

I1-009

Development of an Integrated Monitoring and Interpretation Program (IMIP)

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Inquiry Submittal

Submitted to

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by

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I. INQUIRY SUBMITTAL

a. Title/Applicants: "Development of an Integrated Monitoring and Interpretation Program (IMIP)"; Applied Marine Sciences; US Geological Survey.

b. Project Description/Objectives: To organize for CALFED local ecosystem expertise; develop an IMIP to gauge restoration success.

c. Approach/Tasks/Schedule: Starting with ecosystem objectives established by CALFED and the Ecosystem Roundtable, we will identify whether existing monitoring programs can determine restoration progress, and suggest either expanding or reducing monitoring using the following considerations and methods:

1. Specific measures of ecosystem health, established by CALFED, should have scientific consensus and independent peer review. The enthusiastic participation of the principal agencies and entities now monitoring the system in contributing or proposing the most important measures of ecosystem health is crucial, as is public input.
2. An adaptive demonstration of the usefulness of various proposed measures through the early portion of the program. Therefore, ongoing integration of new information on the causes of fluctuations and the role of anthropogenic manipulations of the system must occur. This step will establish the link between research results and management.
3. Our proposed public-private partnership includes many of the most experienced environmental scientists in the system.
4. Establishing a monitoring program has been initiated by CALFED through some workshops and establishment of working groups and a contract with The Bay Institute, but there is major work left to do. i.e., establishing priorities for contaminants, in developing the IMIP. We will assume the technical management of this process through development of consensus documents, further workshops and review of solicited products. However, development of IMIP must be continual with incremental annual changes as new information and approaches become available. An initial 5-year period is proposed, with 2 years to develop the first iteration and revisions in each of the following three years.
5. A second step would be to develop and manage a Monitoring Enhancement Program (MEP). Every year for three years MEP would call for proposals for studies, syntheses, or integration approaches that would contribute to the watershed monitoring program. Established monitoring programs might, for example make proposals for CALFED support to facilitate developing links to other existing programs, or improve efficiencies or coordination within their own program. The goal of MEP would be to provide incentives for all entities and scientists to contribute creatively and progressively to the IMIP. We could design and manage the call for proposals and selection process, with the goal of avoiding any perceptions of favoritism or conflicts of interest. We will make recommendations to CALFED, and it would be appropriate for CALFED to peer review our products independently. We would assemble experts annually to evaluate the new products that have been demonstrated, determine how

those products fit into the developing monitoring and interpretation program, and select those for further work.

d. Justification: CALFED's Ecosystem Restoration Program (ERP) requires monitoring to evaluate restoration success, and to track changes from human actions and natural fluctuations. The ERP will utilize principles of adaptive management and adaptive management is virtually impossible without a good monitoring program. Monitoring is the intermediary between responsible resource restoration/management and the arena of competing ideas of how the system works as revealed by specific detailed research projects. Several existing programs monitor ecosystem components or address specific questions, however these programs are minimally coordinated, their findings rarely integrated and none applied efficiently to the broad needs of restoration. These programs generate a large amount of data, and may in many instance be more complex and costly than is required for the ERP. There are programs to monitor the fish populations (IEP), water flows (Bureau of Reclamation and Department of Water Resources), water quality (IEP/USGS) and contaminants (San Francisco Bay Regional Monitoring Program) and the Sacramento River Watershed Program, for example.

It is a complex endeavor to develop a watershed-wide, restoration-based monitoring program that includes new elements as well as coordinated data collection among established programs. It is even more of a challenge to develop a program that provides the restoration effort with sophisticated interpretations and integration of results that are relevant to management. Development of such a program will require the dedicated energy of a team that can understand the science and that has management experience in large restoration efforts.

e. Budget: Estimated at \$190K/year.

f. Applicant qualification: Task Leaders: **Dr. Robert B. Spies**, AMS, a nationally known aquatic toxicologist/ecologist/ Chief Scientist for largest US Restoration Project (*Exxon Valdez*); **Dr. Andy Gunther**, AMS, an experienced ecologist with more than 10 years experience in the bay-delta system with technical and policy issues; **Dr. Sam Luoma**, USGS, one of the premier experts on the bay-delta estuary and a well recognized and articulate scientist.

Committed scientific participants for development of the IMIP: **Dr. Stephen Monismith** (hydrodynamics) Stanford University; **Dr. Wim Kimmerer**, (zooplankton and estuarine processes), San Francisco State University; **Dr. Allen Jassby**, UC Davis, (ecologist; interpretation of large data sets), **Dr. Dave Hinton**, (wildlife toxicologist) Director of the Environmental Studies, Graduate Program at UC Davis, **Dr. Phil Mundy**, Lake Oswego Oregon, an expert on fisheries management and salmonid restoration with extensive experience in restoration efforts in the Columbia River Basin and Alaska.

g. Monitoring and data evaluation: This project will evaluate other's data for possible inclusion in CALFED-sponsored monitoring program.

h/i. Local coordination/ compatibility with CALFED objectives: This project will strongly foster coordination among existing program participants and is very compatible with CALFED objectives.