

Report of the Physical Resources Monitoring Peer Review Panel

October 6, 2006

Presentation to GCDAMP Technical Workgroup
November 9, 2006



I. Overview

Design of the Monitoring Program

- panel generally impressed with direction of *GCMRC* physical resources monitoring program
- panel commends individual scientists & program administrators on the degree of communication & collaboration among research teams
- further efforts are necessary, however, to more fully integrate core core monitoring & research efforts
- specifically, fine sediment modeling needs to be better integrated with coarse sediment work & with collection and analysis of field data
- clear articulation of a guiding framework would strengthen collaboration within physical resources program, and coordination among three *GCMRC* programs, & facilitate task of outside reviewers



Design of the Monitoring Program (cont.)

- encourage bottom-up collaborations among research scientists in three core GCMRC program
- current adaptive management process, with AMWG and TWG prioritizing core monitoring information needs based on group consensus, is cumbersome and likely inhibits setting prioritized goals and making decisions
- need more clearly articulated rationale for prioritizing core monitoring information needs



II. Specific Charges to the Panel

Draft statements of work

1) Integrated quality-of-water core monitoring (Topping)

- statement of work is reasonable
- specific suggestions include greater attention to prioritization; need to distinguish extended baseline monitoring activities from relatively short-term measurements; more focus on bed sediment grain size (bed sediment camera) & Paria inputs (further sensors installed to measure discharge, stage, suspended sediment flux, bed sediment grain size, and bedload sediment flux)

2) Modeling support linked to monitoring (Wright)

- goals of modeling effort appropriate & reasonable
- need to ensure that modeling program is properly integrated with work of Topping



II. Specific Charges to the Panel (cont.)

Draft statements of work

3) Additional specific comments

- emphasize need for long-term sediment transport model that can be used to demonstrate the potential results of various operational scenarios
- panel recommends that the current 1d Colorado River model be critically reviewed by a small group tasked with recommending further development or re-development of the model



II. Specific Charges to the Panel (cont.)

Effectiveness of current or proposed sediment core monitoring in meeting identified core information needs & answering strategic science questions

- Need for a comprehensive structured approach: approach can be used to prioritize information needs, define the flow of information that will lead to a desired endpoint of understanding, & to specify the level of detail needed to address driving questions
- e.g. panel uncertain how efforts to model fine sediment dynamics (Wiele) integrate with efforts to model coarse sediment dynamics (Webb)



II. Specific Charges to the Panel (cont.)

Effectiveness of current or proposed sediment core monitoring in meeting identified core information needs & answering strategic science questions (cont.)

- Fine sediment modeling: need more effective communication between modelers and field scientists; need prioritization of questions to be addressed in simulations; need to improve treatment of hydraulics within eddies; model must be calibrated; fundamentally, the model needs to provide first-order estimates of the effects of different management scenarios
- Assessing thresholds: scientists need to ask how well they must know the parameters & trends being studied
- Core monitoring & analysis: panel suggests that monitoring, applied studies, & modeling all be referred to as core monitoring and analysis



II. Specific Charges to the Panel (cont.)

Effectiveness of current or proposed sediment core monitoring in meeting identified core information needs & answering strategic science questions (cont.)

- Experimental flows: experimental flow releases remain critical to the core monitoring & analysis program
- Sediment monitoring strategies: 3 complementary but potentially redundant approaches possible for sediment monitoring - panel recommends combination of approaches that continues annual & event-based ground monitoring of sand bars, & continuing development of the sediment mass balance for the river ecosystem; also essential to continue funding existing research efforts for sufficient period of time to allow scientists to analyze their data



II. Specific Charges to the Panel (cont.)

Potential for integration of sediment core monitoring protocols with other related program activities

Degree of integration among 3 core GCMRC programs has improved since 1999, but more effective integration requires

- establish common frames of reference that facilitate discussion of effects of changing flow & sediment regimes (e.g. stage/discharge)
- evaluate trade-offs among different resources as a function of differing flow regimes
- scientists in other programs identify physical parameters that are central to their understanding of the river ecosystem
- joint annual research symposia & river trips



III. Summary

- panel commends physical resources program director & contributing scientists for progress made with respect to core monitoring and analysis since 1999 program review
- panel stresses need for more experimental flow releases in order to assess the adequacy of models
- panel emphasizes need for (i) clear articulation of structured approach that guides core monitoring & analysis efforts, (ii) closer integration within physical resources program between modeling & applied studies, (iii) integration of frequent experimental releases into core monitoring & analysis, and (iv) development of a common frame of reference & discussion of trade-offs among differing resources

