Panel Scientific and Technical Review

(Note: Review comments will be anonymous, but public.)

Proposal number: 2001-F209 **Short Proposal Title: Biological Assimilatory Capacity for Se**

1a) Are the objectives and hypotheses clearly stated?

Summary of Reviewers comments:
There were two reviews. Both said yes.

Panel Summary:
The objectives and hypotheses are clearly stated.

1b1) Does the conceptual model clearly explain the underlying basis for the proposed work?

Summary of Reviewers comments:
The reviewers generally agreed. The conceptual model provided is a generic flow chart of Se speciation in the environment. It shows the transformation of inorganic Se to Organic Se by lower trophic level organisms.

Panel Summary:
The Se model is clear and appropriate for this proposal.

1b2) Is the approach well designed and appropriate for meeting the objectives of the project?

Summary of Reviewers comments:
One reviewer thought that the study was well designed. The second reviewer had concerns as to whether the tasks and goals could be accomplished. In particular, there were concerns that the diet might contain multiple forms of Se, and further biotransformation in the fish is likely to result in the appearance of even more organo-selenium forms in its tissues. The success of the effort is essentially contingent upon demonstration of a correlation between a specific Se form and a biological response, but in fact many forms of Se might be present and co-vary in their concentration. This reviewer also found the reference of Biological Assimilatory Capacity (BAC) was an inappropriate measure in this proposal. BAC is a concept typically used at an ecosystem level and should not be used at an individual level.

Panel Summary:
Panel members agreed with the comments listed above. In addition, the panel questioned the approach of using the bluegill, which was not fully explained in the proposal. This is not a native fish in the Bay/Delta system, and it has different feeding habits than the splittail. This made it unclear why it would be necessary to model the Se bioaccumulation in the bluegill. It was also unclear what the justification was behind spiking the Se-rich diet with a range of trace-50 ppm. There was no relation to the average food concentrations in the field and how this relates to the

laboratory treatments. Furthermore, the design should account for the different types of Se diets rather than one Se diet.

The panel felt that objective #3 was the weakest link of the proposal. There is no doubt that a field component would provide some essential information to the study. However, as proposed, there are serious deficiencies in the absence standard biological and ecological parameters that should be measured as part of a field collection. Measurements such as age (critical for understanding the duration of exposure), diet (an important route of exposure) and other aspects of life history should be addressed. It is also unclear as to the ability to collect bluegill at these stations. There is data that suggests that bluegill do not occur in great abundance in these rivers (USGS NAWQA studies). Other comments from the panel included the question as to the ability to rear and spawn bluegill in the laboratory. Again, the ecological significance is not clear.

1c1) Has the applicant justified the selection of research, pilot or demonstration project, or a full-scale implementation project?

Summary of Reviewers comments:
Both reviewers felt that this was research.

Panel Summary:
Panel members felt this was adequately described as research.

1c2) Is the project likely to generate information that can be used to inform future decision making?

Summary of Reviewers comments:
If successful, the results would certainly improve decision-making, although it's uncertain as to whether definitive results would be possible.

Panel Summary:
There was general concern regarding the lack of only using one form of Se in the diet as well as the ability to control that form of Se for the duration of the experiment. The panel agreed with the technical reviewers comment as noted below.

2a) Are the monitoring and information assessment plans adequate to assess the outcome of the project?

Summary of Reviewers comments:
These plans are not applicable to a research project lacking a pilot or demonstration phase.

The second reviewer had some concern that the number of samples collected and the specific sampling locations were not mentioned.

Panel Summary:
The panel agrees that monitoring is not applicable.

2b) Are data collection, data management, data analysis, and reporting plans well-described, scientifically sound and adequate to meet the proposed objectives?

Summary of Reviewers comments:
One reviewer said yes. The other reviewer felt that it was not entirely clear how the data would be handled.

Panel Summary:
The panel thought data management was sufficient.

3) Is the proposed work likely to be technically feasible?

Summary of Reviewers comments:
One reviewer said yes. The second reviewer had concerns about the Se diet and the ability to control Se speciation in the food.

Panel Summary:
The laboratory portion is feasible, however the field component of this study is incomplete and is questionable in its present form.

4) Is the proposed project team qualified to efficiently and effectively implement the proposed project?
Summary of Reviewers comments:
Both reviewers felt that the researchers were well qualified.

Panel Summary:
The team is well qualified for objectives 1 and 2, however, technical expertise to successfully achieve objective is 3 is lacking.

5)Other comments

One reviewer felt that the task breakdown was unclear. Tasks and objectives should have been made consistent throughout the proposal.

Overall Evaluation
PANEL SUMMARY COMMENTS

The tasks and objectives were clear for objective 1 and 2, however there was significant discussion with regard to the ability to accomplish objective 3. The panel members agreed with the technical reviewer that the concept of BAC is not applicable in this study. BAC is used to determine an assimilatory capacity at a community or ecosystem level, not at the individual level. It is not clear how the applicants propose to adapt the method as a measurement to obtain their objectives. The panel suggests that the proposal can be strengthened by adding an ecologist for Task 3 and to re-design Task 1 based on the comments above.

The technical reviewers had two opinions. The rating of "very good" is from a land/water use analyst. The second reviewer is an experienced aquatic toxicologist and rated the proposal "good".

Summary Rating

Excellent
Very Good
Good
Fair
Poor

Your Rating: FAIR