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TREASURE ISLAND
SSIC NO. 5090.3.A

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105-3901

February 21, 1995

Ernesto M. Galang
Western Division - Code T4A2EG
Naval Facilities Engineering Command
900 Commodore Drive
San Bruno, California 94066-2402

Re: Draft Phase II-Ecological Risk Assessment Work Plan for Naval Station Treasure Island dated December 19, 1994

Dear Mr. Galang,

The U. S. Environmental Protection Agency (EPA) has received and reviewed the subject document. EPA's comments are enclosed.

If you have any questions, please call me at (415) 744-2368 or Clarence Callahan at (415) 744-2314.

Sincerely,

Rachel D. Simons

Rachel D. Simons
Remedial Project Manager
Federal Facilities Cleanup Office

Enclosures

cc: Jim Sullivan, NAVSTA TI
Mary Rose Cassa, DTSC
Michael Bessette, CRWQCB
Clarence Callahan, EPA
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DRAFT PHASE II ECOLOGICAL RISK ASSESSMENT WORK PLAN FOR NAVAL STATION TREASURE ISLAND (NSTI) DATED DECEMBER 19, 1994

General Comments:

1. EPA understands that the objectives of the Phase II Ecological Risk Assessment (ERA) are:

   1) to determine the distribution of contaminant concentrations in the sediments and terrestrial areas of NSTI

   2) to determine if the contaminant concentrations will result in impact to selected receptors that represent the biological and ecological resources of NSTI.

2. The Phase II effort is a verification of the predicted effects that were made in the Phase I effort. The effects of contaminants on receptors must be quantified in the Phase II ERA. In order to determine the actual impact to site receptors, the contaminants of concern (COCs) must have analytical detection limits that are lower than the appropriate bench marks (e.g. ER-Ls). The detection limits for the Contract Laboratory Program (CLP) methods may have been sufficient for Phase I, but may not be adequate for Phase II. If the commonly used CLP methods are found to be inadequate, other techniques must be employed. This is particularly important for sediment and tissue samples.

Specific Comments:

1. **Section 10.1 Characterization of Ecological Risk to Benthic Receptors, p-25**

Please change "Risk" to "Effects" in the title of Section 10.1.

2. **Section 10.1 Characterization of Ecological Risk to Benthic Receptors, p-25**

The use of a "weight-of-evidence approach" to characterize ecological risk to benthic receptors appears to be a reasonable, however there is little explanation of how this approach will lead to final objective, "to determine the contaminant concentrations in offshore sediments that are protective of benthic receptors (p-26)". As discussed in the February 15, 1995 Project Manager's meeting, a decision tree, showing how the different data (e.g. sediment chemistry, sediment bioassays, bioavailability and benthic community structure) will result in a remediation decision, was recommended for clarifying this

approach.

3. Section 10.1 Characterization of Ecological Risk to Benthic Receptors, p-25

EPA has discussed some of the assumptions on this page with the Navy at other sites such as Concord and Alameda NAS, however the basic hypothesis i.e., that bioavailability is directly related to bond strength of contaminants, and that with particular extraction techniques, the bioavailability can be determined, has not been tested for validity. This hypothesis was presented to support the use of "surface extraction" techniques with "weak acids" that was suggested to represent the bioavailability of contaminants and that Microtox would be an appropriate measurement of the bioavailability. Please describe how this hypothesis will be verified and used in the overall ERA for NSTI.

The Navy further suggests that the bioavailable fraction of the sediment can be determined using measurements of sediment chemistry (pH, AVS/SEM, TOC, grain size) in simple sediment toxicity models, bioassays and tissue residue studies. Please explain how this will be done.

4. Section 10.1.1 Exposure Assessment, p-26

Please clarify the following assumptions presented in this section:

- What data will be obtained to verify that the "contamination is equally distributed throughout the offshore sediment"?

- What is the basis for making the statement that "all food sources are taking up the COPCs equally and all food sources are contaminated"?

5. Section 10.1.2.2 Characterization of Risk to Benthic Invertebrates, p-27

Step #2 states that "Sediment chemistry totals and the bioavailable estimate will be evaluated to develop station-specific COCs". This seems to contradict the first assumption in Section 10.1.1 Exposure Assessment which states that "contamination is equally distributed throughout the offshore sediment". Please explain this discrepancy.

6. Section 10.1.2.2 Characterization of Risk to Benthic Invertebrates, p-28

Step #4 states that "These estimates of risk will then be used to develop cleanup criteria." It is not clear how this will be accomplished using the data collected in Steps 1-3. A decision tree would also be useful here (see Specific Comment #2).

7. **Section 10.1.2.2 Characterization of Risk to Benthic Invertebrates, p-27**

Since pore water will play an important role in determining the impact to receptors (through the use of pore water tests) and as agreed to in the February 15, 1995 Project Manager's meeting, COCs should be measured in the pore water, the medium of exposure. Contaminants must also be measured in the pore water from samples collected to evaluate the Clipper Cove Skeet Range.

8. **Section 13.3 Reference Sediments, p-40**

Based on Figure 5, it appears that shallow water reference sites correspond to R-1 and R-2 which are both scheduled for bioassays. EPA strongly recommends that R-3 be scheduled for a bioassay as a deep water reference site.

9. **Section 13.5.2 Sediment Sample Collection Methods, p-43**

AVS/SEM samples have particular collection requirements to avoid aerating the sediments before extraction (see Appendix B-7, Section 4.1). Since this procedure is not mentioned in this section, when will these samples be collected?

10. **Section 13.8.2 Sample Collection Procedures, p-51**

As agreed to in the February 15, 1995 Project Manager's meeting, benthic samples must be screened through a 0.5 mm screen rather than a 1.0 mm screen alone. These screens can be stacked with the 1.0 mm above the 0.5 mm if desired, but the 1.0 mm cannot be used alone. Please make this consistent throughout the Work Plan.

11. **Section 13.9 Tissue Residue Studies, p-53**

Resident organisms for measuring uptake of COCs should be collected by biomass rather than by species because feeding birds do not sort their food by species.

12. **Section 13.10 Sample Chemical Analysis, p-55**

Please explain why BOD is being measured.

13. **Figure 12 Proposed Sediment Sampling Locations**

The samples designated for bioassays appear to be sparse, only 13 counting the reference sites. As discussed in the February 15, 1995 Project Manager's meeting, please provide revised sampling locations using techniques such as transect sampling.

Please check Figure 12 and Table 5 for inconsistencies. For

example, only one bioassay is shown for Section A on Figure 12 and two are listed in Table 5.

14. Figure 13 Clipper Cove Skeet Range Sediment Sampling Locations

Rather than being randomly placed, the bioassay samples should be placed after some data are available that shows the density of lead shot. The objective is to evaluate the relationship of lead shot and toxicity.

15. Figure 14 Benthic Risk Characterization Flow Chart

Please answer the following questions about Figure 14:

- How will the physical and chemical characteristics be "incorporated" into the process?
- What are the decision criteria and decision points?
- How will bioavailability be "estimated"?
- What does the box in the middle labelled, "chemicals of concern" mean?
- How will the "realistic estimation of risk" be combined with the "conservative estimate of risk" to arrive at "cleanup criteria"?

16. Table 6 Sediment Requirements for Bioassays

Please explain how the numbers in Table 6 and the samples described in Section 13.5.2 (p-44) are correlated.

17. Table 7 Contract-Required Detection Limits (CRDL) for Sediment Samples

As agreed to in the February 15, 1995 Project Manager's meeting, the Navy will compare the analytical detection limits to the bench marks (e.g ER-Ls) and identify the compounds that are above the bench marks. The compounds above the bench marks will be presented to the Project Team (EPA, DTSC, RWQCB and Navy) to discuss alternative analytical methods and cost.

<u>Appendix C - Quality Assurance Project Plan</u>

18. Section 4.3 Sediment Sample Collection, p C-13

In the second paragraph on this page, the length of the core is missing. Please provide this information.

19. Table 6 Analytical Procedures, p C-18

The pore water must be measured for the organic and inorganic COCs.

Citations:

DiToro, D.M., J.D. Mahony, D.J. Hansen, K.J. Scott, M.B. Hicks, S.M. Mays, and M.S. Redmond. 1990. Toxicity of Cadmium in Sediments: the Role of Acid Volatile Sulfide. Environ. Toxicol. Chem. 9:1489-1504.

DiToro, D.M., C.S. Zarba, D.J. Hansen, W.J. Berry, R.C. Swartz, C.E. Cowan, S.P. Pavlou, H.E. Allen, N.A. Thomas, and R.R. Paquin. 1991. Technical Basis for Establishing Sediment Quality Criteria for Nonionic Organic Chemicals Using Equilibrium Partitioning. Environ. Toxicol. Chem. 10:1541-1583.

EPA 1992. An SAB Report: Review of Sediment Criteria Development Methodology for Non-ionic Organic Contaminants. United States Environmental Protection Agency, Science Advisory Board A-101, EPA-SAB-EPEC-93-002, Washington, DC.