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HUNTERS POINT
SSIC NO. 5090.3

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IX

75 Hawthorne Street
San Francisco, Ca. 94105-3901

October 6, 1994

Mr. Raymond E. Ramos
Western Division
Naval Facility engineering Command
900 Commodore Drive
San Bruno, CA 94066-2402

Subject: Phase 1A Ecological Risk Assessment, Vol 1-3 Review,
Hunters Point Annex

Dear Mr. Ramos:

Enclosed please find the Environmental Protection Agency's (EPA) comments regarding the subject documents dated July 15, 1994. We had reviewed these task reports with the intention of providing our comments and guidance to the Navy prior to issuance of the Phase 1B Work Plan. However, having just received the Phase 1B Work Plan, obviously our comments can not be incorporated into this version. Therefore, we are providing these comments on the Phase 1A Task Reports as an indicator of issues and discussion items that will be raised in the October 14, 1994 meeting. We will still review the Phase 1B Work Plan and are anticipating providing comments and guidance to the Navy based on discussions held during the upcoming meeting.

In general, the Phase 1A Ecological Risk Assessment (ERA) Task Summary Reports are comprehensive and well written. We have reviewed these documents with particular emphasis on Task 6 with the intention of providing the Navy useful guidance in developing the Phase 1B ERA Work Plans.

We would like to stress that we believe the most important objective of the forthcoming Phase 1B ERA is ensuring that the study design allows the Navy to determine the impact to the environment from site related activities. Although it is difficult to determine if this objective will be reached based on the limited information presented in Task 6, it does appear that the Navy has demonstrated a very thorough understanding of the general ecological conceptual models. However, we do feel that additional discussions are warranted regarding appropriate site-specific assessment and measurement endpoints.

In addition, from the information presented, it appears that the ERA needs to be carefully scoped to limit what could be a substantial study of the effect of contaminants on higher trophic levels. Based on the uncertainty surrounding this effort (i.e modeling of food web effects, etc.), we suggest the Navy focus its efforts on determining the sources of offshore and near shore contaminants relative to site specific receptors with the ultimate goal of expedited remediation, if required.

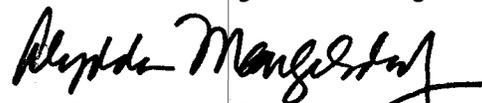
As mentioned above, our objective was to provide the Navy useful guidance regarding the Phase 1B Work Plan prior to issuance. Although we did not meet this objective, we hope these comments will give the Navy an indication of issues that will be raised at the meeting. We will plan to assist in determining the best way to incorporate these comments into the Phase 1B effort, as appropriate, during the meeting.

If you have any questions regarding these comments, please feel free to contact Alydda (415) 744-2385 or Sheryl at (415) 744-2410.

Sincerely,



Sheryl Lauth
Remedial Project Manager



Alydda Mangelsdorf
Remedial Project Manager

Attachment

cc: RAB distribution list

EPA's Comments Regarding the Phase 1A Ecological Risk Assessment
Volumes 1 through 3, dated July 15, 1994

GENERAL COMMENTS

1. As part of the ERA at HPA, additional information is needed to identify the source(s) of contaminated sediments. As outlined in EPA's letter dated August 8, 1993 regarding results of the Environmental Sampling and Analysis Plan (ESAP), results of the sediment component of the ESAP suggest that considerable contamination of bay sediments has occurred, both historically and presently. In addition, the chemical and to some extent the biological data suggests that concentrations of contaminants in near shore sediments are higher than concentrations detected at reference areas, the chemical concentrations do cause biological effects and may be bioaccumulating in higher organisms.

Without identifying the sources of sediment contamination, any removal or remedial action, if required, will likely provide only temporary relief from contamination. Therefore, we would urge the Navy to develop a plan that allows for correlation of the chemical and biological data collected during the Phase 1B effort to appropriate source information, whether the sources are the result of HPA or off-site activities.

For example, to determine the impact to ecological receptors from HPA activities it is important that sources be adequately identified prior to collection of samples so that sampling locations can be selected to correspond with the identified source(s). Further, it is important that the species selected as measurement endpoints be linked to the appropriate media (e.g. bottom-feeding fish and sediment dwelling invertebrates can be appropriately linked to sediment contamination). For a further example, one of the data gaps listed under section 6.4.2 is to determine the adverse effect of contaminants on benthic macroinvertebrates and the secondary effect on consumers. While we agree that this is an important data need; we do believe it is equally important to link the effect, if any, back to a source to determine if and to what extent remediation would be required.

To determine the contribution, if any, from outside sources, it is important that appropriate reference locations be identified and agreed to prior to sample collection and that appropriate statistical methods for comparison of the data are identified and approved by the agencies.

2. Determination of the chemicals of potential concern (COPC) requires further evaluation. For example, no chemical should be excluded as a COPC because there are no criterion for that particular chemical. Further investigation into the potential toxicity and bioconcentration/biomagnification of the chemical should be addressed.
3. Literature or site related references should be provided to lend additional support to the measurement and assessment endpoints selected. Particularly with respect to the types of species selected and their food sources (i.e. for example, what site specific information was used to determine the extent the loggerhead shrike utilized HPA habitat?).
4. Particular emphasis on the selection of the assessment and measurement endpoints requires further development (resulting in the selection of different species). In particular, the assessment and measurement endpoints chosen at this time are not site-specific. For example, the identification of the Brown Pelican as an assessment endpoint does not answer questions regarding site-specificity to use an avian species that is present year-round and feeds close to the shoreline. Both the terrestrial and aquatic assessment and measurement endpoints require further discussion regarding the selection of additional and/or different target species. The first step in the selection process should be selection of a site specific species.
5. Although the mobility of pelagic fish makes it difficult to determine the link to site specific contamination, they are an important food source for some piscivorous birds (i.e. the Brown Pelican) and a good indicator of water column contamination. Therefore, the Navy should consider evaluating these fish as part of the assessment model based on appropriate prey/predator relationships. For example, we agree that the halibut, a benthic feeding, higher trophic level carnivore is an important assessment endpoint based on the potential exposure to sediments, however, it would also be useful to be able to link tissue concentration detected in halibut to avian receptors.
6. The type of bioaccumulation model proposed should be explicitly referenced and explained in the Phase 1B Work Plan along with the data base sources that will be used to compare levels of contaminants in tissue to determine the potential for contaminants at HPA to pose significant hazards to receptors.
7. As acknowledged in the document the peregrine falcon and red-shouldered hawk forage over large areas, therefore how

will the percentage of foraging habitat represented by HPA be determined? How will the importance of foraging grounds at HPA be determined for raptors?

8. This document goes into great detail on the potential off-source contributors. Additional emphasis should be placed on the characterization of the Hunters Point COPC contribution.
9. We suggest using the data collected during the ESAP, particularly the chemical data, to focus future sediment sampling. These data can be used to select a local reference area, if appropriate, and can be used to limit the number of bioassays that would be required by using a no observable effects level (NOEL) type interpretation to focus remediation of sediments, if required. In addition to the site specific data, there are a number of documents with sediment guidance values that would be applicable for use with sediment data from the San Francisco Bay area. For example, the NOAA ER-L and ER-M values have been updated (Long et al., 1993. Incidence of Adverse Biological Effects within Ranges of Chemical Concentrations in Marine and Estuarine Sediments. Envir. Manage.). The Washington State Sediment Management Standards (SMS) include effects-based guidance values for a number of chemicals not listed in other guidance. The SMS also include normalization of the organics and PAHs to total organic carbon (TOC), due to the effect of TOC on bioavailability. This normalization should be included in the sediment evaluation process of HPA. Additional guidance for sediment evaluation can also be obtained from the Ontario Standards (Persaud et al. 1991). The Provincial Sediment Quality Guidelines, Water Resources Branch, Ontario Ministry of the Environment (Draft).

SPECIFIC COMMENTS:

Executive Summary

1. Page 4: Please state how the COPC that had no criterion were dealt with.
2. Page 10, 3rd paragraph: The ingestion of sediment by shorebirds is an extremely important pathway that has not been addressed (see paper by Beyer et al., 1992). Soil ingestion by Wildlife. Patuxent Wildlife Research Center.
3. Page 14, 1st paragraph. One important mechanisms for transfer of COPC is suspended particulate and colloidal matter. The high surface area and the ease of transport of the particulate matter create a potentially significant pathway.

4. Page 14, 3rd paragraph. Please construct a conceptual site model to predict which receptors may be affected from food chain transfer.
5. Page 15, 1st paragraph. Please note that loggerhead shrikes feed on snakes, lizards and small birds as well as insects. The reptile and amphibian component has not been addressed.
6. Page 16, 1st paragraph. Please incorporate more recent refinements to the EPA framework document.
7. Page 18. There is no reference for the risk associated with reptiles and amphibians. Please include them in the conceptual framework.
8. Page 18, 3rd paragraph. The measurement endpoints need to incorporate effects as well as bioaccumulation studies. Consider terrestrial bioassays, such as earthworm or amphibian bioassays, to aid in the assessment of risk.
9. Page 19, 2nd paragraph. In the indirect measurements of potential contaminant concentrations, the percent of time that particular organisms spends in a particular habitat, and the percentage of the various types of food that are eaten by a particular organism need to be addressed. These decisions need to be made before measurements and assessment endpoints are selected. Very clear and concise decision trees should be developed to determine why a particular species was chosen (what will the data present), how risk is determined, what the information that is obtained will indicate and what action(s) will need to be taken at the conclusion of the risk assessment process. Because there is uncertainty (model, parameter, variability) within each step of the process, a sensitivity and uncertainty analysis should be performed within the context of the risk assessment.
10. Page 19, 3rd paragraph. A shorebird with high sediment ingestion rates should be included in the aquatic assessment.

Development of site-specific assessment endpoints needs additional discussion. For example, regional protection of the bird species is not an objective for this investigation. Effects on avian species that can be linked to site-specific COPC need to be developed (i.e. migratory birds are not good candidates for assessment endpoints). Fish species that can be directly related to the site (e.g. territorial benthic species) are more appropriate than highly mobile fish species.

11. Page 21, 2nd full paragraph. Although the societal value of

a particular species is important in selecting an assessment endpoint, additional discussion should be mad regarding the value of that particular species to the ecological system. Ultimately, we are trying to protect the system from degradation, and some species are better indicators of perturbations to the ecosystem as a whole. For example, benthic invertebrate community structure and function can tell a great deal about the overall health of the aquatic ecosystem.

12. Page 24, Data Gaps. Characterization of the extent and magnitude of the onshore and offshore contamination needs to be addressed as an additional data gap. In the context of magnitude of deleterious effects, an outline should be made on the media-specific characteristics that influence bioavailability and toxicity. This will also need to be addressed under the uncertainty analysis.

Determine the process to evaluate what media, locations(s), and chemical or biological testing will be evaluated. The determination of site-specific contamination (effects, exposure, chemical concentration gradients) extent and magnitude needs to be added as a data gap. Too much attention is placed on the contributions from off-site areas. More emphasis should be placed on contributions from HPA.

13. Page 25, 1st bullet. Include AVS/SEM analyses and redox potential.
14. Page 26, 1st bullet. "Ambient levels" needs to be clarified. What constitutes ambient levels; does this include both organics and inorganics in all media?
15. Figure 1. Is there no surface freshwater at HPA? Amphibians were identified as utilizing the habitat, yet no information is provided on the freshwater availability at the site.
16. Figures 4-7. The contaminated biota pathway should be included in each figure. Each parcel contains habitat for ecological receptors.
17. Figure 8. Please include amphibians and reptiles in the food web(loggerhead strikes will feed on reptiles).

Burrowing owl should be considered as an assessment endpoint site-specific information).
18. Figure 9. Shorebirds can ingest a large amount of sediment and should be included in the model.

Task 1

19. Page 1. More details should be provided on the 10 acres of wetlands. What assessment and measurement endpoints will be chosen to assess risk to the wetland?
20. Page 33, Table 1-2. Under the environmental investigations (EMCON), please clarify which regulatory target levels were used and what media or tests were compared to the target levels.

Task 2

21. Page 4. The mean TOC concentration should not be used to normalize the sediment data. Rather, the range of concentrations or the site-specific concentrations that correspond to the chemical analytes should be used.
22. Page 8. By using 1/2 the detection limit, a totals concentration may exceed the regulatory criteria; however, this does not necessarily mean that the chemical concentrations is a false positive. It only indicates that the detection limits were not low enough to effectively evaluate the data from a risk perspective.
23. Page 9, 2nd paragraph. What constitutes the demarcation between on- and off-shore?
24. Page 28, 2nd paragraph. Chemicals should not be excluded as COPC because there are no criteria. In addition, because aquatic organisms can accumulate this element to concentration one or more orders of magnitude greater than in food or water, and biomagnification usually ranges from 2 to 6 times between producers and the lower consumers, this element should be considered as a COPC.
25. Page 30, 2nd paragraph. Because most species of aquatic organisms rapidly bioconcentrate PAHs (especially mollusca and other species incapable of metabolizing PAHs), the PAHs should be COPC, evaluated both individually and by comparing total PAHs to regulatory guidance. Comparison to regulatory guidance for total PAHs should include only those PAHs that were used to develop the guidance value. In addition to ER-L and ER-M values, it is recommended that the Washington State Sediment Management Standards are used as an additional guidance.
26. Page 31, 2nd paragraph. Please include the pesticide benzenehexachloride as a COPC due to the toxicity and bioconcentration potential.
27. Page 31, 4th paragraph. Please include endosulfan as a COPC due to its toxicity potential.

Page 31, 2nd and 3rd paragraphs. Please include heptachlor and methoxychlor as COPC due to their toxicity potential.

Page 33, 2nd paragraph. Please include the phenolics as COPC due to their toxicity potential.

Page 33, 3rd paragraph. Please include bis(2-ethylhexyl) phthalate, as COPC due to their bioconcentration and toxicity potential.

Page 33, 4th paragraph. Please include bibenzofuran as a COPC due to its toxicity and bioconcentration potential to fish, crustaceans, aquatic insects, and aquatic plants.

Task 3

28. Page 3-6, top of page. The double-crested cormorant should be considered as an assessment endpoint. The birds are resident year-round, they may nest at HPA, and they feed predominantly on sedentary fish, thus site-specificity can be assessed.
29. Page 3-7, 4th paragraph. It is highly recommended, due to the society and ecological importance of the saltmarsh wetlands at this site, that conceptual models are developed to assess risk to the wetlands.

Task 4

30. Page 1, 4th paragraph. More detail and explanation should go into the toxicological profile summaries. In particular, the aquatic effects summaries are weak. For example, selenium effects to aquatic organisms and birds have been well-documented. This information should be included in the toxicological summaries.
31. Page 28, last paragraph. Aliphatic fractions of fuel oil can be transported to the microlayer; however, the conclusion that once in the microlayer the hydrocarbons are weathered by evaporation. leads one to believe that there are no effects to aquatic organisms from the microlayer. There is an increasingly large body of evidence that important aquatic processes take place in the microlayer and the effect of the hydrocarbons may be far greater to aquatic organisms from contaminant bioconcentration within the microlayer. Furthermore, there is concern over the transport of contaminants to the shoreline sediments via the microlayer. This pathway should not be discounted.
32. Page 38, 1st paragraph. There are sediment guidance values for lindane (Ontario Standards).

33. Page 51, 1st paragraph. The ER-L and ER-M values should be updated.
34. Page 54, 1st paragraph. The PAHs should be normalized to TOC because TOC influences bioavailability.
35. Table 4-1 Please incorporate the new guidance values.
36. Table 4-3. Bioassays and bioaccumulation studies should be conducted only on the biologically active zone (2-10 cm). Cores should be used to answer questions regarding historical data. By compositing the biologically active zone with deeper zones, information is lost on the use of the data.

Task 5

37. Page 5-5, 3rd paragraph. Sediment exposure through ingestion is a significant pathway for shorebirds.

Task 6

38. Page 1, 4th paragraph. Are site specific data available to verify the soil pH ranges?
39. Page 2, 1st full paragraph. See general comment #1. While we agree with the content of the paragraph, we would stress that the first step in determining if food web transfer is a significant pathway is dependent on determining if contaminants are of concern at lower trophic levels. As acknowledged in this paragraph, site-specific bioavailability information (as well as concentration and bioconcentration potential) is required to determine potential effects at higher trophic levels.
40. Page 2, 2nd paragraph. Please provide site specific reference information, if available, used to determine which birds have been observed at HPA. The loggerhead shrike, for example, was not identified in the habitat assessment included in the Screening-Level Ecological Risk Assessment (EPA, April 1994). In addition, it would be useful to understand the relative number of individual birds and the frequency or duration of use to better understand the importance of HPA as habitat. This will be of particular importance in selecting assessment endpoints.
41. Page 3, 1st full paragraph. We agree with the content of this paragraph and would like to add that the forthcoming Phase 1B effort should be focused on assessing the impact, if any, on the primary consumers for reasons outlined in the paragraph.

42. Page 4, 1st full paragraph. See General Comment #4. Table 6-1 provides a thorough presentation of the potential measurement and assessment endpoints, however we suggest discussing appropriate endpoints at the upcoming ecological meeting.
43. Page 4, Section 6.3.1. See General Comment #7. As discussed in the text, the peregrine falcon and red-shouldered hawk forage over large ranges and as such it will be difficult to determine the percentage of foraging range represented by HPA. Therefore, we suggest discussing this further at the ecological meeting.
44. Page 6, 2nd full paragraph. The bioaccumulation studies on terrestrial invertebrates will not give direct measures of the potential contaminant concentration of prey to the loggerhead shrike because a large percentage of a shrike's diet is composed of reptiles. Information on the percentage of types of prey consumed must be developed before measurement endpoints are selected.
45. Page 7, 1st full paragraph. There should be further discussion on the assessment and measurement endpoints.
46. Page 7, Section 6.3.2. Additional emphasis needs to be placed on researching the appropriate prey species for the assessment endpoints and linking exposure of prey species to the potential source areas.
47. Page 8, third paragraph. As indicated in the text, the brown pelican feeds mainly on pelagic fish (water column feeders) which are not included as measurement endpoints based on their mobility. Therefore, how will the impact to the pelican be determined without knowing the contribution from the water column (i.e. how will effects from water column concentrations be determined?)
48. Page 11, 3rd paragraph. Please see Specific Comment #18.
49. Page 12, forth bullet. Determining the source of contamination to the sewer outfalls is equally as important as determining the contribution of contamination.
50. Page 12, Section 6.4.2. The degree of toxicity associated with stormwater outfalls, sediment and water column is a data gap that should be addressed in the context of the ESAP data.
51. Page 13, 1st and 2nd bullets. If adverse effects are measured, how will these effects be linked back to source area(s)? See General Comment #1.

52. Page 14, 1st bullet. Please clarify the intention of this bullet.
53. Page 14, recommendation bullets. We agree that additional physical, chemical and biological data should be collected, however we suggest the Navy utilize the ESAP data, as appropriate, to focus the data collection effort.