99B-16C
Panel A

II. Executive Summary

A. Project Description

Although the Strategic Plan prioritizes re-establishment of more dynamic, natural high-flow regimes in regulated rivers, it neither specifies criteria for quantifying these flows nor does it identify realistically achievable water management and acquisition strategies.

This project will illustrate state-of-the-art scientific approaches for developing water management operations compatible with both environmental and other water supply objectives. We will demonstrate a method for identifying the flow regimes necessary to achieve ecological restoration objectives, and we will identify opportunities for achieving those target flow regimes through modifications in reservoir and water management operations in the San Joaquin Basin, without undesirable water supply impacts on water users.

Project applicants will pursue a 3-step process:

1. Demonstrate a range of methods for identifying the high flow regimes necessary to achieve ecological restoration objectives.
2. Identify and model integrated water management strategies designed to achieve high flow restoration targets without creating water supply impacts in the San Joaquin Basin.
3. Develop criteria for optimizing compensated water acquisitions to achieve hydrologic restoration targets beyond what is possible with the management innovations evaluated in step two.

B. Location

CALFED East San Joaquin Basin Ecological Management Zone (figure 1).

C. Biological/Ecological Objectives

The primary objective of this project is to identify strategies for restoring:

- frequency of high stream flows in regulated rivers sufficient to maintain channel habitat conditions favorable to native aquatic and riparian species (Strategic Plan Goal 2, Objective5 ERP pg.54).
- flood plains and flood flow processes in regulated rivers by providing flow releases capable of inundating flood plains (Strategic Plan Goal 2, Objective 6; ERP pg. 89)

D. Cost

This effort will be developed in the following three phases. **This proposal is for Phase I only.**

Phase I: Analysis and modeling of hydro-biologic issues and water management.
10/1999 10/2000 $295,925

Phase II: Design flow release and adaptive management experiments.

Phase III: Implementation and monitoring.

E. Third Party Impacts

Because the purpose of the project is to identify opportunities which will have no negative impact on water supply water users, there should be no negative economic or socio-economic impact. The water ecological and drinking water quality benefits that could accrue from high flow restoration would be very substantial.

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F. Applicant Qualifications

The Nature Conservancy (TNC) and Natural Heritage Institute (NHI) will manage this project collaboratively, with NHI serving as fiscal agent and prime contractor. Our approach will be to assemble the best available expertise into two teams to guide the project, including: Luna Leopold and Peter Moyle, renowned hydrologist and fish biologist and NHI trustees, Matt Kondolf, William Kimmerer, Stillwater Associates, and McBain and Trush, which has significant expertise in applying their alluvial attributes approach to recommending flow releases and developing restoration strategies for the Trinity River in Northern California and Tuolumne River.

NHI is a nonprofit natural resources law and technical consulting firm committed to improving the management and conservation of natural resources with expertise in water management and habitat restoration. NHI has been a leading representative of the environmental community in the CALFED process.

Dr. Brian Richter, Director of the TNC's Freshwater Initiative, has extensive experience in establishing the importance of natural flow regimes and has worked with science staff and conservation project teams across the U.S. to identify key hydrologic processes supporting biological diversity, assess alterations to these processes, and design conservation strategies for restoring desired hydrologic conditions.

G. Monitoring and Data Evaluation

We will assume that natural flow variability and natural geomorphic patterns are more desirable than heavily engineered flows for target aquatic species such as chinook salmon. We will characterize natural flow variability and contrast it with present flow regimes using an approach developed by Richter (1988). This technique uses aerial photographs and existing geomorphic studies to determine natural geomorphic characteristics, then correlates geomorphic change with changes in hydrology. Hydrologic regimes that result in desirable (natural) geomorphology will then be identified as target flows, and our water management team will set out to identify strategies for supplying target flow regimes without impacting existing water supplies. Features from aerial photographs will be digitized to a rectified base map.

H. Local Support/Coordination

NHI has longstanding working relationships with the agricultural water districts in the San Joaquin basin which will greatly facilitate working with them to identify opportunities and constraints in this project. For four years, NHI has been collaborating with CVP districts in demonstrating a variety of economic incentives for water conservation in agriculture. NHI has also recently worked with both the San Joaquin tributary water districts and the export water users in the basin in forging the Vernalis Adaptive Management Program to provide environmental water flows to achieve the purposes of the Bay-Delta Water Quality Control Plan, an exercise in cooperative problem solving that will be of value in carrying out this proposal.

I. Compatibility with CALFED Objectives

This project addresses the following ERP strategic objectives and targets: Floodplain and flood processes, pg. 89; Streamflows, pg. 39; Coarse sediment supplies, pg. 73; Stream meander, pg. 75. The ERP and the Strategic Plan are based on the philosophy that restoring these physical processes will be beneficial for nearly all habitat and species objectives.