Proposal Reviews

#32: TWO-DIMENSIONAL DETAILED HYDRAULIC MODEL FOR DETERMINING FLOOD CONVEYANCE IMPACTS OF ECOSYSTEM RESTORATION PROJECTS IN THE YOLO BYPASS

California State Reclamation Board

Final Selection Panel Review	
Research and Restoration Technical Panel Review	
Sacramento Regional Review	
External Scientific Review	#1 #2 #3 #4
Environmental Compliance	
Budget	

Final Selection Panel Review:

CALFED Bay-Delta 2002 ERP PSP
Final Selection Panel Review

Proposal Number: 32

Applicant Organization: California State Reclamation Board

Proposal Title: TWO-DIMENSIONAL DETAILED HYDRAULIC MODEL FOR DETERMINING FLOOD CONVEYANCE IMPACTS OF ECOSYSTEM RESTORATION PROJECTS IN THE YOLO BYPASS

Please provide an overall evaluation rating.

Fund	
As Is	**-**
In Part	**-**
With Conditions	**-**
Consider as Directed Action	**X**
Not Recommended	**-**

Amount: **$635382**

Conditions, if any, of approval (if there are no conditions, please put "None"):

None

Provide a brief explanation of your rating:

Although the Selection Panel received many supportive comments about this proposal, it has several weaknesses. The panel recognizes that a well-designed 2-D hydraulic model (handling unsteady states) for determining impacts of restoration projects in the Yolo Bypass on flood conveyence is a high priority. In 1995 the project developed a functional RMA-2 hydraulic model but because of insufficient computer power it apparently was not used. That 2-D model was designed as a steady state model while the need is for an "unsteady" state model. This project is costly and part of this cost is that a great deal of the funds will be used for management, coordination and over $100K for a case study. The lack of use of the initial RMA-2 model which this project proposes to improve upon leaves the Panel questioning whether the users fully understand the model's importance and use. It also reflects on the record of the investigators.

The Selection Panel recommends "Consider as a Directed Action" whereby the authors are encouraged to rewrite the proposal including a thorough justification of the qualifications of the modelers who will develop an appropriate 2-D hydraulic model for Yolo Bypass. The authors also should consider development of a new and appropriate budget for model development, potentially considering lower funding than in the initial proposal. If the authors think the case study is an essential part of the model development, this also needs to be fully justified. All of the criticisms of the many reviewers need to be addressed in a clear and concise fashion to assure

that this project will not languish, as did the previous effort. A major rewrite of the proposal is in order and an intensive review by hydraulic modelers and users must be undertaken prior to any funding consideration.

Research and Restoration Technical Panel Review:

CALFED Bay-Delta 2002 ERP PSP
Research and Restoration Technical Panel Review Form

Proposal Number: 32

Applicant Organization: California State Reclamation Board

Proposal Title: TWO-DIMENSIONAL DETAILED HYDRAULIC MODEL FOR DETERMINING FLOOD CONVEYANCE IMPACTS OF ECOSYSTEM RESTORATION PROJECTS IN THE YOLO BYPASS

Review:

Please provide an overall evaluation summary rating:

Superior: outstanding in all respects;
Above Average: Quality proposal, medium or high regional value, and no significant administrative concerns;
Adequate: No serious deficiencies, no significant regional impediments, and no significant administrative concerns;
Not Recommended: Serious deficiencies, significant regional impediments or significant administrative concerns.

Overall Evaluation Summary Rating	**Provide a brief explanation of your summary rating**
-Superior	**Rankings: Ext 1- Excellent, Ext 2 - Good Ext 3/4 -Poor, Regional: High**
-Above average	**A number of common and serious deficiences pointed out by three of the external reviewers and concerns on the utility of developing a model to be used by proponents. Excessive cost identified as an issue by almost all reviewers. The panel recognized the need to apply and validate an existing model in Yolo Bypass, but not as formulated by the proponent.**
-Adequate	
XNot recommended	**Major Conflict. Regional reviewers emphasize the need to complete this modelling as soon as possible. The 'not recommended' conclusion of the technical panel will cause additional delays.**

1. **Goals and Justification.** Does the proposal present a clear statement of goals, objectives and hypotheses? Does the proposal present a clear justification and conceptual model for the project?

   All reviewers agreed that the goals and objectives of the project were clear and well stated. On the whole their was agreement that the project was well justified given the need to assess the effects of restoration activities on the flood conveyance capacity of the Yolo Bypass.

   Two reviewers and the regional review questioned one aspect for the justification: the proposed project is intended to reduce the modelling costs for the proponent, yet the cost of the case study in this proposal is in excess of $100,000.

2. **Likelihood of Success (Approach, Feasibility, Capabilities and Performance Measures).** Is the project likely to succeed based on the approach, feasibility and project team capabilities? Are the proposed performance measures adequate for measuring the project's success?

   There were a number of conerns regarding the approach:

   1) Inability to evaluate flood conditions over the span of the hydrograph (the unsteady aspect of flow). Reviewer uncertain whether model needs to consider this, but should have been discussed.

   2) Insufficient spatial resolution for laterally-varying roughness estimates. If these data are not sufficient, only a 1D model is justified.

   3) Proponents will have no knowldege of new projects/modification to existing structures, so model results they produce will be of potentially limited value. CSRB should conduct modelling because of this issue, thus what is the point of spending money on user interface, documentation, and case study?

   4) Excessive cost of case study may limit the feasibilty of proponents applying the proposed model. Same conclusion as for 3).

   5) Adequacy of 1986 and 1997 data to validate/calibrate the model was not specified in proposal.

   6) The model already exists, thus a model does not need to be developed. An existing model could be applied. Very little underlying basis is offered in regard to the model which is cause for concern regarding the capabilities of the applicants to perform this work.

   7) 2D models require a substantial understanding of numerical techniques and hydrodynamics. Most of the proponents will likely not be qualified to use the proposed model. They will likely have to hire consultants to run the model for them, which will increase costs of application.

   Only one reviewer had concerns regarding the feasibility of the project. He noted that the 1995 effort failed, and the rationale for this failure using arguements based on computing capacity, diminished interest, and unforseen circumstances were weak.

   Two of the reviewers pointed out that the majority of the project team had no RMA-2 modelling experience and that their roles were not defined. One reviewer questioned why the Hydraulic Engineering Center of the ACE at Davis was not involved.

3. **Outcomes and Products.** Will the project advance the state of scientific knowledge in general and/or make an important contribution to the state of knowledge of the Bay-Delta Watershed? For restoration proposals, is the project likely to contribute to ecosystem restoration or species recoveries in a significant way? Will the project produce products useful to decision-makers and scientists?

   All agreed a model is needed, however the need to develop one to be used by proponents was questioned. The excessive cost of applying the model based on the $100,000 case study was cause for concern.

4. **Cost/Benefit Comments.** Is the budget reasonable and adequate for the work proposed?

All reviewers had comments/questions regarding the budget.

1) Three reviewers pointed out that over $100,000 is being spent on coordination.

2) The case study was budgeted at over $100,000 which is high and possibly excessive for future users of the model (which brings into question the projects justification).

3) Only $10K is cost sharing. This may indicate that the"dimished interest" for this work (cited as one of the failures for the 1995 project) is still an issue within the Board. If the model is needed regionally for planning restoration projects in the Yolo Bypass, it is reasonable to expect that other parties aside from CALFED should contribute financially to the development/application of a flood conveyance model.

5. **Regional Review.** How did the regional panel(s) rank the proposal (High, Medium, Low)? Did the regional panel(s) identify significant benefits (regional priorities, linkages with other activities, local involvement) or impediments (local constraints, conflicts with other activities, lack of local involvement) to this proposal? What were they?

   Noted that Congressman Ose specifically indentified the development of a hydrologic model as one of his requirements for the implementation of N. Delta Refuge.

   Wished that timeline of work was a bit faster. Model and workbook would not be available for 3 yrs, which could handicap restoration planning.

   Had concerns about the potential expensive of applying the model for proponents given +$100,000 case study.

6. **Administrative Review.** Were there significant concerns about the proposal with regard to the prior performance, environmental compliance and budget administrative reviews? What were they?

   none

Miscellaneous comments:

Sacramento Regional Review:

Proposal Number: 32

Applicant Organization: California State Reclamation Board

Proposal Title: TWO-DIMENSIONAL DETAILED HYDRAULIC MODEL FOR DETERMINING FLOOD CONVEYANCE IMPACTS OF ECOSYSTEM RESTORATION PROJECTS IN THE YOLO BYPASS

Overall Ranking: **-**Low **-**Medium **X**High

Provide a brief summary explanation of the committee's ranking:

The effects of restoration projects on flood control represents perhaps the single most important issue in the Yolo Bypass. This project would develop a modeling tool capable of addressing the major needs. Rep. Doug Ose has stated that he would not support projects such as the North Delta Refuge without the development of appropriate flood models.

1. Is the project feasible based on local constraints?

   XYes **-**No

   How?

   The Rec. Board, DWR and ACOE operate the Yolo Bypass and have the necessary authority to conduct this modeling effort. This project would provide a useful tool needed to evaluate diverse projects such as the Yolo Wildlife Area & FWS N. Delta Refuge.

2. Does the project pursue the restoration priorities applicable to the region as outlined in the PSP?

   -Yes **X**No

   How?

   This study does not fit neatly into any of the PSP categories. Perhaps the most relevant is Goal 1: Develop and implement habitat management and restoration actions in collaboration with local groups such as the Sacramento River Conservation Area Non-Profit Organization. In the Yolo Bypass, flood impacts of habitat restoration continues to be one of the primary issues delaying project implementation. This is because the primary function of YB is as a flood control facilityhabitat restoration and other land uses are secondary. As correctly pointed out in the proposal, restoration efforts have been handicapped by the lack of a good hydraulic model for planning purposes. Without such a model, it will be difficult for projects such as N. Delta Refuge and restoration in DFGs Glide Property to proceed. Note that Congressman Ose specifically identified the development of a hydrologic model as one of his requirements for the implementation of the N. Delta Refuge.

3. Is the project adequately linked with other restoration activities in the region, such as ongoing implementation projects and regional planning efforts?

XYes **-**No

How?

As noted above, flood effects are a primary issue for restoration planning and implementation. Because of their regulatory role, the Rec. Board has had close contact with DFG, FWS and other groups involved with restoration planning.

4. Does the project adequately involve local people and institutions?

XYes **-**No

How?

The team involves all of the major institutions and have been active in local stakeholder meetings (Yolo Working Group). The Review Panel was particularly pleased to see that this proposal would continue to fund meetings of the Yolo Working Group as a means to maintain public outreach.

Other Comments:

The Review Panel wished the timeline of this proposal was a bit faster. The model would not be completed for two years and no test model results or workbook would be available for 3 years. This slow timeline could handicap restoration planning in the region (eg DFG, FWS).

This model may be a necessary and important tool for habitat restoration of Yolo Bypass, but the Review Panel was concerned that it may not be a particularly economical tool for future restoration planning. The applicants note that: the modeling cost often overwhelms project planning..rendering the potential restoraion project unfeasible. They propose to address this issue by using public funds to develop an RMA2 model. A concern is that this could still be a VERY expensive model to run, regardless of who subsidizes its development. The budget for Year 3 shows that it would cost $109k (for consultant services) to run a single case study. The applicants note that most model users would focus on a small area within the total model boundry (P. 3, Para. 3), but it is unclear if this would be a major cost savings.

External Scientific: #1

Research and Restoration External Scientific Review Form

Proposal Number: **32**

Applicant Organization: **California State Reclamation Board**

Proposal Title: **TWO-DIMENSIONAL DETAILED HYDRAULIC MODEL FOR DETERMINING FLOOD CONVEYANCE IMPACTS OF ECOSYSTEM RESTORATION PROJECTS IN THE YOLO BYPASS**

Conflict of Interest Statements:
I have no financial interest in this proposal.
XCorrect
-Incorrect

In the blank below please explain any connection to proposal, to applicant, co-applicant or subcontractor or to submitting institution (write "none" if no connection):

None

Review:

Please provide an overall evaluation summary rating:

<u>Excellent:</u> outstanding in all respects;
<u>Good:</u> quality but some deficiencies;
<u>Poor:</u> serious deficiencies.

Overall Evaluation Summary Rating	**Provide a brief explanation of your summary rating**
-Excellent	**Many well qualified and experienced organizations could do the work much less money. If the need for the model is a high priority, other proposals should be requested.**
-Good	
XPoor	

1. **<u>Goals.</u>** Are the goals, objectives and hypotheses clearly stated and internally consistent? Is the concept timely and important?

   The goals and objectives are clear enough but the hypotheses are irrelevant to this proposal. This is not a research project.

2. **<u>Justification.</u>** Is the study justified relative to existing knowledge? Is a conceptual model clearly stated in the proposal and does it explain the underlying basis for the proposed work? Is the selection of research, pilot or demonstration project, or a full-scale implementation project justified?

Adequate knowledge and experience is available to develop the proposed model, although a model is not being developed. A model is being applied. Very little underlying basis is offered in regard to the model. Adequate argument is offered to the application of the model. A full scale is justified.

3. **Approach.** Is the approach well designed and appropriate for meeting the objectives of the project? Are results likely to add to the base of knowledge? Is the project likely to generate novel information, methodology or approaches? Will the information ultimately be useful to decision-makers?

   The approcah is not well designed in that the participants seem to be at the bottom of the learning curve for the model. Since similar models have been applied in numerous settings, little will be added to the base of knowledge except to that of the participants. The use of the model could provide useful information and insights to decision-makers.

4. **Feasibility.** Is the approach fully documented and technically feasible? What is the likelihood of success? Is the scale of the project consistent with the objectives?

   The application and use of such model are documented. Given well trained staff, the likelyhood of sucess is high. The proposed application, the river reach, is sufficiently short and, from my reading of the proposal, excludes major, complicating hydraulic structures.

5. **Project-Specific Performance Measures.** Does the project include appropriate performance measures to measure success relative to the project's goals and objectives? Is there enough detail as to how the performance measures will be quantified? For restoration projects, are monitoring plans explicit and detailed enough to determine if performance measures will be adequately assessed?

   The end products and periodic reports are the maesure of performance. They are offered without much definition. The proposed operating manuals should be outlined and the nature of the periodic reports established.

6. **Products.** Are products of value likely from the project? Specifically for restoration projects, are products of value also likely from the monitoring component? Are interpretative outcomes likely from the project?

   The products are listed but not well defined as mentioned above.

7. **Capabilities.** What is the track record of applicants in terms of past projects? Is the project team qualified to efficiently and effectively implement the proposed project? Do they have available the infrastructure and other aspects of support necessary to accomplish the project?

   The staff dose not seem well qualified for the job. The proposed model requires extensive knowldege of hydraulics, mathematics and computer simulation. I wonder why the Hydraulic Engineering Center of the Army Corps of Engineers, at Davis, is not envolved. The applicant surely has the computer hardware and programs the undertake the work.

8. **Cost/Benefit Comments.** Is the budget reasonable and adequate for the work proposed?

   The cost is excessive (approximately 17 percnet of the budget is for administrative work) and the staff's expertiese inadequate. The value of this project is limited.

Miscellaneous comments:

External Scientific: #2

Research and Restoration External Scientific Review Form

Proposal Number: **32**

Applicant Organization: **California State Reclamation Board**

Proposal Title: **TWO-DIMENSIONAL DETAILED HYDRAULIC MODEL FOR DETERMINING FLOOD CONVEYANCE IMPACTS OF ECOSYSTEM RESTORATION PROJECTS IN THE YOLO BYPASS**

Conflict of Interest Statements:
I have no financial interest in this proposal.
XCorrect
-Incorrect

In the blank below please explain any connection to proposal, to applicant, co-applicant or subcontractor or to submitting institution (write "none" if no connection):

none

Review:

Please provide an overall evaluation summary rating:

Excellent: outstanding in all respects;
Good: quality but some deficiencies;
Poor: serious deficiencies.

Overall Evaluation Summary Rating	Provide a brief explanation of your summary rating
XExcellent	**This proposal was very clear and concise and is an excellent initiative.**
-Good	
-Poor	

1. **Goals.** Are the goals, objectives and hypotheses clearly stated and internally consistent? Is the concept timely and important?

   The goal of this project is clearly and concisely stated within the proposal. As the primary intent of the project is to develop a computer model to assist in future restoration planning there are no hypotheses given.

   The concept of the proposal is to utlize proven technology (2-d modelling)to provide a tool for the California State Reclamation Board and potential proponents of restoration projects in the Yolo Bypass. This project concept is timely and imporant as the CSRB requires the potential restoration projects maintan conditions that don't reduce flood conveyance capacity in the Bypass.

2. **Justification.** Is the study justified relative to existing knowledge? Is a conceptual model clearly stated in the proposal and does it explain the underlying basis for the proposed work? Is the selection of research, pilot or demonstration project, or a full-scale implementation project justified?

   The project is justified on the basis that is provides a more integrated, consistent and precise definition of flood conveyance impacts (the hydraulic component) than other available models. What is unclear from the proposal that affects the justification is: 1) what are the other methods available 2) how much increased resolution the 2-d model will provide over exist models (not described in the proposal) and wheher this reduced risk of flood impacts 3) how many projects have been proposed or are anticipated in the Bypass

   The project is correctly called a planning initative as it employs known technology to help improve capability to safely implement restoration activities in the Yolo Bypass.

3. **Approach.** Is the approach well designed and appropriate for meeting the objectives of the project? Are results likely to add to the base of knowledge? Is the project likely to generate novel information, methodology or approaches? Will the information ultimately be useful to decision-makers?

   The approach to the development of the modeling tool is methodical, logical and follows standard practice for development of hydraulic models.

   This model will substantially increase the base of knowledge and documentation of topographic conditions in the bypass. While it is well known that 2-d models provide better resolution of hydraulic conditions it is unclear. As there is no comprehensive model available for this type of planning in the area it is likely to provide substantive improvement in the overall relaibility of hydraulic predictions related to flood conveyance. The project is not likley to generate a new and improved method but rather better information for that study area. This information will be very useful for decsion makers.

4. **Feasibility.** Is the approach fully documented and technically feasible? What is the likelihood of success? Is the scale of the project consistent with the objectives?

   The proposal for this project is very clear and concise. It fully documents the approach at a level of detailed needed for this evaluation.

   The proposed project is based entirely on known and proven technology and thus is techncially feasible and it is highly likley to be successful.

   The scale of the project is consistent with the objectives.

5. **Project-Specific Performance Measures.** Does the project include appropriate performance measures to measure success relative to the project's goals and objectives? Is there enough detail as to how the performance measures will be quantified? For restoration projects, are monitoring plans explicit and detailed enough to determine if performance measures will be adequately assessed?

   The proposal does not provide explcit performance measures.

   The assumed performance measures are therefore assumed to be successful delivery of a fully documented, calibrated, and functioning 2-d hydraulic model for the study area in the Yolo Bypass. If this is the case then the proposal does provide the detalied information to meet this level of performance

6. **Products.** Are products of value likely from the project? Specifically for restoration projects, are products of value also likely from the monitoring component? Are interpretative outcomes likely from the project?

   While I am supportive of the project, my only concerns are

   1)the overall need for the 2-d model - From the information provided it is unknown what the potential accuracy of the alternative approaches for evaluating how restoration initatives may impact flood conveyance (i.e. is the model overkill?) 2)how often will it be used - The required investment is $0.6 million dollars which would be a large speculative investment unless there was some assurance that the number of projects that will be proposed will make this investment worthwhile.

7. **Capabilities.** What is the track record of applicants in terms of past projects? Is the project team qualified to efficiently and effectively implement the proposed project? Do they have available the infrastructure and other aspects of support necessary to accomplish the project?

   The proposal provides information that demonstrates the capability and track record of the proponents of the projects. It appears the proponents are fully capable and have the required infra-structure to make this project sucessful.

8. **Cost/Benefit Comments.** Is the budget reasonable and adequate for the work proposed?

   My question was " Is the increased capability to estimate flood conveyance characteristics justifed given the $0.63 million investment". If a large number of projects are anticipated this may be justified, however, if no projects are proposed or anticiapted the value seems low.

Miscellaneous comments:

External Scientific: #3

Research and Restoration External Scientific Review Form

Proposal Number: **32**

Applicant Organization: **California State Reclamation Board**

Proposal Title: **TWO-DIMENSIONAL DETAILED HYDRAULIC MODEL FOR DETERMINING FLOOD CONVEYANCE IMPACTS OF ECOSYSTEM RESTORATION PROJECTS IN THE YOLO BYPASS**

Conflict of Interest Statements:
I have no financial interest in this proposal.
XCorrect
-Incorrect

In the blank below please explain any connection to proposal, to applicant, co-applicant or subcontractor or to submitting institution (write "none" if no connection):

None

Review:

Please provide an overall evaluation summary rating:

<u>Excellent:</u> outstanding in all respects;
<u>Good:</u> quality but some deficiencies;
<u>Poor:</u> serious deficiencies.

Overall Evaluation Summary Rating	**Provide a brief explanation of your summary rating**
-Excellent	**I believe that this project could be done at a much lower cost by using contractors to do the work and by deleting the case study suggested in the proposal. Project management appears to be excessive for the number of people actually listed as qualified to perform the hydraulic modeling. Qualified contractors exist in the region.** **The final product should be able to be applied for less than the $100K requested to perform a case study.** **This work likely needs to be done. Before undertaking it, answer three questions: (1) is there not sufficient interest from ANY OTHER funding source for matching funds? (2) is a 2-D steady flow model the best tool, or should a 1-D unsteady flow model (HEC-RAS unsteady) or a 2-D unsteady flow model (FESWMS) be applied? and (3) could this project not be done by outside contractors who are engaged in similar modeling efforts?**
XGood	
-Poor	

1. **Goals.** Are the goals, objectives and hypotheses clearly stated and internally consistent? Is the concept timely and important?

   The goal of the project is clear: to create a detailed, 2-D hydraulic model of the Yolo bypass area. The objectives are clear: to calibrate and verify the model and apply it to a test case in the modeled area. The concept is timely and important.

   Internal consistency: one of the features of this study is an apparent savings in future applications. The budget is not consistent with this assumption: $100 K is required for a case study to illustrate the method. This cost equals that to calibrate and verify the model and is three times the cost to develop the model in the first place. This does not appear to be consistent with the implied cost savings generated by having such a model in place for future projects.

2. **Justification.** Is the study justified relative to existing knowledge? Is a conceptual model clearly stated in the proposal and does it explain the underlying basis for the proposed work? Is the selection of research, pilot or demonstration project, or a full-scale implementation project justified?

   The RMA-2 computer model is certainly adequate for the study for the analysis of steady-state conditions. It is stated that the model will be calibrated using data from observed floods and verified with similar data and synthetic data from the UNET model. The resulting model, the primary product of this project, will NOT be able to evaluate conditions over the span of a flood hydrograph. It will, instead, be able to evaluate hydraulic conditions for any single moment in time. Unfortunatley, I cannot assess the relative importance of analyzing impacts over a flood event (the "unsteady" part of hydraulics). There is, however, a current project underway to construct such an unsteady flow model for the Sacramento River system. The multi-year project is being carried out by a contractor. There appears to be an inconsistency in the capability of RMA-2 and its application to the Yolo Bypass. In the RMA-2 model description under "background," it is stated that "...RMA-2 explicity addresses laterally varying roughness conditions and produces laterally varying water surfaces." Then under Phase 4, Calibration, it is stated that "The resolution of surface roughness definitions...will be limited to a somewhat large(i.e. regional) scale." In other words, it appears as though the input to RMA-2 will not be sufficiently detailed to allow for "...laterally varying water surfaces." The proposal should have been clear on this point. If input data are not sufficiently detailed, then a 1-D computer model is the only type justified. It seems that Phase 5, a Case Study Application, is cost excessive and unnecessary for this project. The case study to be analyzed is either hypothetical or real, and a "real" application is suggested. Since the purpose of the model is to provide a somehow-less-expensive-than-current tool to analyze future impacts, it seems that (1) $100K for the case study is excessive and (2) the case study should be left for future contractors to perform.

3. **Approach.** Is the approach well designed and appropriate for meeting the objectives of the project? Are results likely to add to the base of knowledge? Is the project likely to generate novel information, methodology or approaches? Will the information ultimately be useful to decision-makers?

   The approach is well developed, will add to the knowledge base of the region, and should be useful to decision makers.

Whether the model should incorporate unsteady effects is not clear from the proposal.

4. **Feasibility.** Is the approach fully documented and technically feasible? What is the likelihood of success? Is the scale of the project consistent with the objectives?

   The approach is documented sufficiently and is feasible.

   The project will likely be successful given the large budget dedicated to the tasks.

5. **Project-Specific Performance Measures.** Does the project include appropriate performance measures to measure success relative to the project's goals and objectives? Is there enough detail as to how the performance measures will be quantified? For restoration projects, are monitoring plans explicit and detailed enough to determine if performance measures will be adequately assessed?

   The success of the model will be determined by the success in calibrating and verifying results. While it is stated that measured data from the 1986 and 1997 floods will be used for calibration and verification, no details are provided to allow an evaluation to be made of the data adequacy for these two tasks. Hopefully there are enough data.

6. **Products.** Are products of value likely from the project? Specifically for restoration projects, are products of value also likely from the monitoring component? Are interpretative outcomes likely from the project?

   Products from the project include a calibrated computer model, a sample application, and documentation to assist in future applications including a CD with the model and reports.

   These products are appropriate and should be helpful.

7. **Capabilities.** What is the track record of applicants in terms of past projects? Is the project team qualified to efficiently and effectively implement the proposed project? Do they have available the infrastructure and other aspects of support necessary to accomplish the project?

   Of the ten participants identified in the proposal, one has identified experience with RMA-2. This person seems to have the qualifications and experience necessary to construct, calibrate, and verify the model. While some coordination is necessary, the specific roles to be filled by the other nine key participants are not defined.

8. **Cost/Benefit Comments.** Is the budget reasonable and adequate for the work proposed?

   The budget appears to be high for the promised products. Of the $635K for the project, in excess of $100K is spent to "coordinate" the project by COE and DWR personnel. Of the 10 "key participants," only 1 has experience with the selected computer model. This project carries a very high cost of coordination when only one person has experience in using the preferred model. The case study requires $100K. It is stated in the "background" section that "the modeling effort cost often overwhelms project planning, design, and sometimes even construction budgets..." It should be remembered that the $100K hydraulic model case study is ONLY for hydraulic impacts. Actual case study costs will be much higher because they will include ecosystem restoration components. Under the "Relationship to Other Ecosystem Restoration Projects," it is stated again that "Having an existing and a functional end-user model is more crucial for smaller scale projects with limited budget for hydraulic modeling." Is "limited budget" $100K or more? While the proposal states in several locations that work will be performed by outside contractors, none are identified in the proposal as "key participants," and no budget is allocated to outside contractors according to the budget tables. Only $10K of cost sharing appears in the proposal. In

the problem section of the "Backgound" portion of the proposal, it is stated that "diminished interest" was one of the reasons why the earlier hydraulic model was not expanded. The low matching commitment may indicate that interest has not increased significantly since that time.

Miscellaneous comments:

External Scientific: #4

Research and Restoration External Scientific Review Form

Proposal Number: **32**

Applicant Organization: **California State Reclamation Board**

Proposal Title: **TWO-DIMENSIONAL DETAILED HYDRAULIC MODEL FOR DETERMINING FLOOD CONVEYANCE IMPACTS OF ECOSYSTEM RESTORATION PROJECTS IN THE YOLO BYPASS**

Conflict of Interest Statements:
I have no financial interest in this proposal.
XCorrect
-Incorrect

In the blank below please explain any connection to proposal, to applicant, co-applicant or subcontractor or to submitting institution (write "none" if no connection):

none

Review:

Please provide an overall evaluation summary rating:

<u>Excellent:</u> outstanding in all respects;
<u>Good:</u> quality but some deficiencies;
<u>Poor:</u> serious deficiencies.

Overall Evaluation Summary Rating	**Provide a brief explanation of your summary rating**
-Excellent	**A model is needed, but the justification for developing one to be used by proponents is weak. The track record of the proponent given the 1995 effort is also suspect. The cost is much too high.**
-Good	
XPoor	

1. **<u>Goals.</u>** Are the goals, objectives and hypotheses clearly stated and internally consistent? Is the concept timely and important?

   The goals and objectives of this project are clearly stated on p. 3. The goal is to update an existing 2D hydrodynamic model and produce a product with improved end-user operability.

2. **<u>Justification.</u>** Is the study justified relative to existing knowledge? Is a conceptual model clearly stated in the proposal and does it explain the underlying basis for the proposed work? Is the selection of research, pilot or demonstration project, or a full-scale implementation project justified?

Development of a calibrated hydrodynamic model in the Yolo Bypass is well justified by the proponents. It is reasonable to provide a tool to determine the combined impacts of proposed restoration efforts to the flood conveyance of the bypass.

In the justification section of the proposal, the proponent discusses the relationship between the proposed model and the CALFED ERP funded Yolo Bypass Management Strategy. They state that:

"the applicability of the proposed model will be key for obtaining a permit from the Board."

Is this a threat (fund us or else)? Perhaps I am reading this incorrectly, but it appears the proponent is saying that if the modeling effort is not funded they will not provide a permit for the Management Strategy. I leave it to CALFED administrators to clarify/handle this issue.

3. **Approach.** Is the approach well designed and appropriate for meeting the objectives of the project? Are results likely to add to the base of knowledge? Is the project likely to generate novel information, methodology or approaches? Will the information ultimately be useful to decision-makers?

   The concept of providing restoration proponents with a tool to determine the extent to which their project affects the overall flood conveyance of the Yolo Bypass seems fundamentally flawed. Any such assessment would have to consider both existing structures as well as new ones or modifications to existing structures being evaluated by the Board, yet the proponent would presumably have no information on the latter two. The more logical alternative is to have the Board run the model to assess the hydraulic impacts of a proposed project (as mentioned in the Feasibility section on p. 7) and to work with the proponent to modify the project to meet their flood conveyance requirements if feasible. Under this circumstance, the model does not require as extensive documentation, front-end/GUI work, or a detailed case study (beyond what is required for validation).

4. **Feasibility.** Is the approach fully documented and technically feasible? What is the likelihood of success? Is the scale of the project consistent with the objectives?

   The proponents failed to develop a useable model based on their 1995 effort (p. 3). I am not convinced that they will succeed in this effort. Three of the reasons given for the 1995 failure are cause for concern: insufficient computing capacity, diminished interest, and unforeseen circumstances.

   Computing Capacity: True, computers are faster today than 7 yrs ago, but 2D models covering areas much larger than the Yolo Bypass have been successfully applied in freshwater and marine systems well before that period. I suspect some difficulty with the iterative solution procedure used in RMA-2, and the proposal provides no information on how this difficulty will be overcome in the current effort. In any event, couldn't the effort in 1995 have focused the study on a smaller area to limit computational demands?

   Diminished Interest. Diminished interest by who, the Board, the modelers, or the end users? All are cause for concern. Is there more interest today?

   Unforseen Circumstances. This may be legitimate, or it may be indicative that the proponents do not have the skills to manage a project of this type or scale. Unfortunately no details are provided about the nature of these circumstances.

5. **<u>Project-Specific Performance Measures.</u>** Does the project include appropriate performance measures to measure success relative to the project’s goals and objectives? Is there enough detail as to how the performance measures will be quantified? For restoration projects, are monitoring plans explicit and detailed enough to determine if performance measures will be adequately assessed?

   An extensive effort is proposed to validate model predictions.

6. **<u>Products.</u>** Are products of value likely from the project? Specifically for restoration projects, are products of value also likely from the monitoring component? Are interpretative outcomes likely from the project?

   A major issue regarding the utility of the product developed from this project relates to the cost of the Case Study, one that approaches $110,000. Presumably the project team would be able to implement the case study relatively efficiently as they will be very familiar with running and calibrating the model, so this is probably a minimum cost. In the ’Problem’ section of the proposal, the model is justified under the argument that hydraulic modeling assessments required by proponents of restoration efforts often exceed construction budgets, making the restoration project unfeasible. I leave it to the regional and administrative reviewers to determine if a $100,000 evaluation cost is reasonable for most proponents (with no guarantee that the project would be approved. I doubt it. A more reasonable approach would be to have the Board’s modelers run RMA-2 for the proponent once design specifications are provided to them. As I understand it from the proposal, the Board is basically going to have to do this anyway to validate the proponents modeling projections. Why go to all the expense of providing documentation, a user-friendly front-end, and an expensive case study?A major issue regarding the utility of the product developed from this project relates to the cost of the Case Study, one that approaches $110,000. Presumably the project team would be able to implement the case study relatively efficiently as they will be very familiar with running and calibrating the model, so this is probably a minimum cost. In the ’Problem’ section of the proposal, the model is justified under the argument that hydraulic modeling assessments required by proponents of restoration efforts often exceed construction budgets, making the restoration project unfeasible. I leave it to the regional and administrative reviewers to determine if a $100,000 evaluation cost is reasonable for most proponents (with no guarantee that the project would be approved. I doubt it. A more reasonable approach would be to have the Board’s modelers run RMA-2 for the proponent once design specifications are provided to them. As I understand it from the proposal, the Board is basically going to have to do this anyway to validate the proponents modeling projections. Why go to all the expense of providing documentation, a user-friendly front-end, and an expensive case study?A major issue regarding the utility of the product developed from this project relates to the cost of the Case Study, one that approaches $110,000. Presumably the project team would be able to implement the case study relatively efficiently as they will be very familiar with running and calibrating the model, so this is probably a minimum cost. In the ’Problem’ section of the proposal, the model is justified under the argument that hydraulic modeling assessments required by proponents of restoration efforts often exceed construction budgets, making the restoration project unfeasible. I leave it to the regional and administrative reviewers to determine if a $100,000 evaluation cost is reasonable for most proponents (with no guarantee that the project would be approved. I doubt it. A more reasonable approach would be to have the Board’s modelers run RMA-2 for the proponent once design specifications are provided to them. As I understand it from the proposal, the Board is basically going to have to do this anyway to validate the proponents modeling projections. Why go to all the expense of providing documentation, a user-friendly front-end, and an expensive case study?

7. **Capabilities.** What is the track record of applicants in terms of past projects? Is the project team qualified to efficiently and effectively implement the proposed project? Do they have available the infrastructure and other aspects of support necessary to accomplish the project?

   Past track record is not good, but the details of why the 1995 effort failed are not provided (as reviewed above). The project team is large but does have extensive experience. It is concerning that 10 people are involved in this project, and that does not include any of the consultants who will do the majority of the work (based on the budget). It is not surprising that project coordination costs are $45,000 in Yr. 1, $28,000 in Year 2, and $32,000 in Yr. 3, almost 1/6th of the total budget.

8. **Cost/Benefit Comments.** Is the budget reasonable and adequate for the work proposed?

   $635,000 to apply and validate an existing model (RMA-2) in the Yolo Bypass?. This seems very high. The management overhead consumes almost 1/6th of the budget. Assuming that most proponents will not be able to afford to run this model (the case study is + $100,000) costs could be considerably reduced by eliminating Phases 5 and 6. In my best guess, a validated model that could be used by the Board (internally) could be developed for about ½ the proposed cost.

Miscellaneous comments:

Environmental Compliance:

Proposal Number: 32

Applicant Organization: California State Reclamation Board

Proposal Title: TWO-DIMENSIONAL DETAILED HYDRAULIC MODEL FOR DETERMINING FLOOD CONVEYANCE IMPACTS OF ECOSYSTEM RESTORATION PROJECTS IN THE YOLO BYPASS

1. Are the legal or regulatory issues that affect the proposal identified adequately in the proposal?

   XYes **-**No

   If no, please explain:

   Modeling only, no permits or environmental documentation required.

2. Does the project's timeline and budget reflect adequate planning to address legal and regulatory issues that affect the proposal?

   XYes **-**No

   If no, please explain:

   N/A

3. Do the legal and regulatory issues that affect the proposal significantly impair the project's feasibility?

   -Yes **X**No

   If yes, please explain:

Other Comments:

Budget:

Proposal Number: 32

Applicant Organization: California State Reclamation Board

Proposal Title: TWO-DIMENSIONAL DETAILED HYDRAULIC MODEL FOR DETERMINING FLOOD CONVEYANCE IMPACTS OF ECOSYSTEM RESTORATION PROJECTS IN THE YOLO BYPASS

1. Does the proposal include a detailed budget for each year of requested support?

   XYes -No

   If no, please explain:

2. Does the proposal include a detailed budget for each task identified?

   XYes -No

   If no, please explain:

3. Does the proposal clearly state the type of expenses encompassed in indirect rates or overhead costs?

   XYes -No

   If no, please explain:

4. Are appropriate project management costs clearly identified?

   XYes -No

   If no, please explain:

5. Do the total funds requested (Form I, Question 17A) equal the combined total annual costs in the budget summary?

   XYes -No

   If no, please explain (for example, are costs to be reimbursed by cost share funds included in the budget summary).

6. Does the budget justification adequately explain major expenses?

   XYes -No

If no, please explain:

7. Are there other budget issues that warrant consideration?

-Yes **X**No

If yes, please explain:

Other Comments:

this proposal applies to consultant services. information well defined in page 14 of the proposal and the budget summary