



DEPARTMENT OF THE NAVY  
SOUTHWEST DIVISION  
NAVAL FACILITIES ENGINEERING COMMAND  
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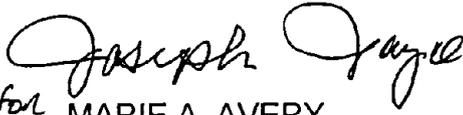
Subj: RESPONSE TO COMMENTS FOR DRAFT FINAL ECOLOGICAL RISK  
ASSESSMENT VALIDATION STUDY, PARCEL E, HUNTERS POINT  
SHIPYARD, SAN FRANCISCO, CALIFORNIA

Encl: Response to Comments for the Draft Final Ecological Risk Assessment  
Validation Study Report, Parcel E, Hunters Point Shipyard, San Francisco,  
California dated June 1, 2000

1. Enclosure is forwarded in accordance with the Hunters Point Shipyard Federal  
Facilities Agreement.

2. If you have any questions regarding this enclosure, please contact Mr. Martin  
Offenhauer at (619) 532-0931, FAX (619) 532-0933.

Sincerely,

  
for MARIE A. AVERY  
Base Closure Manager  
By direction of the Commander

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**RESPONSE TO AGENCY COMMENTS ON THE DRAFT FINAL VALIDATION STUDY  
REPORT AND DRAFT FINAL PROTECTIVE SOIL CONCENTRATIONS  
TECHNICAL MEMORANDUM  
PARCEL E, HUNTERS POINT SHIPYARD  
SAN FRANCISCO, CALIFORNIA**

This attachment presents the U.S. Department of the Navy (Navy) responses to comments from the U.S. Environmental Protection Agency (EPA) dated April 27, 2000, and Department of Toxic Substance Control (DTSC) dated April 24, 2000.

**RESPONSE TO COMMENTS FROM DTSC**

**General Comments**

**Comment:** The Parcel E Validation Study and the Technical Memorandum developing Protective Soil Concentrations follow the methodology agreed upon between the Navy and the regulatory agencies. The text of one section of the Validation Study appears to be in disagreement with the supporting data and the Technical Memorandum. This is Section 11.5. A revised version of Section 11.5 was furnished by electronic mail on April 10, 2000. The soil concentrations listed in the revised Section 11.5 agree with the other portions of the Validation Study and the Technical Memorandum. This revised version should be placed in the Final Validation Study. The revised version contains some typographic errors which should be corrected prior to inclusion in the Final Validation Study (e.g., the first line of Section 11.5 indicates that for receptors were evaluated rather than four). The revised version is supplied as Attachment A.

**Response:** The typographic error has been corrected. The revised Section 11.5 will replace the existing Section 11.5 in the Draft Final Validation Study (VS) Report. A copy of the revised Section 11.5 has been presented as an appendix to this attachment.

**Specific Comments**

**1. Comment:** The range and average HPS-specific biotransfer factors (BTFs) for flying and crawling invertebrate appears to contain an error (Section 0.2, page 9-3). The soil to flying invertebrate BTF for lead is listed as 0.062 and the soil to crawling invertebrate BTF for lead is listed as 0.061. The average soil to invertebrate BTF, however, is listed as 0.074. This average value cannot be the average of the two separate values listed. Please correct the error and determine that the arithmetically correct average BTF was used in calculations of ecological hazard.

**Response:** Crawling and flying invertebrates were not collected at all sampling stations at Parcel E. At some stations, only crawling invertebrates were collected; at some,

only flying invertebrates; and at others, both crawling and flying invertebrates were collected. Average crawling and flying invertebrate tissue concentrations were calculated individually for each station. The average of these individual averages was calculated to derive the average invertebrate tissue concentration at each station.

The average soil-to-invertebrate BTF presented in Section 9.2 of the VS report represents the average invertebrate tissue concentration at all stations sampled, and not simply the average between the soil-to-crawling invertebrate BTF and soil-to-flying invertebrate BTF. The average soil-to-invertebrate BTF of 0.074 is correct.

**2. Comment:** Please insert the correct units of g/kg in the denominator of equation 10-1.

**Response:** The corrected units of the denominator would be as follows “ 1000 g/kg”.

**3. Comment:** The soil concentrations related hazard quotients in the station-by-station discussion (Section 11.3) were checked at random and found to agree both with the tables presenting the soil concentration (Table 4a through 4l) and the values presented in the technical memorandum.

**Response:** The Navy acknowledges this comment.

**4. Comment:** The range of soil concentrations presented in the summary of risk by chemical of potential concern (Section 11.5, pages 11-37 through 11-40) do not agree with the associated tables (Table 4a through 4l) nor the technical memorandum. Telephone conversations during the week of April 10, 2000 confirmed that there are discrepancies. Proposed corrections to this section were transmitted via electronic mail on April 10, 2000. The correct values are included in this memorandum as Attachment A.

**Response:** The Navy apologizes for the inconsistency reported in Section 11.5. (see response to the DTSC General Comment).

**5. Comment:** The adjustment of the lead and nickel intake rates is specific to HPS and should not be used at other Navy sites without prior review by HERD. HERD, the California Department of Fish and Game and the U.S. EPA Region 9 agreed to consider differences in the absolute bioavailability of the lead and nickel compounds administered in toxicity experiments and the potentially lower bioavailability of lead and nickel compounds at HPS Parcel E in calculating the intake used to develop these two hazard quotients. HERD recommended a deionized water Waste Extraction Test (WET) be performed to compare the water solubility in the WET test to the known water solubility of the different lead compounds as a simple method to evaluate the lead compounds which are present at HPS Parcel E. The Navy determined that the sampling and analysis cost would be prohibitive compared with the additional removal of approximately 100 yd<sup>3</sup> based on the most protective soil level developed in the Validation Study (VS). Laboratory techniques for quantitatively assessing the type of lead compounds in soil, and therefore the bioavailability, have been used at other sites subsequent to preparation of

**Parcel E VS (Jorgensen and Willems, 1987). Future Ecological Risk Assessments (ERAs) which attempt to determine the bioavailability of lead in soil should employ these techniques.**

**Response:** The Navy will consider using the Waste Extraction Test (WET) as it may apply in future ERAs.

**6. Comment:** The hazard quotients (table 5a through 5l) were checked at random and found to be arithmetically correct.

**Response:** The Navy acknowledges this comment .

**7. Comment:** Hazard quotients in the summary table of hazard quotients in excess of 1.0 (table 6) were compared at random to the detailed hazard quotient tables (Table 5a through 5l) and found to agree.

**Response:** The Navy acknowledges this comment.

**8. Comment:** The soil sampling locations should be indicated in the Technical Memorandum on Figure 2 or a similar figure as they are indicated in Figure 10 of the VS report.

**Response:** Please find Figure 2a as an appendix to this attachment that indicates the sampling locations at Parcel E, Hunters Point Shipyard (HPS).

**9. Comment:** Please include the units of mg/kg for the concentration in prey items (Cprey) in the back calculation formula presented in the Technical Memorandum.

**Response:** The modified formula would include the units of milligrams/kilograms for the concentration in prey item (Cprey).

**10. Comment:** We accept the home range of 3,048 acres for the red-tailed hawk (Technical Memorandum, Section 3.2.3, page 3-9) for the Parcel E HPS assessment due to the poor quality of habitat at Parcel E compared with habitat at the nearby San Bruno Mountain. This value for red tailed hawk home range would not be applicable if more suitable habitat was present at Parcel E.

**Response:** The Navy agrees. The home range used for the Protective Soil Concentrations Technical Memorandum (PSCTM) represents the average of literature-derived home ranges (EPA 1993). Given the poor quality habitat at Parcel E, the average home range selected was appropriate for existing conditions at Parcel E, HPS.

**11. Comment:** We suggest a new section heading be included prior to discussion of the dose estimate formula to separate this discussion from the preceding discussion of exposure parameters for the red-tailed hawk (Technical Memorandum, Section 3.2.3, page 3-10). The VS report has a discussion separator at this location in the text. No written response is necessary for this comment.

**Response:** The Navy acknowledges this comment.

**12. Comment:** The more recent allometric scaling factor for mammals (Sample and Arenal, 1999) (Section 3.3.1, page 3-12) should be used in future terrestrial ecological assessments.

**Response:** The Navy concurs with this comment. The new mammalian scaling factor was not used, because the VS report was in its Draft Final stage when the study was published. The Navy did however, make note of the new mammalian scaling factor in the VS Report, and will use the most current and applicable mammalian scaling factor in future ERAs.

**13. Comment:** The soil concentrations described in the text for calculation of Ecologically Protective Soil Concentrations (PSCs) (Technical Memorandum, Section 4.0, pages 4-1 through 4-14) should be described as mg/kg wet weight since both wet weight and dry weight concentrations are listed in the associated tables.

**Response:** The sentence, as modified, would include milligrams/kilograms wet weight while discussing PSCs.

### Conclusions

**Comment:** The re-evaluation of lead and nickel bioavailability contained in the Technical Memorandum which develops Protective Soil Concentrations is site specific to Hunters Point. Some determination of the form of lead present is imperative for bioavailability to enter into the calculation of intake. The Navy chose not to perform an assessment of the form of lead and instead include an additional 100 yd<sup>3</sup> of soil in the Feasibility Study. Methods for determining the form of lead in soil, which have been employed at other California sites (i.e., Travis Air Force Base Small Arm Range) should be used in any future assessment of potential lead bioavailability.

Soil concentrations in the Technical Memorandum which entered into the calculation of Protective Soil Concentrations were wet weight soil concentrations. Any protective Soil Concentrations must be expressed in mg/kg dry weight, as wet weight concentrations would vary over the course of the year.

**Response:** The Navy agrees that the lead and nickel bioavailability-based PSCs are specific to HPS and will consider using the Waste Extraction Test (WET) in as it may apply in future ERAs. (see response to DTSC's specific comment no. 5).

The PSCs in the PSC TM were expressed as milligrams per kilograms (mg/kg) wet weight, because PSCs were derived by using the original dose equation to back calculate PSCs.

However, the Navy agrees that wet weight concentrations would vary over the course of the year. The percent moisture in the soils at Parcel E during the sampling event ranged from 1.35 to 6.93 percent, with an average moisture content of 4 percent which would be the value used to express the PSCs in milligrams/kilograms dry weight.

## RESPONSE TO COMMENTS FROM EPA

### General Comments

The Navy and their support contractors have in general responded adequately to my previous comments (7/22/99 memo) as reported in the Appendix B of this document. For this portion of the Hunters Point project, the Navy and their support contractors have been very responsive to EPA's concerns and suggestions for estimating the potential risk to receptors at parcel E, Hunters Point.

### Specific Comments

EPA has worked with the Navy and their contractors to develop the approach used in this document to arrive at a better estimate of the exposure to the site receptors. EPA commends the Navy for their effort to achieve a more logical and representative estimate of exposure to the site receptors.

While the Navy has been very responsive in collecting site-specific information for this validation effort to estimate a more logical and reasonable exposure of the site receptors to the contaminants, there is a great amount of remaining uncertainty because of unknown life history data. While the responsibility for collecting these data lies with the Navy, EPA recognizes that these data are not easily obtainable and sometimes not available. This is a shortcoming of this site work in particular and in ecological risk assessment in general. If the Navy and their contractors can be faulted for anything with this effort, it is lack of searching for more data concerned with the specific habits of the site receptors. This includes feeding areas (home range) and time spent on the site (site use factor) by the particular receptors and specific food items on the site. This information is more difficult to come by, but may be available from alternate sources. This kind of search is not evident from the material presented.

Overall, the document is better than we normally see from many of the sites, particularly terrestrial sites in Region 9. The "ecologically protective soil concentrations" as presented by the Navy seem to be acceptable because they were derived using site-specific data and conditions directly related to the site.

There are a couple of my previous comments that were not addressed adequately. Perhaps the Navy could try again.

An alternative to that presented in this document is to present a range of exposure estimates for each receptor. For instance, the site use factor for the kestrel is estimated to be 0.99 (p 10-5) based on the literature. The site use factor might be varied from the lowest observed in this area (search for reports from amateur birders) or identify low numbers for similar sites from the literature to the highest value suggested, 0.99. The percentage of food items consumed for the kestrel are estimated to be 36.2 (invertebrates), 23.7 (reptiles) and 27.6 (mammals) from the literature (p 10-4). For site-specific estimates, if ratios of animal biomass cannot be estimated from the samples collected, then randomization process (i.e., bootstrapping) for assigning various percentages to the kestrel might be used to estimate proportions of intake and loadings of contaminants (i.e., concentration in tissue multiplied by

the biomass) such that the risk is shown as a range. This calculated range is then used to characterize the estimated risk presented by the site specific situations rather than the literature based information.

EPA would like to know the source of the document, "Research Triangle Institute, 1995. Development of Human Based and Ecologically Based Criteria for the Hazardous Waste Identification Project. Volume I. Review Draft March 3." Is this in fact a RCRA document that is now available on a web site?

**Response:** The Navy is pleased with the comments from the regulators and will consider searching for alternative studies, such as data from amateur birders, to supplement specific habitat information for selected receptors for future ERAs. Exposure parameters for all receptors considered at Parcel E, HPS that were used in calculating the dose were developed in accordance with Agency concurrence, at a teleconference held in April 1999. In general, the exposure parameters used in the VS report for estimating ecological risk were the most conservative parameters. For example, the site use factor for the kestrel (0.99) was based on the smallest home range reported in the available literature (EPA 1993). In cases where site-specific estimates for some tissue types were unavailable at some sampling locations, because those prey items did not exist on site, an effort was made to adequately represent existing, site-specific conditions. At such sites, if one of the prey items were inadequate or absent, it was assumed that the receptor would feed on the available prey items at that location. An effort was made to reduce the uncertainty inherent in presenting the risk estimates as a range of values, and therefore the most environmentally conservative estimates were used to quantify risk at specific sampling locations at Parcel E, HPS, (TtEMI and LFR 2000).

The document referenced as, "Research Triangle Institute. 1995. Development of Human and Ecologically Based Criteria for the Hazardous Waste Identification Project." was prepared for U.S. EPA, Office of Solid Waste, Contract No. 68-D2-0065 and 68-W3-0028 by Research Triangle Institute. Project 5810-43, 5819-114." A copy of the document was sent out to the Agencies in April 1999.

**References:**

U.S. Environmental Protection Agency (EPA). 1993. "Wildlife Exposure Handbook." Washington DC. EPA 600/R-93/187. December.

TtEMI and LFR Levine Fricke 2000. "Draft Final Validation Study Report, Parcel E, Hunters Point Shipyard, San Francisco, California." March.