

CALFED Science Program PSP Grant

Supplement Proposal

Technical Selection Panel Review

Grant Supplement Identification: *Hendrix*

Applicant Organization: R2 Resources Consultants, Inc.

Grant Supplement Title: A Statistical Model of Central Valley Chinook Salmon
Incorporating Uncertainty

Original Grant (Year): A Statistical Model of Central Valley Chinook Incorporating
Uncertainty (2004)

Review

The following review form has been broken down into three subsections: (1) technical review criteria, (2) value added review criteria, and (3) funding recommendation. It includes a review and summary rating for each of these subsections using all review criteria. Technical criteria is separated from the value added criteria because these issues will be weighed separately, but with equal importance. No supplement proposals will be funded that are rated inadequate in either criteria.

Subsection 1: Technical Review

Review about the technical merit of the supplement proposal. Criteria for consideration are:

Technical Review Criteria

- ***Purpose:*** *Are the goals, objectives and hypotheses of the supplement proposal clearly stated and internally consistent?*
- ***Background:*** *Is the underlying basis for the supplemental work clearly explained and well documented?*
- ***Approach:*** *Is the approach to the supplemental work well designed and appropriate for meeting the objectives of the supplemental project? Is it clear who will be performing supplemental tasks including management and administration of the project and are resources set aside to do so?*
- ***Feasibility:*** *Is the approach for the supplemental work fully documented and technically feasible? What is the likelihood of success? Is the scale of the project consistent with the objectives and within the grasp of authors?*
- ***Budget:*** *Is it clear how much each aspect of the supplemental work will cost including each task, salaries, equipment, etc.? Is the budget reasonable and adequate for the work proposed?*
- ***Qualifications:*** *Is the project staff qualified to efficiently and effectively implement the supplemental project? Do they have available the infrastructure and other aspects of support necessary to accomplish the project?*

- **Past Performance:** *Unless informed otherwise by CALFED staff, reviewers should assume that the applicants have met the commitments indicated on their existing CALFED grant/contract.*

Purpose: The goal of the original 2004 CALFED contract to Hendrix et al. was to develop a statistical modeling framework for analysis of factors affecting population dynamics of winter and spring run Chinook salmon in the Delta ecosystem. The modeling framework included models to simulate effects of ocean influences and anthropogenic factors (i.e. effects of water diversions and exports), and guide future research and management decisions. Although the project was funded in 2004, work did not begin until October 2007 owing to (unspecified) contractual issues.

The goals and objectives of the supplement proposal are clearly stated. They include making the models more useful to the Bay delta community through a series of public workshops, incorporating results of recent and ongoing empirical studies into the models, and incorporating feedback policy design (adaptive management) into the models.

Background: Yes, the basis for the supplemental work is clearly explained and documented. The arguments are made for gaining consensus from the management and scientific communities about model assumptions and inputs, by incorporating the latest information into the models, and inviting the community to comment on, and use the models in workshops. The example is given of the contentious debate over restoration alternatives for Columbia River salmon which was created by two competing models (CRiSP, FLUSH). The investigators also propose to conduct adaptive management experiments with the models and test different hypotheses about relative effects of stressors.

Approach: The approach is appropriate for meeting supplemental project objectives. Project management and administration are defined.

Feasibility: The approach for the supplemental work is fairly well documented and technically feasible. The project investigators are experienced at building and using models, at conducting workshops to incorporate management and scientific review, and also in adaptive management experiments. The scale of the project is consistent with objectives.

The effectiveness of the approach is conditional on the quality of the model, and there is limited evidence of the performance of the model. Several of the panelists are confident that the model will provide the quality appropriate to achieve consensus among scientists and managers.

Budget: The budget is reasonable and adequate for the work proposed.

Qualifications: The project staff is eminently qualified to conduct work proposed in this supplement project. Ray Hilborn is a leading authority on use of models

and the adaptive management process to investigate complex questions in fish populations. He also does a great job explaining complex ideas to scientists, managers and the general public in straightforward, compelling ways. Greene and Beechie are well known fisheries scientists. Hendrix has the statistical expertise to manage the incorporation of new information into the modeling framework.

Technical Review Summary

The technical review of this supplement proposal is provided in the space below and addresses each of the technical review criteria (above), including strengths, weaknesses, and specific reasons supporting the evaluation.

Strengths: This supplemental proposal is noteworthy because the investigators appear genuinely interested in input to, criticism of, and experimentation with their modeling framework. Too often, complex models are developed without active use by the scientific and management communities. The investigators are inviting public comment and use, both to critique model assumptions and invite confidence in the model outcomes. They also propose workshops to allow gaming by user groups. They are proposing to use the model to conduct adaptive management experiments and use the model to test policy before and after management actions are conducted. The investigators are highly competent to conduct the work. Given the recent collapse of the fall run of Central Valley Chinook salmon, this project is extremely important for evaluating restoration alternatives.

Weaknesses: Because of the delay in implementation existing CALFED contract, only limited results are shown from the statistical modeling framework. Large multi-modeling efforts take time to build, run, and evaluate. Results from one model should help inform other models. The confidence that the proposed process will work lies mostly in the project proponents and their track record of success. Additionally, in the wiring diagram appears incorrectly cast as management changes should flow through processes to life history effects.

Technical Rating Criteria

Rating of the technical merit of the supplement proposal based on the following scale:

- ***Superior:*** Outstanding in all respects with no technical concerns. Complete confidence proponents will accomplish the project goals.
- ***Above Average:*** A very good proposal with no significant technical concerns. Very confident proponents will accomplish the project goals.
- ***Sufficient:*** A reasonable proposal with some technical deficiencies but nothing critical. Fairly confident proponents will accomplish most of their project goals.
- ***Inadequate:*** A technically deficient proposal with serious impediments or concerns. Little confidence proponents will accomplish many project goals.

Please **X** the appropriate technical rating:

- _____ Superior
- _____ Above Average
- ___ **X** ___ Sufficient
- _____ Inadequate

Explanation of rating and additional comments:

This project should complement and enhance the value of the existing contract with CALFED. However, there are some technical concerns including a lack of clarity on exactly how the process will play out and some apparent errors in the wiring diagram. The large confidence in the research team overcomes many of the panel’s technical concerns and instills confidence that the proponents will accomplish the project goals.

Subsection 2: Value Added Review

Review about the value added of the supplement proposal. Criteria for consideration are:

Value Added Review Criteria

- ***Purpose:*** *Is the new study justified relative to existing knowledge? Are new results likely to add to the base of knowledge? Is the supplemental project likely to generate novel information, methodology, or approaches? Is it clear how the purpose of the supplemental work differs from the work in the existing grant/contract?*
- ***Relevancy:*** *Is it clear how the supplement proposal evolved from and relates to the existing grant/contract? Does the supplement proposal clearly and directly address one or more of the objectives/priorities in the existing grant/contract? Does the supplement proposal identify new relevancies to CALFED priorities not identified in the existing grant/contract?*
- ***Timeliness:*** *Does the supplement proposal clearly illustrate the need for immediate funding before the next Science Program PSP cycle (1 to 2 years)?*
- ***Approach:*** *Is it clear how the approach of the supplemental work differs from and adds to the work in the existing grant/contract?*
- ***Products:*** *Are products of value likely from the supplemental project that differ from those proposed in the existing grant/contract? Is there a plan for widespread and effective dissemination of information gained from the supplemental project?*
- ***Budget:*** *Is it clear that supplemental funds are going to new or revised tasks or equipment relative to those proposed in the existing grant/contract? Considering the amount of funding requested in the proposed budget, is there a high value in terms of knowledge gained for the CALFED Program relative to other proposals you are familiar with (i.e. “bang for the buck”)?*

Purpose: The new study is very justified relative to knowledge. In the existing contract, the investigators develop a unified modeling framework for evaluating relative effects of ocean versus watershed management on population dynamics of Chinook salmon. This new supplemental proposal will ensure that the modeling

framework is understood and used with confidence. It is very clear how the supplemental work differs from the existing contract.

Relevancy: The supplemental proposal and the existing contract both address the priority of understanding trends and patterns of populations and system response to a changing environment. The existing contract is to build a model to understand how management actions may affect Chinook salmon populations in the Central Valley, how data collection methods may provide observations of populations, and how management may improve or hinder learning about biological uncertainties. The supplemental proposal will facilitate understanding and reliability of the models to address CALFED's priority.

Timeliness: This is hard to answer. The work on the current contract just began in October 2007. It will take time for the models to be developed, run and vetted before the proposed work on the supplemental request can actually be useful. Given the concern over the salmon collapse the general topic is timely.

Approach: It is very clear that the supplemental work is different from work in the existing grant. It also is very clear that the supplemental work enhances and complements the existing work.

Products: Products of value include several workshops, production of simplified versions of the model for distribution via web page, and documentation of adaptive management experiments and results.

Budget: It is clear that supplemental funds are going to new tasks that will enhance value of work conducted on the existing contract. There is a high value in knowledge gained by the CALFED program. CALFED and the Delta user community will have opportunities to become familiar with, critique, and use the models to address management-related concerns and hypotheses about restoration alternatives. Although the supplemental request is fairly expensive, there is high bang-for-the-buck.

Value Added Review Summary

The value added review of this supplement proposal is provided in the space below and addresses each of the value added criteria (above), including strengths, weaknesses, and specific reasons supporting the evaluation.

This supplemental proposal would be well worth funding now to ensure that the complex modeling process developed in the existing contract does not sit on the shelf, unused, and untested.

Value Added Review Rating

Rating of the value added merit of the supplement proposal based on the following scale:

- **Superior:** Outstanding scientific value with a pressing need for immediate funding and expected to add substantial new thinking/concepts to our knowledge/understanding on one or more highly relevant CALFED topics for a very reasonable supplemental cost.
- **Above Average:** At least high scientific value and a clear need for rapid funding. Expected to add solid basic new thinking/concepts to our knowledge/understanding on one or more highly relevant CALFED priority research topics for a very reasonable supplemental cost.
- **Sufficient:** A supplement proposal with a fair amount of scientific value and need for timely funding and expected to add some basic new thinking/concepts to our knowledge/understanding on one or more adequately relevant CALFED topics for a reasonable supplemental cost.
- **Inadequate:** A supplement proposal that has little scientific value or need for timely funding. Not expected to add significant new thinking/concepts to our knowledge/understanding on relevant CALFED topics or the supplemental cost is unreasonable for the knowledge gained.

Please select the appropriate rating with an **X**:

- X** Superior
 Above Average
 Sufficient
 Inadequate

Explanation of rating and additional comments:

This proposal is superior because it will facilitate understanding and use of a complex modeling framework to test potential restoration alternatives for Chinook salmon populations in the Central Valley. The use of complex models to guide management and restoration of fish stocks often fails because managers and scientists do not trust or understand model input and output. This supplemental proposal is unusual for the effort made to enhance model use. Too often models are built and sit on the shelf so funding this type of proposal can help ensure the work is used.

There are many good additions this supplement proposal provides. There is some concern about deciding to fund a model to make public without yet seeing any results of the model to date and there is somewhat of a “trust me” approach. However, the project proponents have a proven track record for involving numerous stakeholders on model development and building consensus.

Subsection 3: Funding Recommendation and Justification

Funding recommendation for this supplement proposal and a justification of this recommendation.

Select one of the following three funding recommendations with an **X**:

- Fund in Full
- Fund with modifications
Suggested Funding Amount \$ _____
- Do not fund

Justification to recommendation. If the recommendation is to fund with modifications, modifications the applicants must make in order to receive funds are listed.

This supplemental request has a good chance of success. The work is timely, given the public outcry over the collapse of the fall run of Chinook salmon in the Central Valley. Effectiveness and use of the existing modeling framework should be greatly enhanced by the work proposed under the supplemental request. A concern is whether to fund it now or wait for a later PSP process when most or all of the existing contract work will be completed. However, there is an obvious benefit to involving stakeholders and others in model development up front, before a model is completed.