

Proposal Reviews

#132: Mercury Watershed Loads and Bayland Methylation Processes in the Northern Reach of San Francisco Bay: Linking Basic Science, Water Quality Standards, and Management Actions in the CALFED Bay-Delta area.

San Francisco Estuary Institute

Research and Restoration Technical Panel Review

Bay Regional Review

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Prior Performance/Next Phase Funding

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Budget

Research and Restoration Technical Panel Review:

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

Proposal Number: 132

Applicant Organization: San Francisco Estuary Institute

Proposal Title: Mercury Watershed Loads and Bayland Methylation Processes in the Northern Reach of San Francisco Bay: Linking Basic Science, Water Quality Standards, and Management Actions in the CALFED Bay-Delta area.

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	There are generally some good ideas presented in this proposal. The particle transport and modeling aspect could stand on its own. Unfortunately, the team has shown that they have little experience in Hg research and would benefit from linking with a proven Hg researcher. The conceptual models and hypotheses show good thinking, but these are not carried through and results in a very weak study with low applicability for management interests.
-Above average	
-Adequate	
XNot 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?

This study appears to lack direction and therefore the goals are difficult to follow. The panel agrees with the PIs that there are serious gaps in our knowledge of Hg cycling in the Bay-Delta Area, but it appears that this project is a few years away from being a good proposal. If stakeholder involvement is a goal of the project, then that phase should actually be completed prior to submission of this type of research proposal. The stated hypotheses are consistent, but could use revision in a more focused study.

Clearly, Hg loading to the Bay is an important topic and processes occurring within the estuary are extremely important to delineate. The conceptual model of Hg cycling is simplistic at best and doesn't integrate details about potential controls on methylation,

Hg-mineral solubility, and partitioning. In order to gain a first-order understanding of the system a much larger monitoring strategy must be employed in concert with process-oriented studies of the sediments, lower food web, and modeling.

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 study has three main parts: Design, assessment and synthesis. Design is driven by stakeholders. Assessment is Hg/MeHg in bed sediments of the Napa and its tributaries, at a fairly large number of locations. The objective is to link Hg concentrations with lithology and watershed sources. Analysis of only Hg, MeHg, OC, fines and other trace metals would be done, limiting the potential interpretation of the data collected.

From the initial reading of this proposal, this proposal sounded like it could be strengthened by association of an expert in the field of Hg to direct the research along the truly pressing needs for understanding cycling. The term methylation efficiency (ME) to describe the percent Hg as MeHg in an aqueous sample was the first red flag. The measurement given here as ME is a reflection of the sum total of numerous Hg processing, only one of which is the efficiency of methylation. That term should be used in the process of the conversion of inorganic to organic Hg. This proposal neither addresses that concept nor directly addresses any process work. Too many important processes are only considered by a crude estimate of their importance.

Without further review on details of misconceptions of cycling, it is strongly recommend that these authors partner with a mercury biogeochemist and resubmit their proposal. The concept is fine. The details and justification are not well thought out. There is almost no information provided on sampling or analytical methods. What lab will run the Hg and MeHg analyses? How will QA be accomplished? If the analytical work will be done in-house, SFEI should show some information of the quality of those analyses to date. These issues remain keys to the success of Hg studies.

Performance measures from this proposal were clear with a timeline and pathway for deliverables. Unfortunately, lack of details in the proposal lead to an inability to assess performance.

With 10 investigators and 3 consultants, all resources in this proposal are spread rather thin. There may not be adequate time for each investigator to immerse themselves in the research.

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?

In its present state the value of the products of this research are quite low. The comment about reuse of wastewater in wetlands appears out of the blue. That is an interesting concept, though and one that may make a nice research project if the geochemical implications are included. This team has little track record in Hg cycling or trace metal cycling. McKees background is in nutrients. Thompson is a benthic ecologist. Yee recently completed his doctoral work on trace metals. Dr. Flegal and his group certainly have the expertise to conduct this project, but their role is not clear. Santa Cruz role in this project was never stated. The budget justification shows no funding to Santa Cruz or Flegal. Division of responsibility and labor among the investigators was not discussed at all.

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

Given the above comments, investment in this project is unwise and the benefits of the proposed research would be low. It would be extremely advantageous to have in-house analytical capabilities for such a proposal--if an interesting trend was observed, additional sampling could be performed. Student training would also be a plus.

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?

High Mercury is a serious problem in the estuary and could impact restoration efforts. This is a well laid out study plan. No permits are needed, local agencies are supportive, the scientific methods are proven. Complements the CALFED mercury project and will provide information for managing the estuary.

The regional panel favors environmental water quality projects (like this one) which will provide information about mercury in the region useful for making decisions about mercury management and cleanup. This project makes direct links to environmental health toxicity (when is mercury available, in which flora or fauna, in which forms and at what concentrations). This project will help with decisions about restoration project design and management.

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?

CEQA compliance would require filing a Categorical Exemption. Notifying BCDC and the State Lands Commission (land use lease) required for sampling. Compliance with DFGC Sec. 1002 would be necessary if the sampling includes collecting macro fauna.

Miscellaneous comments:

None

Bay Regional Review: #1

Proposal Number: 132

Applicant Organization: San Francisco Estuary Institute

Proposal Title: Mercury Watershed Loads and Bayland Methylation Processes in the Northern Reach of San Francisco Bay: Linking Basic Science, Water Quality Standards, and Management Actions in the CALFED Bay-Delta area.

Overall Ranking: -Low -Medium **XHigh**

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

The regional panel favors environmental water quality projects (like this one) which will provide information about mercury in the region useful for making decisions about mercury management and cleanup.

1. Is the project feasible based on local constraints?

XYes -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?

XYes -No

How?

MR #5 (Ensure that water quality doesn't compromise environmental restoration) bullet 2 - Hg

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?

Yes This project makes direct links to environmental health toxicity (when is mercury available, in which flora or fauna, in which forms and at what concentrations). This project will help with decisions about restoration project design and management.

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

XYes -No

How?

The team of scientists is local, and the sample locations are within the region.

Other Comments:

Mercury methylation has a (small?) potential to derail environmental restoration. This project will likely answer scientific questions and avoid a derailment.

Bay Regional Review: #2

Proposal Number: 132

Applicant Organization: San Francisco Estuary Institute

Proposal Title: Mercury Watershed Loads and Bayland Methylation Processes in the Northern Reach of San Francisco Bay: Linking Basic Science, Water Quality Standards, and Management Actions in the CALFED Bay-Delta area.

Overall Ranking: -Low -Medium **XHigh**

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

Mercury is a serious problem in the estuary and could impact restoration efforts. This is a well laid out study plan.

1. Is the project feasible based on local constraints?

XYes -No

How?

No permits are needed, local agencies are supportive, the scientific methods are proven.

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

XYes -No

How?

Water quality, preventing habitat degradation, and informing restoration efforts.

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?

Complements the CALFED mercury project and will provide information for managing the estuary.

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

XYes -No

How?

Local agencies are involved.

Other Comments:

Team thought highly of this proposal.

External Scientific: #1

Research and Restoration External Scientific Review Form

Proposal Number: 132

Applicant Organization: San Francisco Estuary Institute

Proposal Title: **Mercury Watershed Loads and Bayland Methylation Processes in the Northern Reach of San Francisco Bay: Linking Basic Science, Water Quality Standards, and Management Actions in the CALFED Bay-Delta area.**

Conflict of Interest Statements:

I have no financial interest in this proposal.

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
-Excellent	Mercury is certainly an important issue that deserves attention, but I am concerned that the PI's do not have any experience in the research topic they propose to pursue. I also think the team may be spread too thin, and that the investigators will not have enough time to adequately answer the research questions (for a given investigator, the money may run out just as they are developing an understanding of the issues). I think the PI's need to demonstrate a clear track-record of research in this area before full-scale implementation can be justified.
-Good	
<input checked="" type="checkbox"/> Poor	

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

The goals of this proposal are clearly articulated, and mercury is certainly an important issue that deserves attention.

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 PI's do provide a conceptual model for their research, but it was not well explained. For example, the individual research tasks were not clearly tied to the conceptual model. The PI's do not appear to have any experience in the research topic they propose to pursue. I think the PI's need to demonstrate a clear track-record of research in this area before full-scale implementation can be 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 information from the proposed research is likely to be relevant to decision-makers. I am not an expert in this field, so I cannot comment on the technical feasibility of their research.

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?

See above.

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 are clearly stated, and seem appropriate to quantify the success of the project.

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?

If the research is successful, it will provide useful products.

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 PI's do not appear to have any experience in the research topic they propose to pursue --note the very small number of times the PI's cite themselves in the proposal.

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

The budget does appear to be reasonable. One concern is the large number of PIs, which provides only a small amount of money for each investigator. Will this provide enough time for the investigators to get fully involved in the research? Put differently, is the team spread too thin? I would rather see the same budget distributed amongst a smaller number of PI's to ensure there is adequate time to follow through on the research tasks. This comment is particularly germane for this proposal as it appears the investigators are inexperienced in this area of research, and will need time to come up to speed.

Miscellaneous comments:

None.

External Scientific: #2

Research and Restoration External Scientific Review Form

Proposal Number: 132

Applicant Organization: San Francisco Estuary Institute

Proposal Title: **Mercury Watershed Loads and Bayland Methylation Processes in the Northern Reach of San Francisco Bay: Linking Basic Science, Water Quality Standards, and Management Actions in the CALFED Bay-Delta area.**

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
-Excellent	I would rate this proposal poor to good.
-Good	This study has important, clearly stated objectives and a modest budget (by CALFED standards). The conceptual models and hypotheses show good thinking, but these are not carried through into the very weak study and project management designs.
XPoor	

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 to refine the Hg/MeHg budget for the Napa River watershed and sloughs along the margins of Suisun Bay and San Pablo Bay. Particular objectives are sediment transport of Hg and MeHg from these potential sources, and relationships between DO, salinity and MeHg production/transport in the Bays fringing sloughs.

Budgets for Hg and MeHg in the San Francisco Estuary have not been examined in much detail to date. Ongoing study of Hg cycling with CALFED funding has focused on the Delta. This project would add important missing information about Hg and MeHg sources and sinks in the more saline areas of the Bay. It would also provide information about the control of MeHg net production in sloughs.

This project is narrowly and clearly scoped.

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?

A clear conceptual model for Hg transport and MeHg production in the area of study is provided.

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 study has three main parts: Assessment of Hg/MeHg in bed sediments of the Napa and its tributaries, at a fairly large number of locations. The objective is to link Hg concentrations with lithology and watershed sources. Analysis of only Hg, MeHg, OC, fines and other trace metals would be done , limiting the potential interpretation of the data collected.

Assessment of Hg loads from the Napa River, focusing on event sampling of bed sediment transport. This is appropriate to understanding total Hg load. Many other studies show that total Hg and suspended solids are well correlated in a number of fluvial systems. However, experience in other estuaries and rivers shows that MeHg load generally does not occur concurrently with sediment transport or during storm events. Apparently, MeHg load from the Napa will not be estimated. Since the Sacramento and San Joaquin seem to important sources of MeHg to the Delta, is this oversight justified?

Assessment of factors potentially associated with MeHg flux from San Pablo Bay and Suisun Bay Sloughs. Sloughs will be 4 times a year. Only a small number of parameters in addition to Hg and MeHg will be examined, again limited the value of the sample collection for interpreting process.

The design of the slough study is poorly defined. The methods for choosing habitat for study are not spelled out. While DO and salinity are identified as potential key parameters in controlling methylation, no discussion of how these parameters will be assessed in sloughs is given.

Overall the approach appears simplistic, even for the clearly focused goal.

There is almost no information provided on sampling or analytical methods. What lab will run the Hg and MeHg analyses? How will QA be accomplished? If the analytical work will be done in-house, SFEI should show some information of the goodness of those analyses to date. These issues remain key to the success of Hg studies.

Much more information would have been valuable for review of this proposal, including maps

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?

Because of the lack of detail in the experimental and analytical section of the proposal and the lack of track record in this research area by the study team, it is hard to gauge the likelihood of success. The experimental design doesn't quite fulfill the promise of the objectives, goals and conceptual design. This may be most of the team is new to Hg biogeochemistry.

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?

There is not enough detail to assess how performance will be quantified.

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?

Again, because of the lack of detail in the experimental and analytical section of the proposal and the lack of track record, it is hard to judge if valuable products are likely.

Anomalous review of project reports (p. 12 of the proposal) is an interesting concept.

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?

This team has little track record in Hg cycling or trace metal cycling. McKee's background is in nutrients. Thompson is a benthic ecologist. Yee recently completed his doctoral work on trace metals.

Dr. Flegal and his group certainly have the expertise to conduct this project, but their role is not clear. Santa Cruz's role in this project was never stated. The budget justification shows no funding to Santa Cruz or Flegal. Division of responsibility and labor among the investigators was not discussed at all.

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

Hard to tell.

Miscellaneous comments:

External Scientific: #3

Research and Restoration External Scientific Review Form

Proposal Number: 132

Applicant Organization: San Francisco Estuary Institute

Proposal Title: **Mercury Watershed Loads and Bayland Methylation Processes in the Northern Reach of San Francisco Bay: Linking Basic Science, Water Quality Standards, and Management Actions in the CALFED Bay-Delta area.**

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
-Excellent	There are generally some good ideas presented in this proposal. The particle transport and modeling aspect could stand on its own. Unfortunately, the team has shown that they have little experience in Hg research and would benefit from linking with a proven Hg researcher.
-Good	
XPoor	

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

This study appears to lack direction and therefore the goals are difficult to follow. I agree with the PIs that there are serious gaps in our knowledge of Hg cycling in the Bay-Delta Area, but it appears that this project is a few years away from being a good proposal. If stakeholder involvement is a goal of the project, then that phase should actually be completed prior to submission of this type of research proposal. The stated hypotheses are consistent, but could use revision in a more focused study.

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?

Clearly, Hg loading to the Bay is an important topic and processes occurring within the estuary are extremely important to delineate. The conceptual model of Hg cycling is simplistic at best, and needs the association of agency or university entities that could help to better define the research.

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?

From the initial reading of this proposal, I felt that this proposal would be strengthened by association of an expert in the field of Hg to direct the research along the truly pressing needs for understanding cycling. The term methylation efficiency (ME) to describe the percent Hg as MeHg in an aqueous sample was the first red flag. The measurement given here as ME is a reflection of the sum total of numerous Hg processing, only one of which is the efficiency of methylation. That term should be used in the process of the conversion of inorganic to organic Hg. This proposal neither addresses that concept nor directly addresses any process work. Too many important processes are only considered by a crude estimate of their importance.

Without further review on details of misconceptions of cycling, I strongly recommend that these authors partner with a mercury biogeochemist and resubmit their proposal. The concept is fine. The details and justification are not well thought out.

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 project will certainly collect some interesting data, but the likelihood of success in understanding Hg cycling is quite low.

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?

I must say that the performance measures from this proposal were probably the best of those that I have reviewed. It gives a clear timeline and pathway for deliverables and the team should follow this approach in a resubmission.

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?

In its present state the value of the products of this research are quite low. The comment about reuse of wastewater in wetlands appears out of the blue. That is an interesting concept, though and one that may make a nice research project given the geochemical implications are included.

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 research team has little experience in the sampling and analysis of low-level metals. The team needs to be strengthened by the addition of a Hg expert.

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

Given the above comments, investment in this project is unwise and the benefits of the proposed research would be low.

Miscellaneous comments:

External Scientific: #4

Research and Restoration External Scientific Review Form

Proposal Number: 132

Applicant Organization: San Francisco Estuary Institute

Proposal Title: **Mercury Watershed Loads and Bayland Methylation Processes in the Northern Reach of San Francisco Bay: Linking Basic Science, Water Quality Standards, and Management Actions in the CALFED Bay-Delta area.**

Conflict of Interest Statements:

I have no financial interest in this proposal.

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
-Excellent	This proposal falls somewhere between good and poor. While Hg is a timely issue in the Bay Delta system, I found the hypotheses addressed issues that are too site-specific (not portable to other systems, such as process-oriented experiments), or are not likely to show clear relationships with Hg in sediments or water (DO, salinity). I generally thought that the system would be under-sampled spatially and temporally, and that consulting costs would be prohibitive. The attempt to tie monitoring research in with easily managed parameters is a good perspective to take, but it needs to be tied in with a larger, more inclusive study.
-Good	
XPoor	

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

The project goals are clearly stated, and tie directly into the hypotheses. Tasks are clearly related to the stated hypotheses. Mercury contamination is a timely issue within the Bay Delta system; the tested hypotheses address very specific locations, including the relative source strength of historical sediments vs. watershed inputs. Management strategies will be based in part on knowledge of the magnitude of these inputs. I suspect, however, that given

the complexity of the Bay system, a much larger monitoring program may have to be set up to adequately constrain watershed vs. in situ sources, and achieve a mass balance.

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 conceptual model is simple and understandable, but doesn't integrate details about potential controls on methylation, Hg-mineral solubility, and partitioning. While the relative source strength and DO-salinity relationships are important management topics, I believe that in order to gain a first-order understanding of the system a much larger monitoring strategy must be employed in concert with process-oriented studies of the sediments, lower food web, and modeling.

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 adequately addresses the hypotheses in terms of sediment and water collection. Due to the temporal and spatial variability (patchiness) in surface waters and sediments, it would be useful to increase the number of sampling sites to include other tributaries, sloughs, and points within the Bay. This may be constrained by the cost of consultants and analytical costs, however. The proposal is designed towards usefulness to managers, by tying Hg dynamics into simple measurements such as DO and salinity. I fear that such simple relationships will not be easily derived, based upon the complexity of estuarine sediments, hydrodynamics, chemical speciation, and source strengths of Hg.

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 field sampling is very likely to be successful, as the authors are familiar with the sites, and sample analysis will be conducted by respected consultants. The scale of the project is adequate for achieving the stated goals, but again I would state that a larger project involving more parameters than DO and salinity is required to gain an adequate understanding of the systems involved.

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?

Performance measures take the form of QA/QC protocols, quarterly and annual reports, dissemination of information through the web and reports, and peer-reviewed publication. These are adequate steps towards meeting performance criteria.

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 most important product will be information for use by managers and the general public. Most of this information will be pertinent to specific areas within the Bay Delta, and may be of limited portability. This may be sufficient for CALFED, however. While interesting questions to examine, I question whether strong relationships will be found between DO/salinity and sediment/water Hg will be observed.

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 record of Mr. McKee shows that the proposal has strength in its sediment-related activities. My main concern is that only one of the co-PI's has a strong background in mercury research--this may factor into specific sampling-related issues or data interpretation, and ultimately what recommendations are made to management and the public. The strengths of the scientific team are its interdisciplinary nature, and that they are extremely familiar with the local environment.

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

The budget is justified in the sense that it is comprised mostly of monies for sample analysis, while very little goes to salary, supplies, or equipment. It would be extremely advantageous to have in-house analytical capabilities for such a proposal--if an interesting trend was observed, additional sampling could be performed. Student training would also be a plus.

Miscellaneous comments:

Prior Performance/Next Phase Funding: #1

New Proposal Number: 132

New Proposal Title: Mercury Watershed Loads and Bayland Methylation Processes in the Northern Reach of San Francisco Bay: Linking Basic Science, Water Quality Standards, and Management Actions in the CALFED Bay-Delta area.

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

CALFED #99-B06, USBR #99-FC-20-0241 - San Jose State University Foundation - Assessment of Ecological and Human Health Impacts of Mercury in the Bay-Delta Watershed

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

N/A

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

-Yes -No **X**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?

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

If no, please explain any inaccuracies:

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

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

If no, please explain deficiencies:

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

-Yes -No **X**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:

While I administer CALFED Agreement 99-B06 with the San Jose State University Foundation, I have no direct knowledge of SFEIs performance on that project.

Prior Performance/Next Phase Funding: #2

New Proposal Number: 132

New Proposal Title: Mercury Watershed Loads and Bayland Methylation Processes in the Northern Reach of San Francisco Bay: Linking Basic Science, Water Quality Standards, and Management Actions in the CALFED Bay-Delta area.

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

ERP 99-N07 Chronic Toxicity of Environmental Contaminants in Sacramento Splittail- A Biomarker Approach

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

N/A

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

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

If no, please explain any difficulties:

NFWF does not have any direct agreements with applicant, SFEI. SFEI is a subcontractor to 99-N07, 2000-E04.

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

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

If no, please explain any inaccuracies:

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

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

If no, please explain deficiencies:

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

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

If no, please explain:

N/A

Other Comments:

Environmental Compliance:

Proposal Number: 132

Applicant Organization: San Francisco Estuary Institute

Proposal Title: Mercury Watershed Loads and Bayland Methylation Processes in the Northern Reach of San Francisco Bay: Linking Basic Science, Water Quality Standards, and Management Actions in the CALFED Bay-Delta area.

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

-Yes No

If no, please explain:

CEQA compliance would require filing a Categorical Exemption.

Notifying BCDC and the State Lands Commission (land use lease) required for sampling.

Compliance with DFGC Sec. 1002 would be necessary if the sampling includes collecting macro fauna.

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

-Yes No

If no, please explain:

No time or funds are identified for environmental compliance.

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

-Yes No

If yes, please explain:

Other Comments:

Budget:

Proposal Number: 132

Applicant Organization: San Francisco Estuary Institute

Proposal Title: Mercury Watershed Loads and Bayland Methylation Processes in the Northern Reach of San Francisco Bay: Linking Basic Science, Water Quality Standards, and Management Actions in the CALFED Bay-Delta area.

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

Yes -No

If no, please explain:

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

Yes -No

If no, please explain:

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

Yes -No

If no, please explain:

4. Are appropriate project management costs clearly identified?

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 -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?

Yes -No

If no, please explain:

7. Are there other budget issues that warrant consideration?

-Yes No

If yes, please explain:

Other Comments: