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November 16, 2006

Ms. Song Her
Clerk of the Board
State Water Resources Control Board
P.O. Box 100
Sacramento, CA 95812-0100

Subject: Sediment Quality Objectives
Enclosure: 1) References

Dear Ms. Her:

We appreciate the opportunity to submit these comments on the informational scoping document for the Development of Sediment Quality Objectives for Enclosed Bays and Estuaries dated August 17, 2006.

Summary: The Development of the Sediment Quality Objectives is a very ambitious program. When adopted it represents a significant step toward improving and managing the water quality of the enclosed bays and estuaries of the State. The draft Sediment Environmental Document (dSED) must clearly state the objectives and describe in detail the new methodologies used to judge whether the sediment being sampled will be toxic or not. The dSED will require accompanying implementing guidelines that are clear and understandable. Because project is multi-phased consisting of two phases that are interdependent we recommend that a single SED be prepared with a supplementary SED prepared upon completion of Phase II.

Our comments are organized by the relevant sections in the above August 17 scoping document.

Section I. Introduction

1.4 Proposed Activity The scoping document for the draft Substitute Environmental Document (dSED) focuses on Phase I of the development program to adopt sediment quality objectives (SQO) for Enclosed Bays and Estuaries that protect a limited set of designated beneficial uses; namely those that are directly dependent on the sediment quality, the benthic community, and those that are indirectly dependent on the sediment quality, limited to human health by setting safe consumption levels of contaminated seafood harvested from the bays. Phase II is to develop SQOs that will protect all the designated beneficial uses that are directly and indirectly dependent on the sediment quality. Because the project is multi-phased, our view is that a single project dSED should be prepared describing the entire project based the requirement in CEQA Section 15165 Multiple and Phased Project and Section 15168. A supplemental dSED is acceptable for the final phase of the project.

1.5 Program Goals
Describe the Plan by phases such that the adopted sediment quality objectives will upon completion of the phases protect all the relevant designated beneficial uses listed in each water body Basin Plan. See comment on section 2.6

2.0 Issues and Alternatives

2.1 The dSED for the Sediment Quality Plan should clearly state that the recommended Alternative 3 is for Phase I, which is to develop the sediment quality objectives for the direct effects on the benthic community and to protect human health by setting contamination levels and consumption rates for seafood harvested in enclosed bays.

2.2 Besides listing the applicable waters, the Sediment Quality Plan must recognize that there are site specific differences among these waters. The CEQA guideline §15125 requires a description of the environmental setting. Conceptual site models for each of the water bodies should be contained in the Sediment Quality Plan to meet this requirement. The conceptual site models are also valuable for the management of the assessing and managing contaminated sediments. A site specific conceptual site model is important because it identifies exposure pathways, receptors, and a selection of potential response actions. Elements of the site conceptual model include the geology, hydrogeology, sources and sinks of contaminants, historical depositions, tidal and human caused energy sources that disturb the sediment, physical and other properties of the sediment. Apitz, et al, explain the importance of a detailed conceptual site model for assessing and managing contaminated sediments [Apitz].

2.4 1st sentence. Appears to be a typo “protected” should be “protective”. The 2nd sentence, which states the tools may not protect all species in a water body, needs to be clarified. Does this refer to the SQOs and supporting tools just for Phase I or all phases of the sediment quality planning? If the latter is true then the SQOs with all phases completed would not comply with the basin plans to protect the designated beneficial uses in the bays and estuaries.

2.6 Beneficial uses for enclosed Bays and estuaries, Table 2.1, should include Wildlife Habitat. The last sentence on page 10 is unqualified and could be understood to apply to the Plan with all the phases completed. If that is the intent then we disagree. We disagree with alternatives 1 and 2. There should be a third alternative defined by the designated beneficial uses with all the phases completed consisting those listed in Table 2.1 plus the Wildlife Habitat with the exception of Industrial Service and Navigation. The document should state that there is a subset of designated uses applicable only to Phase I described by the target receptors, namely the benthic community and human health. We disagree with the Alternative 2, uses linked to specific receptors, because it is only provides examples.

2.7 Typo, first paragraph, line 9. Table 1 should be Table 2.1
2.7 Alternative 3. The World Health Organization has established toxic equivalent factors (TEF) for dioxin-like PCBs for birds, humans and fishes. These TEFs indicate that birds are the most sensitive next are humans and lastly fishes [EPA 2000] to the dioxin-like PCBs. Phase II should be addressing these indirect effects for the upper trophic levels. The last sentence should be amended to read; “Additional receptors and information on pollutants in the sediments must be evaluated in the later phases of the program.”

2.9 Human health. There three issues of concern. First issue is who to protect in the population. The SQO program should protect the all sectors of the human population; the most sensitive including fetuses, children, women of childbearing age, the infirm and the elderly plus ethnic populations and subsistence fishers with seafood consumption rates that are higher than the norm. Therefore, we disagree with the staff recommendation for consumption rate Alternative 6, that used by OEEHA.

The second issue is that the SQO should be based on chemical contaminants in all seafood that is consumed by the human population and not just fin fish.

The third issue is how to define the protected conditions in Phase I for human health. The staff recommendation is to use the consumption of carcinogens in fish tissue as the protective condition. It is unclear why staff restricts the health risk to carcinogens. The SQO for Phase I should add the protective conditions for non-carcinogenic chemicals in seafood that pose health risks such as methyl mercury, arsenic and other heavy metals.

2.10 The discussion presented in this section on multiple lines of evidence includes indirect (non pollutant) stressors such as organic matter, grain size, etc. This section should discuss the need for a conceptual site model, which would include these indirect stressors. The importance of the conceptual site model in assisting and managing contaminated sediments was noted in the previous comments. For example a site conceptual model for San Diego Bay would reveal multiple indirect stressors such as low tidal exchange, storms that are sufficiently severe to modify the sediment physical and chemical properties. Stressors caused by human activities include polluted urban runoff, the presence of commercial and Navy shipbuilding facilities, large Naval bases, and ships churning up and modifying sediment aerobic and pH conditions and exposing legacy contaminants in the sediments.

Other issues

The Plan addresses the sediment quality in just the surficial layer. The reason that is given is that the majority of the benthic community resides in surficial layer (approximately 2 cm thick). However, the Plan does not address the matter of successional changes that occur in the benthic community in response to contamination [Rosenberg]. Examining just the top layer does not give sufficient insight on the ecological health of the water body. This limitation of the SQO should be acknowledged and future work should address this issue. It is important to understand the holistic effects of contamination on the marine benthic community [Scott].

Developing the final SQOs Phase I and II, direct and indirect effects will be an iterative process, especially for the chemical contaminants that bioaccumulate and biomagnify. It is understood that Phase I will released prior to Phase II. Because Phase I only evaluates the fish tissue contamination from a human health risk standpoint and does not determine the source of contamination in the sediments, no useful link can be made to the direct effects assessments of the sampled stations in a given water body. The condition in Phase I can lead to administrative problems in taking actions faced with the range of possible outcomes at a given station or set of stations for the direct effects and fish tissue concentrations levels within a given area of a water body. Consider, for example, a case where several sites in the water that are assessed as being unaffected using the Phase I methodology but the human health risks are found not to be acceptable in the fish tissue levels within the proximate area of the sites. What action should be taken? The decision to use the phased release should be carefully considered in light of the administrative and compliance issues that could

arise. If the decision is to phase the releases, the adequate guidance on how to interpret the results and actions to take should be provided.

Section 3.0 Preliminary Draft Plan

3. I, Page 37, footnote numbering. Typo in footnote number, which starts with 2 or missing footnote 1. See Table 3.1, which has a footnote "1" without any reference notes.

3. III, Table 3.1. The beneficial uses listed should apply only to Phase I. The term "this policy" is ambiguous and should be clarified.

3. I. A. The title "Aquatic Life" can be misleading as this could refer to the other life forms besides the benthic community. Recommend change to "Benthic Community".

3. V. D, Field Procedures and 3. V. E. Laboratory Testing
Item 1 in the Field Procedures prescribes a grab sampler. This is not sufficiently detailed to make a general comment on the details of implementing the Plan. The Plan should be accompanied by detailed information on field (monitoring) procedures and laboratory testing.

3. V. H 1. This paragraph should state that the analytes in Appendix A apply only for the direct effects (benthic community). The statement that the inclusion of additional analytes cannot be used in the exposure assessment should be explained for clarity for the benefit of the reader not familiar the development of exposure assessment. Clarify the sentence replacing "data" with "additional analytes."

3. V. H. 4. The description of the Chemical Category Score approach is not adequate. We recommend the third sentence be revised to read: "The predicted benthic effect category effect for each chemical is determined by comparing the chemical concentration to a series of three increasing threshold levels T1, T2, and T3, which define four effects categories 1, 2, 3, and 4. Category 1 is for chemical concentration levels below T1, Category 2 for concentration between T1 and T2, and so forth."

Page 46, first complete sentence; replace "benthic category score" with "chemical category score". On page 46, last line preceding Table 3.5, replace "Effect values" with "Threshold values". As stated previously, the Plan must have detailed descriptions to support the various new methodologies used. The Chemical Category Score should include an in-depth, peer reviewed technical paper on this newly developed method.

VI. Human Health. The term "fish" can be confusing as it can mean fin fish or the more inclusive definition according to the U.S. Food and Drug Administration definition to include shell fish, molluscan crustaceans, and other forms of aquatic life excluding birds and aquatic mammals. [USFDA]. For the purposes of this comment letter we are using seafood to mean the USFDA definition that is consumed by the public. The dSED should provide a complete list of known seafood that is consumed by humans in the enclosed bays and estuaries. We also recommend that the Glossary include a definition of "fish" and or "seafood" to avoid confusion.

Phase I addresses the human health risk assessment in consuming seafood. It does not address the sources of the contaminants in the sediments. The chemical analytes in Appendix A does not include a complete list of chemicals that bioaccumulate in seafood and pose human health risk. We recommend that Appendix A be amended with those chemicals known to bioaccumulate in seafood

and pose human health to be monitored and used for information purposes. The data would also be useful for developing the SQO for Phase II. The PCB list should include additional congeners that are dioxin-like noted in the above comment on Section 2.7.

3. VII. 5. Design. Item c. The statement that the Stratified Random network will provide the most useful information is an unqualified statement exclusive of selective sampling stations and should be revised. The conceptual site model and existing sediment quality data may require fixed grid sampling sites to obtain trend data, effectiveness of existing remediation measures, detailed data on existing sources of pollutants such as storm drains, creeks and rivers entering the bay. In San Diego Bay a combination of both random and fixed selected networks of sampling stations have and are being used.

3. VII. 5. Design Item e should be revised because it incorrectly states that Section II. B describes receiving water limits but there are no such limits there. Should it refer to VII.A? The basin plan for each of the water bodies in Section II.B prescribes the receiving water limits. NPDES permitees with sediment monitoring requirements and Total Maximum Daily Load programs requiring sediment monitoring would be candidates for targeted designs.

3. VII [7] Item b. Define "Regional". Does it mean hydraulically contiguous water bodies such as San Francisco Bay and the Deltas, regional with some prescribed geographical boundaries? Item c. Replace "Sediments" with "Stations".

4.0 Glossary The definition of the terms given to describe the salinity levels in the water bodies used in the glossary is different from Venice system used by U.S. Geological Survey [USGS]. Euhaline is a case in point. The glossary defines the Euhaline salinity ranging from 25 to 32 psu. It should be noted that the salinity in San Diego Bay exceeds 32 psu especially in lower San Diego Bay.

We recommend the Venice system salinity classification of a water body be used in the Glossary as shown:

- Oligohaline Salinity 0.5 – 5 ppt
- Mesohaline Salinity 5 -- 18 ppt
- Polyhaline Salinity 18 – 30 ppt
- Euhaline Salinity 30 – 40 ppt

The difference between psu and ppt for the purpose here is insignificant.

This concludes our comments. Thank you.

Sincerely,

Water Issues
Sierra Club
San Diego Chapter

References

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