# Proposal Reviews

## #197: DEVELOPMENT AND TESTING OF AN UNSTEADY RIVER MODEL WITH WATER QUALITY AND SEDIMENT TRANSPORT

University of California, Davis

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# Research and Restoration Technical Panel Review:

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

**Proposal Number:** 197

**Applicant Organization:** University of California, Davis

**Proposal Title:** DEVELOPMENT AND TESTING OF AN UNSTEADY RIVER MODEL WITH WATER QUALITY AND SEDIMENT TRANSPORT

**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 | **Technical reviews ranged from poor to excellent. This discrepancy appeared to be based on the individual reviewers belief that the highly significant, but undescribed, HEC contribution would assure the overall success of the project. Major deficiencies are the lack of field validation and efforts toward tying to local watershed groups and technology transfer. All reviewer panelists felt that a product as proposed would be very valuable and that the applicants should be encouraged to resubmit during the next CalFed solicitation round. A new proposal musts provide detailed study plans, model data collection, calibration, validation and cost structure including the HEC component.** |
| -Above average | |
| -Adequate | |
| **X**Not recommended | |

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?

   **The goal is to formulate a model that can predict river temperature, dissolved oxygen, sediment transport, as well as flow quantity. This is a worthy but very broad goal. The fundamental hypothesis is stated to be extension of a widely accepted hydrodynamics model (HEC-RAS) through the incorporation of water quality and sediment transport. Project scale is quite consistent with study objectives. This is not a basic research project but rather more of a demonstration project. The project is justified in as much as the different component models are most often used in river studies through independent investigations without integration, thus forcing decision-makers to drawn any conclusions regarding interactions.**

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?

   **The performance measures and expected products/outcomes appear adequate and reasonable for the nature of this project. Strengths are the suggestion of model testing on three streams being restored within the program and the conduct of training at the conclusion. However, no detail is provided on the study design for model application, calibration and validation. Questions were raised due to he fact that several temperature models already exist, some in the public domain, are not mentioned and therefore could not tasks 5-8 be simplified by using existing models. Also the description of sediment transport models was not specific, and the supply of sediment to the rivers was not addressed at all. Is this being collected by HEC? The peer review and interim reporting built into the process throughout should allow for sufficient evaluation of progress and performance.**

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?

   **The products, if shown to be valid, would be most timely and should be an important contribution to CalFed and water resource professionals universally. Unfortunately the proposal does not focus on involvement of local watershed groups and information transfer.**

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

   **The major development of the sediment transport model appears to be done outside ($450K from the Hydrologic Engineering Center) at no cost to this proposal. Two of the technical reviewers felt the costs were high since existing models could be incorporated and there is no indication of intensive field data gathering for validation. A proposal of the magnitude of $900K must provide a detailed cost breakdown by specific tasks including the outside funding through HEC. In order to be properly reviewed and rated.**

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?

   **All four regional reviews gave this proposal their qualified support which ranged from low to medium. Concern was expressed as to the degree to which the model would be user friendly. Also note was made that the applicant had not made a connection with any of the watershed groups that may eventually want to use the product and having no field verification or calibration component would make it of limited use for restoration decision-makers. They would like to see examples of applicability by referring to specific goals in the watersheds they will be testing the model in.**

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?

   **Applicant has performed well in implementing prior contract. A suggestion was made that due to the federal cost-share funds the applicant should consult with the USFWS to see if NEPA compliance is required. A discrepancy between item 17a requested state funds is $764,275, and**

**the budget summary = $916,840.**

**Miscellaneous comments:**

**None**

## Bay Regional Review:

**Proposal Number:** 197

**Applicant Organization:** University of California, Davis

**Proposal Title:** DEVELOPMENT AND TESTING OF AN UNSTEADY RIVER MODEL WITH WATER QUALITY AND SEDIMENT TRANSPORT

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

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

**The regional panel favors action-oriented projects that secure and restore critical habitats in the Bay and Suisun Marsh. Although engineering tools such as this Model are used in some restoration projects, the proposal did not make a clear case that the Model is essential to these action-oriented projects. Consequently, this proposal did not secure a "high" rating.**

1. Is the project feasible based on local constraints?

   **X**Yes **-**No

   How?

   **N/A to this type of project (scientific project)**

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

   **X**Yes **-**No

   How?

   **Yes, BR-7 Improve understanding of links between at-risk species populations + inflows. Its 1st bullet emphaszies Hydrologic/Sediment Transport Models as Restoration Tools. There is a weak connection to the freshwater-seawater interface portion of this goal.**

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

   **X**Yes **-**No

   How?

   **Yes - The HEC model is widely used for flood control projects. Many flood control projects are multi-purpose restoration and flood control projects. Better sediment transport models would benefit both flood control and restoration. Publicly available, low-cost (free ware), software packages such as HEC are a welcome tool in the budget-constrained restoration arena.**

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

   **X**Yes **-**No

   How?

   **A local university (UC Davis) is partnering with the USACE.**

Other Comments:

**Re: the letters of support - letters could be used to make the case that this is a high priority for CalFed's ecosystem restoration program.**

## Delta Regional Review:

**Proposal Number:** 197

**Proposal Title:** DEVELOPMENT AND TESTING OF AN UNSTEADY RIVER MODEL WITH WATER QUALITY AND SEDIMENT TRANSPORT

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

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

**The large scale of this model may limit its ultimate utility. A smaller scale (i.e. a single small watershed) version may result in greater utility.**

1. Is the project feasible based on local constraints?

   **X**Yes **-**No

   How?

   **o The product of this proposal will be a hydraulic model based on an existing HEC-RAS model that will be linked with a water quality model and a sediment transport model. The water quality parameters that will be modeled include temperature, salinity, dissolved oxygen and mercury. Data from the Sacramento River, Cosumnes-Mokelumne system and Cache Creek will be used as test cases.**

   **o The water quality data sets have to be assembled. This will consume a large amount of the work identified for the UC Davis personnel.**

   **o The availability of the sediment transport data is recognized as the most uncertain element of the data sets. This scarcity of sediment transport data is somewhat universal in the Bay-Delta system, thereby demonstrating the need for the development of this capability.**

   **o The assembly of the data sets for the three test case river systems is somewhat of a problem. The proposal addresses this by recognizing that while the data are not perfect they will be satisfactory for model testing.**

   **o No CEQA or NEPA documents will be required to complete the proposal.**

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

   **X**Yes **-**No

   How?

   **o The proposal is broadly applicable to most of the ERP Draft Stage 1 restoration priorities, but in particular it is consistent with Delta and Eastside Tributaries restoration priories 1 (Restore habitat corridors in the North Delta, East Delta, + San Joaquin River), 2 Restore and rehabilitate floodplain habitat in eastside tributaries + the lower Sacramento + San Joaquin Rivers), and 4-8 (Restore habitat to benefit at-risk species, improve knowledge of optimal restoration strategies;implement actions to control NIS;restore shallow water**

**habitats while minimizing contaminants' adverse effects;protedct at risk species using water mgmt. + regulations;understand Delta water issue implications of climate + hydrologic variability), and Multi-Region restoration priorities 5 and 6(ensure that restoration isn't threatened by degraded water quality;ensure at-risk species' recovery by developing conceptual understanding + models that cross regions)).**

**o The models developed in this project will be freely available to users.**

**o The hydraulic model developed will allow end users to add sub-models and components of their own choice; this enhances the utility of the model as an adaptive management tool.**

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

   **X**Yes -No

   How?

   **o Three models will be developed all of which will use the available version of the HEC-RAS model and will interface existing GIS software.**

   **o Input data that will be used in this project will be developed from existing data sets.**

   **o This project will provide the entire user community with a time-varying hydraulic model that will have wide regulatory acceptance and that is directly linked to state of the are water quality and sediment transport models. This will allow modeling of the entire riverine portion of the Bay-Delta on a consistent system-wide basis.**

   **o The products from this project will be linked to assess water flow, water quality and sediment transport, levee stability, and flood control and restoration alternatives.**

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

   **X**Yes -No

   How?

   **o The proposal contains letters of support for the project from the Sacramento Area Flood Control Agency (SAFCA), Department of Water Resources, U.S. Army Corps of Engineers and MBK Engineers.**

   **o No public outreach program is identified. o Project activities will be accomplished through a collaborative effort involving personnel from the US Geological Survey, U.S. Army Corps of Engineers and UC Davis.**

Other Comments:

**(from the PSP Geographic Review panelists): o The large scale of this model may limit its ultimate utility. A smaller scale (i.e. a single small watershed) version may result in greater utility.**

**o The lack of sediment data may preclude model calibration/validation.**

**o The degree to which the model will be user friendly is unknown, but appears likely to be somewhat unfriendly. This could hamper the ultimate utility of the product.**

## San Joaquin Regional Review:

**Proposal Number:** 197

**Applicant Organization:** University of California, Davis

**Proposal Title:** DEVELOPMENT AND TESTING OF AN UNSTEADY RIVER MODEL WITH WATER QUALITY AND SEDIMENT TRANSPORT

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

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

**Needed to make a better case for regional applicability given similar efforts already occuring in region. Needed to make a better case for linkage to ongoing projects in region. CalFed ERP should not be the sole funder of this since it has applicability beyond restoration planning.**

1. Is the project feasible based on local constraints?

   **X**Yes **-**No

   How?

   **Qualified yes. The proponents characterize this as a research and demonstrations project, implying little local input is required.**

   **Water quality data for the three test cases have yet to be assembled or defined so how do they know what constraints they will run into getting what they need?**

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

   **X**Yes **-**No

   How?

   **Qualified yes. They could have made a better case for the applicability by providing more specific examples of applicability by for example referring to the specific goals in the watersheds they will be testing the model in.**

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

   **-**Yes **X**No

   How?

   **Again they could have done a better job showing how their work will specifically link to ongoing restoration activities in the watersheds.**

**How does this differ from some of the efforts by consultants to do this same type of model integration for their clients, using some of the same model components.**

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

   **-**Yes **X**No

   How?

   **They did not really address this since they assume this is purely a research and demonstrations project although there could be the need for local involvement to assemble the data sets.**

Other Comments:

**Worthwhile endeavor but CalFed ERP should not be the sole funder of this since it has applicability beyond restoration planning.**

## Sacramento Regional Review:

**Proposal Number:** 197

**Applicant Organization:** University of California, Davis

**Proposal Title:** DEVELOPMENT AND TESTING OF AN UNSTEADY RIVER MODEL WITH WATER QUALITY AND SEDIMENT TRANSPORT

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

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

**The proposal is useful in that it would build on the HEC-RAS model but it has no field verification or calibration component and would be of limited use to the restoration ecologist.**

1. Is the project feasible based on local constraints?

   **X**Yes **-**No

   How?

   **The project proposes technically feasible laboratory research and modeling that proposes to build on existing sub-component models of sediment transport, water quality and hydrology, which are then to be refined for application in the Sacramento River valley.**

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

   **X**Yes **-**No

   How?

   **The proposal falls within the goals of #7 of the restoration priorities.**

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

   **-**Yes **X**No

   How?

   **While they seemed to contact many of the researchers and agencies that have some jurisdiction in the Sacramento River watershed they have not made a conection with any of the watershed groups that may eventualy want to use their work. They may want to identify a group that they could work with to feild test the model.**

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

   **-**Yes **X**No

How?

**See above. While they have contacted UCD and the Regional Board they have not contacted any watershed groups.**

Other Comments:

**Useful that it would build on the HEC-RAS model but it has no field verification or calibration component and would be of limited use to the restoration ecologist.**

# External Scientific: #1

**Research and Restoration External Scientific Review Form**

Proposal Number: **197**

Applicant Organization: **University of California, Davis**

Proposal Title: **DEVELOPMENT AND TESTING OF AN UNSTEADY RIVER MODEL WITH WATER QUALITY AND SEDIMENT TRANSPORT**

**Conflict of Interest Statements:**
I have no financial interest in this proposal.
**X**Correct
**-**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 | **The dissolved oxygen module for the model would be helpful, but the sediment transport and stream temperature modules are described too broadly to be useful.** |
| **-**Good | |
| **X**Poor | |

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

   **The goal of this project is to formulate a model that can predict river temperature, dissolved oxygen, suspended sediment and bedload, as well as flow quantity. It is a worthy goal, but very broad.**

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?

**Solutions of several river ecology problems would be enhanced by the development of a stronger water quality prediction tool. A myriad of water quality problems exist in California rivers, and the need for better integration of water quality analysis in river studies is high.**

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?

   **I found the overall approach was described too broadly to be of much use. The authors discuss several existing flow models and why HEC-RAS is the best choice for this project. HEC-RAS is already well accepted, so the need to test it against other models (Task 1, $46,000) is unclear. Secondly, several stream temperature models which incorporate solar radiation, topography, shading, etc. already exist, some in the public domain, but none are mentioned. So, Task 3 (798 labor hours to program a temperature model) seems unnecessary and related temperatures tasks (5,6,7 and 8) could be simplified by using existing models.**

   **Third, the description of the sediment transport modules were not specific. Several sediment transport models already exist. Suspended sediment and bedload transport depend not only on flow magnitude, as implied in the proposal, but on the supply of sediment to the rivers, which is not addressed at all.**

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?

   **It is certainly feasible to come up with a general model of sediment mixing, stream temperature and water quality, but the utility of this to address specific problems is unclear. For example, even though mercury contamination is acknowledged to be a problem, the proposed sediment transport model will not be very helpful in assessing site specific contamination problems.**

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 interim goals are listed by year, and refer to the tasks listed earlier, but there is no way to assess the adequacy of such statements as complete water quality sub-models." How well do the models need to represent the data from the field sites to be declared to perform satisfactorily?"**

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 final model, in a user-friendly format, is the project's product. Such a model would indeed be useful, but I have reservations about the approach and feasibility, as stated 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 researchers involved are professionally competent to formulate models, and the letters of support attest that several agencies trust these researchers. The cooperation with USGS, HEC-COE and UC-Davis is laudable.**

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

   **$900,00 over three years seems high. Some costs are unnecessary if the researchers avail themselves to existing sediment transport and temperature models, as noted under approach."**

**Miscellaneous comments:**

# External Scientific: #2

**Research and Restoration External Scientific Review Form**

Proposal Number: **197**

Applicant Organization: **University of California, Davis**

Proposal Title: **DEVELOPMENT AND TESTING OF AN UNSTEADY RIVER MODEL WITH WATER QUALITY AND SEDIMENT TRANSPORT**

**Conflict of Interest Statements:**
I have no financial interest in this proposal.
**X**Correct
**-**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 | **The integration of water quality and sediment transport into the widely used hydrodynamic model HEC-RAS is very timely and would be quite useful for river corridor decision-making in the future restoration efforts. I would recommend this be funded with the requirement that a rigorous peer review panel be set up to review and pass muster on progress.** |
| **X**Good | |
| **-**Poor | |

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

   **This project seeks to develop and test an integrated package of freely available modeling tools to meet the needs of predicting both the features of flow quantity and quality (temperature) and sediment transport. The fundamental hypothesis is stated to be extension of widely accepted hydrodynamics model (HEC-RAS) through the incorporation of water quality and sediment transport. This is not a basic research project but rather more of a demonstration project.**

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?

   **This project is well justified in as much as the separated component models are routinely used in river studies by independent investigators with out integration, thus forcing decision-makers to draw their own conclusions from completely independent studies on the same river. Again this is a demonstration of integration not research per se.**

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?

   **As written this proposal presents a good knowledge of the suite of models to be evaluated for integration abut little description of how model calibration and testing will be accomplished. There is no description of data collection for calibration etc. They do say that ongoing research by HEC plans to develop state-of-the-art sediment modeling within the HED-RAS modeling system over the three year period. This is good as HEC has a good reputauion but I would like to see more explanation in this 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?

   **This proposal falls to provide a good study design that can be evaluated. It leaves to much to reliance on the reputation of the investigators (just trust them that they can do this).**

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?

   **As above specific performance measures to judge how well the project is proceeding are not given. Apparently the annual presentation of results to the Bay Delta Modeling Forum is the primary measure. If this were set so that this level of peer review was given son teeth such as approval of major steps before proceeding then the project may have real merit.**

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 product could have great value if done well and peer reviewed along the way. As presented there is little likelihood that the interpretative outcomes will be of real value to decision-makers.**

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 project team appears to be qualified.**

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

   **The budget seems high without much intensive field work for validation and outside peer review. Also the major development of the sediment transport model appears to be done outside of this proposal so no cost ot this project.**

**Miscellaneous comments:**

**None**

# External Scientific: #3

**Research and Restoration External Scientific Review Form**

Proposal Number: **197**

Applicant Organization: **University of California, Davis**

Proposal Title: **DEVELOPMENT AND TESTING OF AN UNSTEADY RIVER MODEL WITH WATER QUALITY AND SEDIMENT TRANSPORT**

**Conflict of Interest Statements:**
I have no financial interest in this proposal.
**X**Correct
**-**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** |
|---|---|
| **X**Excellent | **As described above, I believe this project will be able to produce a highly useful tool not only for the CALFED Program, but also for a more universal audience as well.** |
| **-**Good | |
| **-**Poor | |

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

   **The goals, objectives and hypotheses are clearly stated, logical, understandable and achievable. The research proposed is most timely and will be an important contribution not only to the CALFED Program, but to water resource professionals everywhere.**

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 Investigators more than adequately make the point that their research and the tool they intend to develop will have quite universal application. They also go to great lengths to describe and justify their effort within the framework of the CALFED program. The potential uses they describe for their product appear reasonable and meaningful, and in the longer term, of value to the Program. The underlying basis of the proposed work is well-described. The selection of the "research" category is correct, although several aspects of the work could also be classified as "pilot" or "demonstration".**

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 overall approach described appears logical, comprehensive and feasible within the 3 year time frame proposed. I do however, question the first step identified. Is "validation" of unsteady HEC-RAS, at a cost of $46K, really necessary, after they have described this hydraulic model as the "backbone" of their effort and "widely used and accepted" by the engineering community? More explanation here would be helpful. Two strengths of the proposed approach are the model testing on three streams being restored within the Program and, the conduct of a training workshop at the conclusion of their effort. The endproduct of this research will definitely add to our knowledge base and enhance our abilities to estimate WQ and sediment transport in an unsteady flow environment. Such a tool will no doubt be of use 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?

   **As mentioned above, I believe the approach described is technically feasible and adequately described within the proposal. Given the credentials of the study team and the technical feasability of the effort, I would rate the likelihood for success as high. Project scale is quite consistent with study 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 performance measures and expected products/outcomes described appear adequate and reasonable for the scale and nature of the project. The peer review and interim reporting built into the process throughout should allow sufficient evaluation 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?

   **The linkage of sediment transport and WQ models to a widely-accepted hydraulic model in a public domain format will be of value not only to the CALFED Program, but also to a more universal audience of water resource managers and professionals.**

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 project team assembled appears very capable of successfully undertaking and completing this research. I view the joint effort proposed between HEC-COE and ucal-Davis as a strength, as I do the inclusion of a USGS sediment transport expert on the study team. Certainly the infrastructure and support systems needed to conduct this research are available.**

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

   **The inclusion of the $450K cost share from the Hydrologic Engineering Center certainly enhances the C/B from the standpoint of the CALFED Program. Overall, perhaps with the exception of the $46K noted above, the costs appear in-line with the anticipated benefits of the model proposed for development.**

**Miscellaneous comments:**

**None.**

## Prior Performance/Next Phase Funding:

**New Proposal Number:** 197

**New Proposal Title:** DEVELOPMENT AND TESTING OF AN UNSTEADY RIVER MODEL WITH WATER QUALITY AND SEDIMENT TRANSPORT

1. Prior CALFED project numbers, titles, and programs: (*list only projects for which you are the contract manager*)

   **00-F08, McCormack-Williamson Tract II Monitoring Program, CALFED ERP**

2. Prior CVPIA project numbers, titles, and programs: (*list only projects for which you are the contract manager*)

3. Have negotiations about contracts or contact amendments with this applicant proceeded smoothly, without persistent difficulties related to standard contract terms and conditions?

   **X**Yes -No -N/A

   If no, please explain any difficulties:

4. Are the status, progress, and accomplishments of the applicant's current CALFED or CVPIA project(s) accurately stated?

   **X**Yes -No -N/A

   If no, please explain any inaccuracies:

5. Is the applicant's progress towards these project(s)' milestones and outcomes to date satisfactory?

   **X**Yes -No -N/A

   If no, please explain deficiencies:

6. Is the applicant's reporting, records keeping, and financial management of these projects satisfactory?

   **X**Yes -No -N/A

   If no, please explain deficiencies:

7. Will the project(s) be ready for next phase funding in 2002, based on its current progress and expenditure rates?

   -Yes -No **X**N/A

   If no, please explain:

Other Comments:

**Applicant has performed well in implementing prior contract**

## Environmental Compliance:

**Proposal Number:** 197

**Applicant Organization:** University of California, Davis

**Proposal Title:** DEVELOPMENT AND TESTING OF AN UNSTEADY RIVER MODEL WITH WATER QUALITY AND SEDIMENT TRANSPORT

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

   **X**Yes **-**No

   If no, please explain:

   **However, due to federal cost-share funds the applicant should consult with the USFWS to see if NEPA compliance is required.**

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

   **X**Yes **-**No

   If no, please explain:

   **If any time and funds that would be necessary for NEPA compliance are covered under the "Project Management" task.**

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:** 197

**Applicant Organization:** University of California, Davis

**Proposal Title:** DEVELOPMENT AND TESTING OF AN UNSTEADY RIVER MODEL WITH WATER QUALITY AND SEDIMENT TRANSPORT

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

   **X**Yes **-**No

   If no, please explain:

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

   **X**Yes **-**No

   If no, please explain:

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

   **X**Yes **-**No

   If no, please explain:

4. Are appropriate project management costs clearly identified?

   **X**Yes **-**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?

   **-**Yes **X**No

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

   **Question 17a = $764,275, and the Budget Summary = $916,840.**

6. Does the budget justification adequately explain major expenses?

   **X**Yes **-**No

If no, please explain:

7. Are there other budget issues that warrant consideration?

   -Yes **X**No

   If yes, please explain:

Other Comments: