contract, independent review and PEP's
- > SCORE Report and KA in FY 2011
- > Survey support and control network
- > Logistics base support
- > Program Planning and Management
- > Administrative and IT support (SBSC)
- > Implement/maintain new GCMRC website



AMWG Motion issues

- > 4 (a) Relationship of Cultural R&D Project to treatment plan and compliance
 - R&D project is developing a monitoring program that will help meet 106 and GCPA compliance requirements by providing quantitative monitoring data on the effects of dam operations and the effectiveness of erosion control activities or other management actions

AMWG Motion issues

- **4 (c) Necessity of the \$70,000 for the NPS.**
 - **GCMRC Response:** The \$70k was cut to help balance the FY 10-11 budgets; the cut was based on the assumption that NPS did not need AMP funds to support their involvement in the cultural R&D project. Once the permitting issues surrounding the project have been resolved, GCMRC will evaluate the funding needed to support NPS involvement. GCMRC does not support providing funding from the cultural R&D project or from the science budget in general for NPS compliance activities.

AMWG Motion issues

- **5. evaluate the pros and cons of the two (BWP) budget approaches**

GCMRC supports this recommendation. Before approving the FY 10-11 BWP, agreement should be reached on purpose of the biennial budget process and how it will work. The primary purposes of the biennial budget should be to:

- Streamline the AMP budget process
- Free up time for agencies and AMP to address other priority needs
- Better integrate AMP funding needs into agency budget process

AMWG Motion issues

- **6 (a) The budget assumes that we will have moved forward on core monitoring for a number of Goals under the AMP. Although this is reasonable to consider TWG believes it is premature**

GCMRC Response: The designation of projects as "core monitoring" is based on the anticipation that several projects will be approved for Core Monitoring status in FY 2010-11 following TWG review and DOI approval.

AMWG Motion issues

- 6 (b) TWG is looking for additional clarity on staffing and funding including a current GCMRC organizational chart.**

- An updated organization chart was provided to the TWG and AMWG. No new permanent positions are proposed
- The level of detail provided in the budget/work plan was agreed to by the TWG and GCMRC several years ago. The BWP provides a summary of funding by project (GCMRC staff, logistics, equipment, contracts etc.). Providing information on how GCMRC staff time is allocated among projects is beyond the scope of what we intend to provide
- Data analysis and reporting is a major focus of the FY 2010-11 budget and work plan.

AMWG Motion issues

- 6 (f): **Goal 8: GCMRC should develop an on-the-shelf HFE science plan for a potential next HFE.**

KEY HFE ASSUMPTIONS:

1. Additional (multiple) sand-enriched high flows and continued long-term monitoring will be needed to answer the primary strategic science question – "Is there a flow only operating strategy for rebuilding and maintaining sandbars along the Colorado River below Glen Canyon Dam?"
2. Substantial increases in total eddy-sandbar area and volume are only possible during high-flow releases following large tributary floods, which enrich sand supplies in the main channel of the Colorado River.
3. A recent AMWG motion states that additional High Flow Experimentation will not be recommended in FY 2010 owing to the critical need for final reports on the March 2008 experiment.

WHAT ARE THE MAIN OPTIONS?

HFE OPTION #1

Develop an "off the shelf" science plan in FY2010 for a single HFE that would be implemented when next sediment trigger is met (if approved by DOI).

PROS:

- + Allows managers to pursue the only identified means of rebuilding sandbars
- + Allows for evaluation of whether or not cumulative building of sandbars is occurring under repeated, sand-enriched HFEs
- + Allows opportunity to test alternative duration for peak flow of HFE under MLFF regime

CONS:

- Depletes experimental fund, limiting future testing
- Impacts schedule for HFE Synthesis (FY10) and reporting/other projects, such as SCORE II
- Minimal learning, simply repeats what has already been tested
- Does not incorporate findings of HFE synthesis or integrated modeling project research results.

HFE OPTION #2

Develop a multi year HFE Science Plan that addresses triggers for the next sand enriched HFEs in combination with experimental daily operations on basis of previous learning from all HFE reports. The plan would be developed in FY2011, after HFE synthesis is complete (Sept 2010);

PROS:

- + Consistent with commitments in 2008 EA/FONSI
- + Allows more time for planning next HFE or series of HFEs while also including input from development of Desired Future Conditions
- + Provides more time to accumulate experimental funds for future HFE testing
- + Minimizes impact to existing project schedules and reporting commitments

CONS:

- Foregoes an opportunity to conduct an HFE that takes advantage of sediment input in FY 10 or 11

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HFE OPTION #3

Replicate 2004/2008 HFE when next sediment trigger is met. Rely primarily on existing resource monitoring projects to assess the effects of the high flow. Pursue multi year plan (OPTION 2) once HFE synthesis is complete in fall 2010.

PROS:

- + allows manager to pursue the only identified means of rebuilding sandbars
- + Little or no withdrawal from Experimental Fund
- + Minimal impact to ongoing projects and schedules
- + Allows for evaluation of whether or not cumulative building and maintenance of sandbars is occurring under repeated, sand-enriched HFEs

CONS:

- Does not incorporate findings of HFE synthesis or integrated modeling project research results
- Counter to commitments in 2008 EA/FONSI

HFE Conclusion

- > GCMRC believes that it is important to meet reporting and synthesis commitment to the GCD-AMP in FY2010. A fully informed HFE planning process should commence in FY2011 and should be completed in less than a year (OPTION #2).
- > GCMRC would support conducting a High Flow in FY2010 or 11 in response to tributary sand enrichment of the Colorado River utilizing existing monitoring projects to evaluate its effects (OPTION #3). Such an adaptive management response will allow reporting and long term HFE planning to continue on schedule.
- > Developing a "off the shelf" science plan prior to completion of HFE reporting and synthesis would disrupt on going projects and reporting commitments
- > TWG/AMWG/DOI should initiate discussions related to a revised sediment trigger, DFC for sediment, and a more structured approach to HFE planning and compliance

Other Issues

- > Impact to the Experimental Fund (see handout)
- > Impact to NN Contingency Fund
- > Funding for Management and Compliance Actions
- > Deferred Science Projects

Deferred/Scaled Back Projects

- > Arthropod Monitoring
- > Hyperspectral image acquisition and analysis
- > 1984 sand bar analysis
- > Terrestrial ecosystem modeling
- > Deferred contribution to overflight fund (FY 11)
- > Expanded economic analysis
- > Archaeological R&D Project (NPS and Cooperator involvement)
- > Decision support tools/trade analyses
- > Recreation study
- > TCD design and implementation

Next Steps

- TWG Review; recommendations to AMWG (June 22-23)
- Draft BWP to AMWG (July 10)
- AMWG review; recommend final BWP to SOI (August 13)
- General Core Monitoring Plan workshop (September/October)