

**RESPONSE TO AGENCY COMMENTS ON THE
DRAFT FINAL STATION WIDE FEASIBILITY STUDY
MOFFETT FEDERAL AIRFIELD**

1.0 INTRODUCTION

This document presents the Navy's responses to comments from the regulatory agencies on the draft final station-wide feasibility study (SWFS) for Moffett Federal Airfield (MFA), dated November 8, 1996. The comments addressed below were received from Mr. Michael Gill of the U.S. Environmental Protection Agency (EPA) on January 31, 1997 and from Mr. Joseph Chou of the California EPA Department of Toxic Substances Control (DTSC) on June 17, 1997.

2.0 RESPONSE TO EPA COMMENTS

2.1 GENERAL COMMENTS

1. **Comment:** The document is without question, a draft document. The ecological risk assessment results do not seem to have been incorporated into this effort by any interpretation of the overall risk. The Navy eliminated contaminants of concern (metals) through questionable logic, incorrectly interprets the hazard quotient results, incorrectly applies the hazard quotient results, does not provide adequate remedial options, and overestimates the costs of confirmation sampling for feasibility options and monitoring. There are none of the suggestions for cleanup levels included in the document that we discussed at the final remedial investigation (RI) meeting of September 20, 1996 (i.e., develop cleanup goals based on ambient, no observed adverse effects level (NOAEL), or risk-based levels, zero-risk based levels or monitoring only). Perhaps, another meeting is necessary to design the feasibility study based on the environmental risk assessment (ERA) and other information gained throughout the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) activities at Moffett Field.

Response: Additional meetings with the regulatory agencies have been conducted during preparation of the revised draft final SWFS. In addition, input has been collected from natural resource trustees during a field trip on October 9, 1997 to observe the Eastern Diked Marsh, stormwater retention pond, and Northern Channel. The revised draft final SWFS has significant changes from the draft versions that have been incorporated following input from the regulatory agencies.

2. **Comment:** Risk standards. For several contaminants, significant levels of concentrations were observed as measured by effects assessment, i.e., bioassays or modeling to estimate the hazard quotients (HQs) and hazard indices (HIs). The effects assessments were significant at several locations,

for several endpoints and for several receptors. There was significant risk observed in the Eastern Diked Marsh, the stormwater retention pond inlet, and along the Northern Channel due to polychlorinated biphenyls (PCBs), pesticides, and metals. Even if these data do not clearly present any definitive exposure-response relationship, they do establish a significant level of risk.

Response: Comment noted.

3. **Comment** **Risk Assessment vs. Risk Management.** The Navy needs to present alternatives that consider the risk points of departure as recognized by Region 9 EPA so that the Base Realignment and Closure (BRAC) Cleanup Team (BCT) can make an informed risk management decision when it comes to alternative selection. To reiterate, alternatives should also be developed to mitigate human health risks in the range of 10^{-4} to 10^{-6} and ecological risks when $HQ > 1$. Other cleanup level scenarios should be explored and cost estimates provided so that a final alternative selection can be justified based on the nine criteria. A wider range of attainment areas, which translates to the inclusion of more conservative HQs, should be investigated as cleanup goals in the FS. The HQs considered may not provide a sufficient level of protectiveness to the receptors. This lack of protectiveness should be balanced in an analysis with more protective cleanup goals.

Response: SWFS Alternatives 3 through 6 are protective of human health because they will remove all the sediment posing an unacceptable risk to humans under the occupational scenario. Alternatives 5 and 6 address ecological risks exceeding $HQ > 10$ for the benthic invertebrates. Additional figures in the SWFS show a variety of areas of attainment. These can be used by the risk managers to balance protection from contaminants against impact to the environment due to remediation.

4. **Comment:** **Long-term ecological monitoring should include contingency actions. Otherwise, the process is incomplete. If certain ecological effects are observed during this monitoring, corrective action may be required.**

Response: A work plan for long-term monitoring will be prepared during the remedial design phase of the project. The plan will include contingency actions.

5. **Comment:** **Disposal options for treated sediments should include consolidation into Site 1, which may be designated as a corrective action management unit (CAMU).**

Response: The remedial action at Site 1 has been completed so sediment excavated for the SWFS remedy cannot be used there.

6. **Comment:** The Navy should consider wetlands mitigation as part of the alternatives. See the EPA document entitled "An Approach to Improving Decision Making in Wetland Restoration and Creation" (EPA/600/R-92/150, August 1992) for more information and the Army Corps of Engineers "Draft Mitigation Proposal Guidelines Revision" handout from the September 20, 1996 meeting.

Response: Wetland mitigation has been included in Alternative 6 of the SWFS. The Navy has used the EPA publication "Considering Wetlands at CERCLA Sites" and the National Research Council document "Contaminated Sediments in Ports and Waterways" to prepare the SWFS.

7. **Comment:** The FS does not provide a clear overview of the general characteristics of the sediment areas that will be potentially remediated. This information is critical to properly evaluate the need for remedial action and to evaluate the suitability of remedial alternatives.

Response: The discussion of the general characteristics of the areas to be potentially remediated has been revised in Section 1.2.4.6 of the SWFS.

8. **Comment:** There is considerable confusion in the use of the terms "sediment" and "soil" throughout the document. As stated in the executive summary and introduction, the scope of the FS includes contaminated sediments (associated with the Stormwater Retention Ponds, Diked Marshes, and Northern Channel) and Golf Course Landfill 2. A standard sediment definition, along with a better description of the target areas would help alleviate this confusion.

Response: The terms sediment and soil are not used interchangeably in the SWFS. Sediment is distinguished from upland soils because it has or is being transported by water to its present location. The SWFS has been revised to minimize this potential confusion in terminology.

9. **Comment:** One important issue to consider when assessing remedial actions in the sediment target areas is the ecological impacts of the remedial action itself. The report simply states that the excavation and containment remedial actions will cause immediate ecological impacts; however, in order to fully evaluate the acceptability of the remedial alternative, it is important to understand the nature and extent (both spatial and temporal) of the impact of the remedial action on the plants and animals that inhabit the target areas. For example, if the remedial action would obliterate a local population of endangered species, the suitability of the remedial action could be deemed as very low. A thorough evaluation of the potential ecological impacts of the remedial alternatives must be presented. The evaluation should describe what resources will be impacted, how they will

be impacted, the duration of the impact, steps taken to minimize remedial action impacts, and possibly the steps taken to enhance the natural recovery of the habitat.

Response: Additional description of the ecological impacts of the various alternatives may be required following review of the SWFS by the regulatory agencies. Some additional discussion of the alternatives presented in the revised draft final version of the SWFS has been already added.

10. **Comment:** **Another primary remediation technology to consider is removal by excavation or dredging. The post-excavation remediation methods that were suggested as alternatives include treatment of excavated sediment by low temperature desorption and off-site disposal. Other post-excavation methods should also be considered. For example, upland on-site disposal of contaminated sediments in the Site 1 landfill (if designated as a CAMU) could be a cost-effective remedial alternative. The Navy or the National Aeronautics and Space Administration (NASA) might have plans to reclaim some of the diked marsh area for terrestrial uses that would require fill material. Near-shore disposal of contaminated sediments within an engineered fill could meet both project objectives. Deep water disposal of contaminated sediments in San Francisco Bay could be another acceptable alternative, depending upon Corps of Engineers permitting restrictions. One additional point concerning excavation is that the FS assumes the depth of excavation is limited to the top 1 foot of contaminated soils or sediments, and that the excavated area is then backfilled with clean soil or sediment. It is unclear whether a 1-foot-thick layer of clean sediment or soil over contaminated sediment or soil would be protective in the long term. It appears that additional refinement of the excavation or dredging remedial alternative is needed.**

Response: Lower costs alternatives for the reuse or disposal of any excavated and treated sediment will be explored.

In response to the second part of the comment on the depth of excavation, a study cited in "Contaminated Sediments in Ports and Waterways" (NRC 1996) showed that a half-meter thick cap over a PCB-contaminated site could be expected to reduce the release rate of PCBs to the overlying water by 99 percent. The presently proposed alternatives would remove the top 1 foot of sediment, which presumably contains the majority of the PCB contamination, before the clean soil is placed on top of the area. This excavation and capping combination is expected to reduce the risks to allowable levels.

2.2 SPECIFIC COMMENTS

11. **Comment:** Executive Summary, Page ES-2, Last Paragraph. The landfill options should include excavation and consolidation, as is being considered at OU1.

Response: A separate FS is being prepared for Golf Course Landfill 2.

12. **Comment:** Section 1.2, Pages 3-12, Background. This section does not discuss surface water drainage patterns, stormwater run-off, or wetlands. It does not define the areas contributing to stormwater run-off (e.g., industrial, paved lots, vegetated areas, unvegetated dirt) and thus does not provide any information regarding potential sediment sources. It does not provide an adequate background for the sediment treatment alternatives presented in this document. This section needs to be revised accordingly with sufficient detail for the evaluation of the treatment alternatives.

Response: A new section, which discusses surface water, has been added to the SWFS. In addition, Figure 2 showing the storm drain system has been added to the SWFS.

13. **Comment:** Section 1.2.2, Page 5. Although Section 1.2.2 describes the current land use, it is not clear if there is potential in the future for a different land use or possible development. The current mitigation methods being proposed need to account for any future use changes. If there are no land use changes anticipated, then the text should state this.

Response: The text in this section states "NASA has indicated its desire to maintain a strong presence at MFA." No other future uses are contemplated at this time.

14. **Comment:** Section 1.2.2, Page 6, Paragraph 2. While NASA has indicated a desire to maintain a strong presence at MFA, the reader should also be aware that the NASA has also expressed uncertainties about their ability to retain enough tenants to cover the operating costs for MFA. This could have a direct impact on their ability to remain landlord in the future and in turn, allow for land use changes. This should be clarified in the text.

Response: No change from a federal airfield is anticipated for MFA at this time. This has been clarified in the text.

15. **Comment:** Section 1.2.3.1, Page 8. Please update the OU1 schedule.

Response: The discussion of the schedule for operable unit (OU) 1 in Section 1.2.4.1 has been revised to reflect the work accomplished to date.

16. **Comment:** Section 1.2.3.2, Page 8. "...no risks to human health or the environment were identified...". This is incorrect. A brief mention of the beryllium issue at OU2-East should be included here. Risks exist, but a risk management decision was made for no action because it was determined that beryllium was naturally occurring.

Response: The sentence has been revised to state, "During the RI, no risks to human health and the environment due to MFA activities were identified and a no-action ROD for these sites was signed in late 1994 by the Navy, EPA, DTSC, and RWQCB (EPA 1994a)."

17. **Comment:** Section 1.2.3.5, Page 9. We believe there are still outstanding Site 12 groundwater issues. Please clarify.

Response: Site 12 is being addressed under the petroleum sites program in accordance with Regional Water Quality Control Board (RWQCB), San Francisco Bay Region guidance for closure of low-risk sites. The need for additional groundwater monitoring will be addressed in the Site 12 appendix to the basewide petroleum sites report.

18. **Comment:** Section 1.2.3.6. This section should be expanded so the reader understands the characteristics of the sediment remediation target areas (i.e., Eastern and Western Diked Marshes, Stormwater Retention Ponds, and the Northern Channel). Descriptions of each area should include the following information:

- area permanently covered with water;
- whether the water is fresh or marine;
- water depth;
- tidal effects;
- historical and current discharge locations into the areas;
- past and current use of the target areas;
- land use by human and ecological receptors;
- habitat quality (does it provide critical habitat for any wildlife species?);
- locations of the areas; and

- routine maintenance activities (e.g., perhaps dredging to maintain flow is a normal maintenance activity in the target areas, and potential remedial actions involving dredging could be scheduled to coincide with maintenance activities).

Response: Additional discussion on the Northern Channel, Eastern Diked Marsh, and stormwater retention pond has been added to Section 1.2.4.6 of the SWFS.

19. **Comments:** Section 1.2.3.7, Page 12, Potential Runway Wetland. Please update the status of the well abandonment at this site.

Response: This section has been updated. The agricultural well discovered at this location was destroyed following Santa Clara Valley Water District guidelines.

20. **Comments:** Section 1.3.1, Page 13. It should be described here that both an exposure area approach and a point risk approach were used for the station-wide human health risk assessment.

Response: A sentence has been added to Section 1.3.1 noting that a sample-by-sample risk assessment was conducted.

21. **Comment:** Section 1.3.1, Page 15, Paragraph 1. Clarify that Plate 2 summarizes carcinogenic risks for soils only. We are unsure how both residential and occupational could both be represented on this single plot. Please clarify. Also clarify in this paragraph that the west side soil risks were not included in the station-wide RI, but are covered by the Middlefield-Ellis-Whisman (MEW) record of decision (ROD).

Response: The sentences in this paragraph have been revised to state, "Plate 2 summarizes carcinogenic risks for the combined residential and occupational scenarios for soil on the eastern side of MFA. Soils on the western side are covered by the MEW ROD."

22. **Comment:** Section 1.3.1.1, Page 15, Residential Scenario. As stated in previous risk assessments, EPA Region 9 retains the right to consider the areas exhibiting human health risks within the risk range of 10^{-4} and 10^{-6} to be candidates for remediation. A risk of 10^{-6} is considered the point of departure, not 10^{-4} . Please consider all risks in soil greater than 10^{-6} when developing remedial alternatives.

Response: Risks exceeding 1×10^{-6} existed for the residential and occupational scenarios in the sediments of Marriage Road ditch, Patrol Road ditch, and at the landfill at Site 2 (now excavated and removed). The ditches would be filled before residences could be built and humans do not regularly work in these areas. Therefore, these risks do not appear to warrant additional action.

23. **Comment:** Section 1.3.1.1, Page 15, Last Paragraph. The last sentence mentions Plate 1 as depicting locations of the exposure areas; it seems this should be Plate 2.

Response: Plate 2 is correct. The text has been revised.

24. **Comment:** Section 1.3.2.1, Page 17, Phase II SWEA Overview. The stated purpose of the SWEA is, "...to establish a quantitative and qualitative estimate of the risk to ecological receptors from exposure to contaminants of potential ecological concern (COPECs) at MFA." EPA has suggested that the quantitative effort be emphasized over the qualitative, which is best accomplished by strengthening the results of the bioassays (i.e., re-examine the interpretation of results), the tissue analyses, and direct sampling of the water, soil, sediment, and air at the site. The efforts that provide questionable data include exposure dose modeling and the qualitative benthic surveys. Although these questionable techniques have provided information for the screening phase of the ERA, the latter phases of the ERA process normally require direct measurements rather than unvalidated modeling. But because we now agree on what ecological areas are the most likely to be remediated (these are always site-specific determinations), it is time to move forward. In any case, the Navy needs to consider the use of empirical data (bioassays) when developing confirmatory sampling and long term ecological monitoring plans.

Response: Comment noted. Additional examination of the bioassay data was included in the final SWEA report. An outline of proposed ecological monitoring is presented in Appendix C of the SWFS.

25. **Comment:** Section 1.3.2.1, Page 17, Phase II SWEA Overview. The overview of the Phase II SWEA presented in Section 1.3.2.1 is difficult to understand and does not provide sufficient detail. Section 1.3.2.1 should be expanded so the reader can understand how the ecological assessment was performed and the results of the assessment. Please explain how the four HQs for each COPC-receptor were calculated and explain why this was done. What were the assessment endpoints? Throughout the report, reference is made to scenarios in which HQ₁ or HQ₄ is greater than 100; the necessary information from the SWEA is neither presented nor referenced.

Response: Section 1.3.2.2 has been expanded as suggested and discussion of the HQ matrix has been added.

26. **Comment:** Section 1.3.2.1, Page 18, Paragraph 2, Measures of Risk. The primary focus of the Navy for the Moffett ERA was the modeled HQ. The general method for calculating Moffett Field HQs is based on several authors that are in general agreement for this approach. The interpretation of these HQs as presented and the hazard indices (the sum of several HQs) is not

widely accepted and is based on a study without any technical basis other than convenience derived by the study authors (Menzie et al, 1992). The generally recognized interpretation of the HQ, which should be limited to the screening phase, is that ratios above 1.0 indicate a potentially significant effect and other values above 1.0 are viewed in the same range. Very seldom are input data sufficient, i.e., with low uncertainty, to permit any relationship of higher risk with values greatly above unity, as is the case for MFA.

Response: Comment noted.

27. **Comment:** Section 1.4.2.1, 1.4.2.1.1, Page 35. "Groundwater is not affected..." It would be more accurate to mention that groundwater close to the wetlands areas is covered by the OU5, MEW (west-side aquifer) and the OU1 remedial actions.

Response: The sentence in question (in Section 2.1.5 of the revised report) has been modified to state "Groundwater in these areas is covered by either the OU5 or the MEW remedial actions."

28. **Comment:** Section 1.4.2.1.1, Page 35. Why are the National Oceanic and Atmospheric Administration (NOAA) sediment criteria to be considered (TBCs) criteria rather than applicable or relevant and appropriate requirements (ARARs)? Are they set forth in guidance rather than regulations? Please discuss the NOAA sediment criteria in more detail. Also, please provide a copy of or a citation to the criteria so EPA can review them.

Response: The NOAA criteria are for NOAA internal guidance at only. Therefore, they have been removed from this section.

29. **Comment:** Section 1.4.2.1.3, Page 37, California Hazardous Waste Regulations. This comment addresses management of Resource Conservation and Recovery Act (RCRA) or non-RCRA hazardous wastes in accordance with State of California hazardous waste storage, treatment and disposal regulations. This section is not entirely accurate. Where the waste is a RCRA waste and the state RCRA standard is not more stringent, the federal RCRA regulation is cited as the ARAR. At some sites, we have cited both the federal and the state ARAR saying that the federal ARAR cited is implemented via the State ARAR. Where the waste is a non-RCRA hazardous waste (as is the case with PCBs which are hazardous under California RCRA regulations but not under the Federal RCRA regulations), then the State regulations alone are cited as the ARAR. Similarly, if the State has a more stringent standard for a RCRA hazardous waste, then the State regulations alone are cited as the ARAR.

Response: Comment noted.

30. **Comments:** Section 2.1.1, Page 41, Paragraph 2, Remedial Action Objectives (RAOs). "In general, the RAO for sediments is to adequately protect human health and the environment by limiting exposure to COCs." Because the feasibility study should incorporate the results of the risk assessment, it seems that one of the objectives of the RAO would be to reduce the level of risk to the site receptors below those levels identified in this risk assessment as significant risks. This implies that known levels of risk established during this ERA can be identified as acceptable such that the site receptors will not be significantly impacted, thereby limiting the risk to the assessment endpoints. The results of this ERA indicate that the primary exposure pathway is "direct contact" (includes ingestion) with contaminated sediments. Again, little information/interpretation is provided to show the quantitative relationship between the exposure, i.e., contaminant concentration, and the response of the receptors and endpoints.

Response: The RAO has been revised to state, "Reduce the direct exposure to humans and the environment from sediments containing PCBs and pesticides to allowable levels, based on the HHRA and SWEA."

31. **Comment:** Section 2.1.1.1, Page 42, Paragraph 1. "There are no contaminants of concern (COCs) for the landfills." This appears to be incorrect. If one reviews Appendix E of the Station-Wide RI, Site 22 shows risk greater than 10^{-6} due to PCBs and benzo(a)pyrene for the recreational and occupational scenarios (dermal contact and ingestion of soils) and risk greater than 10^{-6} due to PCBs for the recreational scenario (dermal contact). This seems to qualify PCBs (Aroclor-1242, 1254, 1260) and benzo(a)pyrene as COCs.

Response: The landfill at Site 22 is now being addressed by a separate FS.

32. **Comment:** Section 2.1.1.1, Page 42, Paragraph 2, Chemicals of Concern. Section 2.1.1.1 states that metals have been eliminated as COCs for the purposes of identifying remedial areas for several reasons; however, the human health and ecological preliminary remediation goals (PRGs) presented in Section 2.1.1.2 do discuss metals, and it is uncertain whether metals were included in the target area risk estimates or not. This point needs clarification. If the metals were indeed excluded from the target area risk estimates, it is suggested that the discussion of PRGs be limited to the organic chemicals.

In this section it is stated that: "The rationale for screening out metals includes high ambient conditions with no identifiable sources." This statement needs clarification; it is probably intended to refer to high naturally occurring background concentrations of the metal COCs. This statement should be reworded, and accompanied with detailed discussion

and references to support the screening out of metals from further consideration in the FS. This is particularly significant, since in Appendix B (Evaluation of Metals Concentrations...) the conclusions state that: "Concentrations of various metals in shallow wetland sediments appear elevated with respect to local background levels." Further discussion should be included to rule out the contaminant migration from MFA.

In the same sentence on page 42, reference is made to "high concentrations of metals in sediments regionally from urban water run-off." It is not clear what sediments are being referred to in this statement. Please reword and provide accompanying text. The discussion provided in the third paragraph of page 42 discusses metal concentrations with respect to soil and sediment horizons, but does not discuss spatial distribution with respect to hydraulic gradient. This is an important omission that needs to be rectified.

Response: Metals have been eliminated from the discussion of areas that contain unacceptable risks. The discussion of metals has been removed from this section of the SWFS. The rationale for removing metals from the SWFS is presented briefly in Section 2.1.1 and in detail in Appendix B.

33. Comment: Section 2.1.1.2.1, Page 43, Paragraph 1. Same as general comment. Areas with risks in excess of 10^{-6} should be evaluated for remedial action.

Response: See response to specific comment 22.

34. Comment: Section 2.1.1.2.1, Page 43, Human Health Risk-Based PRGs. The derivation of human health PRGs is presented in Section 2.1.1.2.1. This section is very difficult to understand as presented. It appears that most of the PRGs were calculated assuming a residential exposure scenario. It is not clear why residential soil PRGs are being used as sediment benchmarks. Residential units are generally not built on sediment; thus, it is assumed that imported fill would be used prior to construction. In fact, wetlands regulations would probably exclude any residential construction on these areas (see OU6 RI). Since the exposure factors that were used to assess risks from exposure to sediments are not presented, it is not possible to evaluate whether these are appropriate to use as PRGs. If the sediment PRGs were calculated assuming typical residential exposures, it would not be appropriate to use them as cleanup goals, because they would be overly conservative and would not be representative of site conditions.

A more detailed explanation of the human health risk assessment and calculation of PRGs is required in this section.

Response: This section has been revised. However, the exposure areas that represent an unacceptable risk to humans for both the residential and occupational scenarios (as calculated in the HHRA) are still discussed and displayed in Tables 1 and 2.

35. **Comment:** Section 2.1.1.2.1, Page 45, Ecological Risk-Based PRGs. (This section should be renumbered as 2.1.1.2.2) The terms HQ₁ and HQ₄ are not defined. The statement: "A moderate level of protection for this habitat would be for HIs of less than 100, since below this level it is not clear whether population changes occur" must be substantiated. A summary discussion of aquatic and terrestrial receptors must be presented, with their associated HIs.

Response: The terms HQ₁ and HQ₄ are discussed in Section 1.3.2.2, which summarizes the Phase II SWEA.

36. **Comment:** Section 2.1.1.2.1, Page 46, Ecological Risk-Based PRGs. There are no EPA sanctioned "ecological PRGs," nor do we know of any other federal or state agency that promotes or recognizes such standards. Again, the HQs and HIs have limited application only to the screening process, therefore, they are not appropriate for determining overall risk, and especially not appropriate for setting cleanup levels as presented. The interpretation provided as cited in Menzie et al (1992) is not recognized by EPA and is therefore not appropriate. The quantitative results of the ERA that have been validated should be used to set cleanup levels. For this assessment, the bioassays and direct measurements of the contaminant levels should be used to set cleanup levels. Long-term ecological monitoring will probably provide the most accurate measure of effect. The data provided in the papers by Long et al (1995), i.e., the ER-Ls and ER-Ms, are not appropriate for setting cleanup levels. The site-specific bioassays are more appropriate and logical for this process, rather than data gathered from other parts of the country that may or may not relate to the receptors and the endpoints identified for this site. Finally, HQ values should not be used to set cleanup levels.

Response: Maps presenting the different areas where the COPECs exceed certain HQ values are still presented in the SWFS. These maps are to be used, along with the other lines of evidence developed in the SWFS, to make risk management decisions about the areas of attainment to be addressed in the SWFS. The discussion of effects range-low (ER-L) and effects range-medium (ER-M) have been removed from the SWFS.

37. **Comment:** Section 2.1.2, Page 47, Landfills. An excavation and consolidation alternative should be included for the landfills in this FS. It could be used in conjunction with the Site 1 CAMU being considered.

- Response: The Site 22 landfill is being addressed under a separate FS. Construction at Site 1 is essentially completed.
38. **Comment:** **Section 2.2, Page 48. The general response actions for sediments should include mitigation of impacted habitat as an alternative.**
- Response: Mitigation has been added to the range of alternatives discussed in Section 2.3.2.7.
39. **Comment:** **Section 2.2.1, Page 48. What constitutes an institutional control is subject to discussion, but the current thinking is that the term refers only to restrictions (which may or may not be legally enforceable such as deed restrictions, permitting, etc.) and not to physical restrictions which are considered more akin to engineering controls. We suggest deleting "physical" from the first sentence in the Institutional Controls paragraph.**
- Response: The text has been revised accordingly.
40. **Comment:** **Section 2.2.1, Page 49, General Response Actions - Containment. The containment part of this section needs to be revised. Capping or stabilizing sediment are the only alternatives presented for consideration. This section should be rewritten to include sediment control barriers, vegetation of potential source areas to reduce erosion, and other measures to reduce the sediment transport to the target ecosystems. A major part of the containment strategy should be to reduce the sediment load entering the drainage system, insofar as this is possible.**
- Response: Containment has been removed as a general response action.
41. **Comment:** **Section 2.2.1, Page 49, General Response Actions - Active Remediation. The statement that active restoration is appropriate "because conditions at MFA are favorable for some type of remediation" is weak and of no use. Obviously, "some type of remediation" could be used at any site. Please rewrite this paragraph.**
- Response: This paragraph in Section 2.2.2 has been revised to state, "Active remediation will address all of the RAOs and includes in situ (in place) treatment or excavation, ex situ (aboveground) treatment, and disposal. Active restoration is intended to reduce contaminant levels more rapidly than natural attenuation and degradation."
42. **Comment:** **Section 3.1.4, Pages 54 and 55, Removal. Sufficient information, i.e., calculations, are not presented to show the difference in excavation of 1 foot of soil compared to 2 feet of soil and sediments. The statement,**

"...significant costs associated with excavating large quantities..." is incomplete.

Response: This paragraph has been removed from the SWFS. However, costs associated with excavation are discussed in detail in Appendix D.

43. Comment: Section 3.1.7, Page 58, Disposal. The Navy should include in this evaluation the potential for disposal at Mare Island or other Navy sites in the San Francisco Bay area, including the Site 1 landfill at MFA.

Response: The lowest cost option for disposal of sediments in a landfill will be evaluated during the remedial design. For purposes of comparison, costs for locally available commercial landfills were used.

44. Comment: Section 3.2, Page 60, Evaluation of Sediment Process Options. As a result of the ERA, the Navy identified several sediment process options. These were evaluated on the basis of three general factors: 1) effectiveness; 2) implementability; and 3) relative costs.

Each of these factors are further evaluated through specific factors:

- a. effectiveness - ability to treat the estimated volume or area of contaminated media; - the level of protection for human and ecological resources; - the reliability of the alternative to reduce the toxicity, mobility, and volume of contamination at the site and provide long-term protection;**
- b. implementability - this factor incorporates both technical and administrative feasibility. Technical implementation is evaluated by the ease of construction, operation, and maintenance of an alternative. Administrative feasibility refers to the ability to obtain agency approval and the availability of materials and qualified operating staff;**
- c. Any alternative with costs that exceeds, by one order of magnitude, another alternative with similar protectiveness will be eliminated.**

These evaluators for the process options seem to be straightforward; however, there are duplicating and overlapping factors that may be biased by other options. The relative cost is the most quantitative and measurable; however, it can be influenced by the choices of comparison, especially for the various choices and the order of comparison. Some of the suggested estimates for costs have little basis on what is needed or reflects reality of performance.

- 1) **No action - This option offers no protection to the ecological receptors, therefore is unacceptable as a remedy.**
- 2) **Institutional controls - This "remedy" may be protective of human health, but offers no protection to biological receptors, and, again, is unacceptable.**
- 3) **Containment - This option is not clearly stated, i.e., "...reducing the mobility of compounds and eliminating potential routes of exposure by isolation" in this document and therefore is inadequately presented.**
- 4) **Active restoration (treatment) - This option is not fully developed in this document and therefore is inadequately presented.**

Response: This section of the SWFS has been rewritten to provide greater detail on the options considered and the evaluation based on effectiveness and implementability.

45. **Comment:** Section 3.2.3, Pages 62-64, Collection. Sediments designated for collection and disposal should be considered for use as containment material at a landfill, possibly Site 1. The sediment may be able to provide the proper structural and permeability characteristics to allow its use as a base layer for supporting the cap. If this action is not feasible, substantive reasons should be provided as to why it is not.

Response: The action at Site 1 has been completed. The possibility for use of any excavated sediments in the remedy at the Site 22 landfill will be explored during the remedial design.

46. **Comment:** Section 3.2.3, Page 64, Paragraph 4. Explain how the estimated 43,000 cubic yards of contaminated sediment was calculated. Also, what are the "toxicity levels" for a California Class II landfill? Please provide them.

Response: Volumetric calculations for the amount of sediment to be excavated are now presented in Appendix D of the SWFS. The toxicity levels are the California soluble threshold limit concentrations.

47. **Comment:** Section 3.2.4, Page 65, Containment. EPA does not support any activity that involves a concrete cap for the Eastern Diked Marsh or the stormwater retention pond inlet. See comment on Section 5.1.4.

Response: This alternative has been removed from the SWFS.

48. **Comment:** Section 3.3.2, Pages 72 and 73, Containment. A multilayer cap should include consideration of a single-barrier clay liner such as Claymax or equivalent, given the limited area requiring coverage (7 acres), and the cost competitiveness of liners relative to soil barrier layers. At the time of EPA's 1991 guidance, *Conducting RI/FS Studies for CERCLA Municipal*

Landfill Sites, the cost for such single-barrier clay liners was generally prohibitive, but it may not be so now.

Another alternative that should be considered is the use of the contaminated sediments as part of the barrier layer. The sediments could be used as the bedding or subgrade layer. If the permeability is sufficiently low (in the 1×10^{-7} cm/sec range), then the excavated sediments could be used as part of the barrier layer.

Response: The Site 22 landfill has been removed from the SWFS and is being addressed in a separate FS.

49. **Comment:** Section 3.4.3, Page 75, Paragraph 1. Please provide a reference for the non-methane organic compound (NMOC) landfill gas emissions calculations.

Response: See response to previous comment.

50. **Comment:** Section 4.1, Page 76. EPA disagrees with the statement and the implications for the Navy statement, "The SWEA revealed (i.e., produced) many uncertainties...". The issues listed are not issues at all; they involve requirements of the CERCLA process. The remediation process is required to correct the site conditions that were identified as significantly impacting the biological resources at Moffett Field. The ERA is "questioned" by the Navy for adequacy to define baseline conditions and is considered inadequate at the same time by the regulatory agencies. The ERA is the responsibility of the Navy and must meet minimum standards of the agencies. Despite the doubts of the Navy for the adequacy of the baseline risk assessment, cleanup of the site will benefit the site receptors. The Navy is trying to construe the habitat as "...of moderate quality" (p. 46) and at the same time suggesting that the "public" and "regulatory agencies" may not accept the excavation of contaminated sediments because this action will, "destroy active and thriving wetlands and ecological habitats..." (p. 76). These are contradictory statements.

Response: The SWEA has served its purpose in the RI/FS process: it identified the areas that have potentially been contaminated. The SWEA has been approved by the regulatory agencies. The balance between the benefits of remediation and the impacts of remediation must still be weighed. These issues will be resolved by the risk managers.

51. **Comment:** Section 4.1, Page 76, Alternative 2. By selecting Alternative 2 as a remedy, it seems to state that given the lack of information, the Navy is choosing to monitor rather than take action. At other sites, these kinds of situations have been considered treatability studies so that the federal

facility could monitor the situation without foreclosing the possibility of future action.

Response: Alternative 2 (institutional controls) is protective of human health but may not be protective of the environment. Institutional controls and monitoring would not preclude of future action.

52. **Comment:** **Section 4.1, Page 76, Alternative 2. If Alternative 2 is selected and institutional controls are to be implemented, consider whether some sort of legal restriction on use would be appropriate and what that restriction would be. This can be rather complicated at federal facilities and so would need to be discussed in more detail in a ROD, if selected.**

Response: Comment noted.

53. **Comment:** **Section 4.1, Pages 76 and 77. The alternatives proposed here are insufficient, as they only consider excavation of sediments where the least conservative HQ (HQ₁) is exceeded, and then only for HQ₁ > 100. A value of 1 is the accepted minimum HQ where a potential ecological risk could exist. For a fair comparison, other more protective HQ values should be considered for determining if excavation of sediments is necessary. In addition, capping remaining areas using onsite unimpacted wetland background levels as cleanup goals should be considered as another alternative. The remedial alternatives, as presented, do not provide an adequate, nor recommended level of protection for the biological resources or habitat at Moffett Field. The levels of risk represented by the Navy's estimate using the HQ₁ is under-protective, inadequate, unsupported, and unacceptable for any remedial options proposed at Moffett Field.**

Response: The alternatives now presented in the SWFS address soils with HQs greater than 10 for benthic receptors or HQ₃ greater than 100 for avian and mammalian receptors. The areas to be addressed in the selected alternative must be reviewed by the risk managers and revised as necessary to gain consensus on the selected alternative.

54. **Comment:** **Section 4.1, Pages 76 and 77. The alternatives presented in this section do not include containment. Please present the rationale for excluding this option.**

The alternatives are not clear as presented, because the document does not define HQ₁ and HQ₄. It is therefore impossible to determine which areas are to be excavated and which are to be capped.

- Response: Containment has been removed as a process option. HQ₁ and HQ₄ have been defined in the section on the results of the SWEA (Section 1.3.2.2). In addition, maps discussed in Section 2.2.1.2 present a range of areas that may have been contaminated.
55. Comment: **Section 4.1, Pages 78 and 79.** A systematic series of nomenclature errors render this section very confusing. For each section from 4.1.3 through 4.1.7, the first sentence references the wrong alternative. For example, in Section 4.1.3, Alternative 3, Hazard Quotient Greater than 100, the first sentence states that: "Under Alternative 2, contaminated sediments exceeding HQ₁ greater than 100.....would be removed...". Clearly, this should read "Alternative 3," since Alternative 2 is the use of institutional controls only. This is common to the other sections as well.
- Response: The section on development of alternatives (Section 3.1) has been extensively revised and these errors have been removed.
56. Comment: **Section 4.2.2.1, Page 80.** Multilayer cap ARARs will probably be the same as those selected for OU1. It is possible that some federal ARARs (e.g., sections of RCRA Subtitle D) may be applicable. See the OU1 ROD.
- Response: See response to comment 48.
57. Comment: **Section 5.1.2, Page 89, Compliance with ARARs.** This institutional controls alternative should not be called a "no action" alternative.
- Response: See response to comment 48.
58. Comment: **Section 5.1.4, Page 92, Containment.** One of the primary remedial technologies suggested for use in remediating contaminated sediments is containment. On page 92, it is stated that the containment method will be "pouring cast-in-place concrete liners over contaminated site sediment." Considering the potentially vast extent of areas that would require containment (see Figure 14), this containment method is considered impractical. In addition, containment with concrete liners would permanently destroy the habitat, which is undesirable. Containment of contaminated sediments is generally achieved by capping with a thick layer of clean sediment approximately 3 feet thick. Another capping alternative would be a thin layer cap of clean sediment of approximately 6 inches that would effectively reduce ecological exposure in the short term, and would reduce chemical concentrations in the sediment in the long term by mixing of clean and contaminated sediments. Thin layer capping can also be done in stages to minimize ecological impacts. These alternative containment methods should be fully evaluated in this FS.

- Response: Containment has been removed from the SWFS in favor of in situ treatment of unsaturated sediments to degrade PCBs using white rot fungus. If treatability studies show that using white rot fungus in situ is not effective at reducing PCB concentrations, capping may be reconsidered.
59. **Comment:** **Section 5.2, Page 96, Landfill.** Although Alternative 1 identifies an existing soil cap, this is not adequately discussed in the text. Please describe the existing soil cap.
- Response: See response to comment 48.
60. **Comment:** **Section 5.2.2, Pages 98-100, Multilayer Cap.** The costs associated with the multilayer cap should be reviewed. The yearly O&M is excessive, calling for revegetation on a yearly basis. It is unlikely that landfill gas monitoring would need to be performed on a quarterly interval. The cost for site management needs to be better defined.
- Response: See response to comment 48.
61. **Comment:** **Section 6.0, Page 101, Comparative Analysis.** A table showing some sort of "ranking" (possibly a scale of 1 to 5) to describe how well each alternative meets the nine criteria would be effective in summarizing the comparative analysis.
- Response: A new table (Table 10) has been added to this section (now Section 4.2) that compares each alternative against the others. However, no ranking of the alternatives has been generated.
62. **Comment:** **Section 6.1.1, Page 102.** Although the RI/FS concludes that Alternative 2 will meet threshold criteria to protect human health and the environment, this paragraph previously states that Alternative 2 may not protect the environment because of the lack of information regarding ecological risks. This really seems to say that there is insufficient information to say whether or not the alternative is protective of the environment. That is not the same as saying that it is protective. One possibility is to consider this a treatability study or consider it a contingent remedy based upon the results of the study. That would also require considering some baseline information regarding what information would be necessary to determine whether Alternative 2 is protective or whether the contingent remedy should be employed.
- Response: Alternative 2 has not been identified as an alternative that will meet the threshold criteria. Variations of Alternative 2 remain possible if the risk managers desire.

63. **Comment:** Section 6.1.2, Page 103, Paragraph 1. "None of the alternatives guarantees a permanent solution..." If this is the case, then the ROD will have to be called an interim or contingency ROD. Using this type of language should be avoided, unless there will be consideration for additional remedial action in the future. As is typically stated in the declaration of any ROD, "The remedy utilizes permanent solutions and alternative treatment technology, to the maximum extent practicable..."

Response: This sentence has been removed from the SWFS. The remedy selected will use permanent solutions to the maximum extent practical.

64. **Comment:** Section 6.1.2, Page 103, Balancing Criteria - Reduction of Toxicity, Mobility and Volume. The sentence: "The amount of toxicity and volume reduced for Alternatives 3 through 6 will be the same" is unclear and incorrect. Alternative 3 includes no capping, and therefore does not present the same reduction in mobility as Alternatives 4 through 6. Alternatives 4 through 6 all appear to call for the capping of different areas (although the document does not adequately define these areas). Alternative 7 is not mentioned. The sentence: "Alternatives 1 and 2 reduce the least amount of toxicity and volume" is grammatically incorrect. This whole section should be rewritten.

Response: The sentence in question has been removed from the SWFS and this section has been rewritten.

65. **Comment:** Section 6.1.2, Page 103, Balancing Criteria - Short Term Effectiveness. The statement that: "None of the alternatives would have grave short term impacts" is incorrect. The excavation and capping proposed would have a very substantial impact on the ecosystems concerned. Please rewrite this section.

The phrase "...the most amount of potential impact" is grammatically incorrect; please rewrite. The sentence: "Alternatives 1 and 2 would have the greatest potential for short term effectiveness" is technically incorrect, and essentially meaningless, since these alternatives are "no action" and "institutional controls only," respectively. Please delete this sentence.

Response: This section of the SWFS has been rewritten. The sentences referred to in the comments have been removed.

66. **Comment:** Table 4. The remediation goal for Exposure Area 4312 is inconsistent with the text in the last paragraph on page 43. Should it read "10-25 mg/kg"?

Response: This column has been removed from this table. The remediation goals are to reduce the carcinogenic risk to less than 1×10^{-6} and the noncarcinogenic HI to less than 1.

67. **Comment:** **Table 9, MFA Summary of Alternate Costs. This table is inadequate. It should be amended to include the approximate volume of soil to be excavated (the same for each alternative) and the areas to be capped for each alternative. This information is presented in Appendix D of this document. The salient information should be extracted and presented in Table 9, and Table 9 should be referenced to Appendix D. Further text discussion, including the assumptions made in developing the cost estimates, must be presented for each alternative to support the cost ranges presented.**

Response: The table showing the cost ranges for the various alternatives has been revised. Appendix D still contains all the information on generating the costs.

68. **Comment:** **Figure 2. The "Scale In Feet" legend appears incorrect when compared to other figures.**

Response: The scale on this figure has been corrected.

69. **Comment:** **Figures 11, 12, and 13. Figures 11, 12, and 13 present areas of elevated ecological risk for several different scenarios, as explained on pages 78 and 79. Please clarify what the polygons represent. It is stated on page 21 that Figures 11, 12, and 13 report hazard scenarios for avian and mammalian receptors, while footnotes to the figures indicate that the hazards are for benthic invertebrates and terrestrial organisms. If one assumes that the risks depicted in the figures are limited to the avian and mammalian receptors, how was the risk within a polygon determined? Text on page 21 leads to the conclusion that the receptor used to calculate risks in the figure is the great blue heron. The reader assumes that risks to the heron were calculated for oral exposure to sediment and fish, and that consumption of fish would be the primary route of exposure. An expanded explanation of how Figures 11, 12, and 13 were derived is required.**

Sediment sample locations fail to show flow and surface drainage direction, rendering them impossible to interpret. Please mark all figures accordingly.

Response: The polygons on the figures in question are Thiessen polygons. Their generation is discussed in Appendix N of the SWEA. In addition, the legends for these figures have been revised. These figures are extracted from the SWEA, which contains more information on their preparation.

70. **Comment:** **Figure 17. In the legend, is the symbol for "Fill" indicative of solid waste? If so, please change this title. Using the term fill may indicate uncontaminated material.**

Response: This figure has been removed from the SWFS.

71. **Comment:** **Appendix A, Tables. Use similar detail for the ARARs tables for landfills in Appendix A as is used for the OU1 ROD.**

Response: The tables for the Site 22 landfill have been moved to a separate FS.

72. **Comment:** **Appendix A, Tables A-3 and A-4. Please add an "ARARs Determination" column on these tables, as is done for Tables A-1 and A-2.**

Response: See response to comment 71.

73. **Comment:** **Appendix B. The Summary and Conclusions section of this appendix states that: "Concentrations of various metals in shallow wetland sediments appear elevated with respect to local background levels." This is supported by Table B-3, which shows that most of the metals results for the marsh, stormwater retention ponds, and ditches and channels exceed the UCL95 (background) levels. No discussion is presented of metals concentrations in wetlands hydraulically upgradient of the MFA facility (if they exist). Either wetland or stream bed/creek bed upgradient sediment results for metals should be presented to support the assumption that the metals contamination is not from MFA. Further discussion must be included to rule out the contaminant migration from MFA.**

Response: Appendix B has been revised and expanded. Metals concentrations in sediments collected upgradient of MFA are not the best location for background because of the changes in metals concentrations that occur with changing grain size and mineralogy downgradient. Metals concentrations in similar wetlands are discussed in Appendix B.

74. **Comment:** **Appendix C. Appendix C provides a proposal for the long-term ecological monitoring of MFA. Elements of the proposed monitoring for the initial 5-year period are: annual sediment chemistry analysis, annual sediment toxicity testing using a bivalve larvae test, annual tissue chemical analysis using a bivalve, and benthic community analysis performed immediately following remedial action, at 2 years and 5 years post-action. Although Appendix C provides a conceptual framework for the monitoring work, more details are needed before the design can be properly evaluated. Besides providing more details on the field design and methods, it is also necessary to state how results will be evaluated, and what actions could be taken based upon the results (contingency plan).**

Response: The details of any ecological monitoring plan would be prepared during the remedial design. Actions to be taken would be set out in the remedial design as well.

75. **Comment:** **No Data Quality Objectives (DQOs) are presented; will this sampling be conducted under an existing quality assurance project plan (QAPP)? Ecological Monitoring Data Quality Objectives must be developed to fulfill this objective.**

Response: DQOs will be developed with the monitoring plan during the remedial design.

76. **Comment:** **The sample grid size is not defined on page C-3. Please present a grid size and the rationale for selecting it.**

Response: See response to comment 74.

77. **Comment:** **The number of samples listed in the table on page C-4 does not seem adequate. Please provide the rationale for these numbers.**

Response: See response to comment 74.

78. **Comment:** **No information is presented as to the locations of the sample points with respect to hydraulic gradient. Will background samples be collected? No quality assurance and quality control (QA/QC) samples are presented. Please address all of these issues.**

Response: See response to comment 74.

79. **Comment:** **Appendix D. Cost estimates for the remedial alternatives are presented in Appendix D. Costs for Alternatives 3 through 7 are similar despite the fact the areas considered for containment (i.e., cover with a concrete slab) vary considerably (i.e., Alternative 3 versus Alternative 6). Cost estimates presented in Appendix D do not appear to include costs for the containment portion of the remedial actions. Appendix D must be modified to reflect costs for the containment technology.**

Response: The cost estimates presented in Appendix D have been revised, as have the alternatives.

3.0 RESPONSES TO COMMENTS FROM CAL/EPA

3.1 GENERAL COMMENTS

1. **Comment:** **Executive Summary (page ES-2).**

Several issues that “remain unclear” in the SWEA are listed. Please specify whether these are all the outstanding issues that remain to be

resolved. Pertaining to the SWEA, California Department of Fish and Game (DFG) has concerns, which are discussed below, with the following outstanding issues pertaining to the use of the high toxicity reference values (TRVs) and the use of hazard quotients (HQs).

The report utilizes two toxicological “benchmarks”, referred to as hazard quotients which are used to assess potential adverse effects to ecological receptors, including state fish, wildlife, biota, and their habitats. HQ₁ and HQ₂ or the ratio of a particular exposure route dosage (or media concentration) to a reference dose (or media concentration), utilized high toxicity reference values (= less sensitive receptor responses), whilst HQ₃ and HQ₄ were derived from “low” TRVs or values developed from longer term exposures or more sensitive toxic end points, such as reproduction.

These HQs need to be evaluated in the context of their use in determining the ecological risks of hazardous chemical releases and the subsequent selection of a remedial action or risk management decision. The principal result of a “remedy” or “remedial action” is to “... prevent or minimize the release of hazardous substances so that they do not migrate to cause substantial danger... to the environment”¹ and “protect and restore (natural) trust resources”². This latter overarching and equally important aim of the hazardous waste cleanup or remediation becomes the minimum standard or remediation goal to be attained in the select of a remedial action. With that guidance and as the principal State trustee for fish, wildlife, biota and their habitats, DFG can only recommend remedial actions which restore trustee resources to “baseline” or “conditions that would have been expected at the assessment area had the discharge or release of the hazardous material not occurred (underline added)³. Consequently, this guidance (CERCLA law and regulations) clearly does not allow cleanup goals that would allow continued toxicity to natural resource populations, for example. The HQs which are derived from the “low” TRVs must be used to establish risk or the likelihood of adverse effects from contaminants to trust natural resources. These HQs should protect the most sensitive species, as they use lowest no observable adverse effect levels or NOEALs. If one did not employ these lower values to estimate risks and drive the remediation, it is intuitively obvious that full protection of fish, wildlife, biota, and their receptors cannot be achieved. Any resultant remedial action, based upon the high TRV will, more likely than not, cause continued injuries to state trust resources, Further restoration actions are warranted by the federal and state natural resources trustees if HQ₁ and HQ₂ criteria are employed in the remedial

¹ CERCLA § 101 (24); 40 CFR Ch. 1, Part 300, Subpart A, § 300.5

² CERCLA § 122(j)(2); quote from US EPA, 1992. The role of natural resource trustees in the Superfund process. ECO Update, OSWER Publ. 9345.0-051. P.8.

³ 43 CFR Subtitle A, §11.72 (b)(1).

investigation. If the HQ_{3/4} estimates exceed one, more evaluation is needed to define, characterize, and evaluate natural resource endpoints responses or injuries (*sensu* CERCLA § 107, injuries to natural resources) to allow the state and federal natural resource trustees to determine the need for further actions, for example restoration.

Response: The various HQs are presented in the revised draft final SWFS as they were in the final SWEA. The SWEA has been approved by the regulatory agencies. As stated in the SWEA, the impact to the environment is based on a weight of evidence approach, not solely on the HQ values. The range of HQs is presented in the SWFS to assist the risk managers in making cleanup decisions for MFA.

2. Comment: Section 1.2.4 Contamination Entering from Off Site (Page 12).

Please specify on whether the MEW Superfund site is the sole source of VOC contamination at MFA.

Response: Section 1.2.4.3 states that volatile organic compound (VOC)-contaminated soil was excavated from Site 18 (including Building 88). This source probably contributed to the VOC contamination in the groundwater on the west side of MFA. This area is not discussed in this SWFS because it is covered by the ROD with the MEW companies.

3. Comment: Section 1.3.2 Site-Wide Ecological Assessment (Pages 16-17).

Please elaborate further on the Phase I SWEA methodology and site characterization described in this section.

It is stated that wetland areas were identified based on criteria from the U.S. Fish and Wildlife Service (USFWS) and the U.S. Army Corps of Engineers (COE). Please specify whether all the wetland areas were identified utilizing both criteria, how the USFWS and COE criteria differ, and why the wetland areas were not identified based on DFG criteria.

Response: Additional information on the Phase I SWEA has been added in Section 1.3.2 of the SWFS. For a detailed discussion of the Phase I SWEA see the "Final Phase I Site-Wide Ecological Assessment."

The SWFS shows the areas of wetlands delineated by both USFWS and the COE criteria (Figures 4 and 5). The California Department of Fish and Game wetland delineation criteria follow the USFWS protocol to define wetlands. It is beyond the scope of the SWFS to explain the differences in the wetlands delineation criteria. Applicability of these criteria to MFA wetland areas is still being discussed by the BCT.

4. **Comment:** Section 1.3.2.1 Phase II SWEA Overview (Pages 17-23).

Refer to DFG comment number one above pertaining to HQs, HIs, and TRVs.

What will be done or is being done to eliminate and/or address all the listed major sources of uncertainties associated with the risk assessment for benthic, avian, and mammalian receptors.

Response: The SWEA has been accepted by the regulatory agencies for use in the RI/FS process at MFA with the existing uncertainties. The Navy believes that, including the uncertainties, the SWEA has served its purpose in the RI/FS process of identifying the areas of greater and lesser impact to the environment due to MFA activities.

5. **Comment:** Section 1.3.2.2 Summary of Ecological Risk (Page 23).

What is meant by moderate in the statement "...results in a moderate possibility of adverse effects on receptors?"

Response: This statement is taken from the executive summary of the SWEA. The footnote on Table ES-2 of the SWEA states that "moderate" is $10 \leq HQ < 100$.

6. **Comment:** Section 1.3.3.2 Wetland Areas (Page 30).

This section seems to focus on the role of wetlands as "waste treatment systems" and "limited sinks." It is necessary to take into account that some of the wetlands at MFA are closed systems, not open systems with flushing action, which tend to accumulate the contaminants removed from the waste water, thus making them accessible to the food web (i.e., aiding in the biotransfer of contaminants to higher trophic level organisms). Wetlands can "limit the bioavailability of a number of constituents," but they do not stop all the constituents from being bioavailable.

Pertaining to the statement that "...sediment bioassays showed limited toxicity for some organisms, the potential impact to populations in these marshes is not clear." When and what is being done to make this clear.

There is existing contamination in the wetlands and the remediation of at least the identified hot spots should be taken into consideration in this section.

Response: The wetlands are discussed in the SWFS in Section 1.2.4.6. The statement about sediment bioassays has been removed from the revised SWFS text.

Contamination "hot spots" are taken into consideration in the alternatives selection.

7. **Comment:** Section 1.4.2 Identification of Potential ARARs (Page 34).

DFG submitted a list of potential ARARs and TBCs to Ms. Susan Mearns of Montgomery Watson on March 29, 1994 and to DTSC on September 30, 1996. DFG requests that all potential ARARs and TBCs submitted by DFG be addressed, either in the text of these sections or in Appendix A.

Please provide the rationale for determining that DFGs potential ARARs are not applicable or relevant and appropriate. Also, please also provide the rationale for considering and rejecting DFGs TBCs. Finally, please explain how those ARARs /TBCs and how they will ensure protectiveness of fish, wildlife, biota, and their habitat.

Response: Applicable or relevant and appropriate requirements (ARARs) are listed in Table A-1. The selection of ARARs is discussed in Appendix A.

8. **Comment:** Section 1.4.2.2 Potential Federal and State Location-Specific ARARs (Page 36).

Pertaining to the statement "The State of California has adopted the U.S. Fish and Wildlife Service definition for wetland areas and does not have more stringent laws and regulations for protection of wetland and flood plain areas than the federal laws and regulations." The DFG has adopted the USFWS wetland definition (as contained in Cowardin et al., 1979) for Department use in conjunction with application of DFG's Wetland Resources Policy. Please clarify if this is the USFWS criteria that the wetlands were identified on as stated on page 17.

It is stated that "under the federal program, if wetland destruction or loss is necessary, then new, comparable wetlands areas may need to be established so that there is no net loss of wetlands." The DFG wetland policy stresses the need to compensate for the loss of wetland habitat on an acre-for-acre basis. For every acre of wetland lost, no less than an acre of wetland must be created from non-wetland habitat. Compensation for the loss of wetland habitat values to fish and wildlife resources requires the creation of habitat values at the compensation site which at least duplicate those habitat values which are lost to project implementation.

Mitigation for habitat values lost to the implementation of a project may be accomplished in four ways taking into consideration mitigation site location and wetland type to be created or enhanced: In-kind, on-site; In-kind, off-site; Out-of-kind, on-site; and Out-of-kind, on-site; and Out-of-kind, off-site. Please refer to the enclosed document "Department of Fish

and Game Recommended Wetland Definition, Mitigation Strategies, and Habitat Value Assessment Methodology” for further information.

Please elaborate on how long it will take for the “capping or excavation of contaminated soil and sediment” to be complete and describe what actions will be taken to compensate for the interim-loss of wetlands and adverse impacts to fish and wildlife during these remediation activities. Please also elaborate upon how the impacted wetlands would be “re-established” the factual basis for determining that no wetlands will be “lost”. Please also explain what contingencies are planned for in the event wetlands are not re-established or are lost during the remediation.

Response: See response to DTSC comment 3 concerning wetland delineation criteria.

The area of the Eastern Diked Marsh that may be excavated as part of the remediation would be restored as rapidly as possible following excavation. The replacement of clean soil and restoration of this excavated area are expected to take only a few weeks. No action will be taken for this interim loss of wetlands. The proposed Eastern Diked Marsh excavation would remove the top 1 foot of soil. Clean soil would then be placed in these areas and a stream channel created to take water from the stormwater settling basin, through the Eastern Diked Marsh, and to the stormwater retention pond. The clean soil would then be replanted with species presently growing in this area. No wetlands will be lost during the remediation.

9. **Comment:** **Section 2.1.1.1 Chemicals of Concern (Page 42).**

The DFG does not agree with the elimination of metals from consideration for the purposes of identifying remediation areas. The Phase II SWEA identifies metal concentrations in the sediment that occur at levels above the background levels. These present high levels may pose potential ecological risks to the wildlife present.

Response: Appendix B contains further rationale for the elimination of metals from the list of contaminants of concern. Areas with high metals concentrations will be removed if the Eastern Diked Marsh is excavated.

10. **Comment:** **Section 3.1.4 Removal (Page 55).**

Cost alone does not provide sufficient justification to warrant the removal of only the first 1 foot of soil when as stated, “pathways to human and ecological receptors are through direct contact with the top 2 feet of soil and sediment.”

Response: The risks to human health and the environment will be reduced to an acceptable level by removal of the top 1 foot of sediment and its replacement with 1 foot

of clean backfill. Contaminant concentration profiling can be done in some areas to demonstrate that the PCBs have been removed to acceptable levels.

11. **Comment:** Section 3.2.4 Containment (Page 65).

Please elaborate on the wetland “restoration” that would be involved and specify on how the wetlands from the Eastern Diked Marsh and the stormwater retention pond would be “relocated.” Since it would depend on the capping material utilized on whether “the ecosystem may reestablish itself,” DFG would not support the use of capping material that would not allow this to occur.

Response: The discussion on containment has been removed from the SWFS.

12. **Comment:** Section 4.1 Sediments (Page 76).

The listed issues regarding the SWEA that still remain unclear all involve CERCLA requirements (see DFG comment number one). Also, refer to DFG comment number one in regards to the unacceptable use of HQ₁ for any of the remedial options proposed, the use of HQ₁ would not provide adequate protection to the natural resources and their habitats.

The statement “...destroying active and thriving wetlands and ecological habitats for uncertain benefits” (which is made several times throughout the document), concludes that remedial action will cause injuries to wetlands without providing any analysis, data, or evaluation. DFG believes that remediation of hazardous waste in wetland is feasible, is cost effective, and can be accomplished without destroying the wetland for “uncertain benefits.” Reference to “active and thriving wetlands” is difficult to evaluate in the context of exposure to hazardous wastes, and resultant toxicological impacts. With respect to regulatory guidance the SWEA has not evaluated, considered, nor analyzed data and studies to determine the “baseline” condition of state fish, wildlife, biota, and their habitats. As a consequence the State Natural Resource Trustee Agency cannot concur with the conclusion that the remediation (or lack thereof) complies with the intent of CERCLA to return natural resources to conditions which prevailed (or would have prevailed) had the release of hazardous substances not occurred.

As part of the remedial action, there should be an analysis and evaluation of how Navy intends to compensate the state for the injuries to its natural resources and related services lost to the public that occur during remediation and post-remediation. While DFG’s preference is for full restoration, i.e., a return to conditions that would have existed had the release(s) not occurred. DFG also recognizes that rehabilitation,

replacement, and/or acquisition of equivalent resources may be viable alternatives under certain circumstances.

Response: As discussed in the response to DTSC comment 1, the SWEA has now been approved by the regulators. The range of alternatives presented in Section 3 of the SWEA is designed to allow the risk managers flexibility in remedy selection to balance impacts and potential benefits of each alternative.

13. Comment: Section 5.1.3 Removal and Off-Site Disposal (Pages 90 and 91).

It is stated that “the ecological exposure pathway is contained within the top 1 foot of sediment,” yet on page 55 is stated that “pathways to human and ecological receptors are through direct contact with the top 2 feet of soil and sediment.” These are contradictory statements, please clarify.

Elaborate on what is meant by “minimal verification” sampling will be necessary. And what is meant by “low” in the statement, “The remaining risks associated with residual COCs left in place (at depths greater than 1 foot) are low...”

Response: The SWFS has been revised to consistently use the top 1 foot of sediment in these discussions.

The text containing the term “minimal verification” have been removed from the SWFS. The term “low” means below the acceptable risk range.

14. Comment: Section 6.1.2 Balancing Criteria (Pages 102-104).

DFG disagrees with the statement that Alternative 2 (institutional controls through fencing, signs, and ecological monitoring) may meet the threshold criteria of overall protection of human health and the environment. DFG believes long-term ecological monitoring is not protective of fish, wildlife, biota, and their habitat and would fail to meet DFG’s stated ARARs if subsequent monitoring determined that adverse impacts to ecological receptors have occurred or continue to occur.

Moreover, DFG believes Alternative 2 does not meet the strong statutory preference for remedies that provide long-term effectiveness and permanence or that reduce toxicity, volume or mobility of contaminants that would be met by selection of Alternatives 3-7.

The statement is made “Alternative 7 offers the most long-term effectiveness and permanence” and in the preceding paragraph it is stated that “Alternatives 2 through 7 all provide the same level of permanence.” These are contradictory statements, please clarify. What is the time frame

being discussed when referencing “long term” monitoring, effectiveness, and permanence.

Pertaining to the statement, “The restoration of these areas to the baseline condition will require significant effort.” Does “baseline condition” mean prior to any contaminants having been released and what is meant by “significant?”

Response: Alternative 2 will be reviewed by the risk managers.

Alternative 7 has been removed from the SWFS. The statement, “The restoration of these areas to the baseline condition will require significant effort,” has been removed from the SWFS.

15. **Comment:** Appendix A (Page A-2).

First and foremost, please respond to DFG comment number seven.

In the analysis of the “Executive Order 11990 Wetlands Protection” the report implies that habitat destruction is unavoidable and damage to wetland areas including benthic communities and presumably other natural resources by the implementation of remedial action of capping and/or excavation. DFG believes that there are engineering and ecological techniques available to mitigate/minimize impacts from those remedial treatments. Although the ARAR analysis does not further identify how the alternatives will comply with this executive order DFG believes none of the described alternatives are precluded because of this ARAR.

Table A-1 also states “overtime habitat should be re-establish naturally.” DFG would like to have clarification of this statement. DFG strongly believes that active re-vegetation and other mitigation measures should occur to restore the wetland to baseline conditions as soon as possible. The Department of the Navy (DON) should not solely rely upon natural restoration.

Response: The text in Table A-1 has been revised to remove the statements about invariable damage. The wetlands areas that may be excavated would be covered with clean soil and replanted as soon as possible after the excavation activities are completed. Also see the response to DTSC comment 7.

16. **Comment:** Appendix C (Pages C-1, C-5).

This appendix presents options for the “long-term monitoring at MFA to track the progress of the ecosystem toward recovery.” Is the time frame being placed on “long-term monitoring” 5 years? In a five year period there will be a total of three biological surveys conducted (one immediately

following the remediation action, another one 2 years after and the final one 5 years following the remedial action). Monitoring should occur on a frequent basis (i.e., no less than every 5 years), it should commensurate with the types of vegetation and the sedimentation recovery rates, and it should be conducted for the life of the contaminants(s) left in place. Given the potential adverse impacts that may result from the proposed remediation activities, DFG believes that DON may need to monitor beyond 5 years in order to ensure that full restoration has occurred.

In which instances are the soils of concern not adjacent to the runways or near operational activities?

Please specify which bivalve larvae is being contemplated for use as a test organism for the long-term monitoring plan.

Pertaining to the establishment of a reference site to use for MFA, DFG would like to have this issue investigated further. DFG is not certain that the proposed San Francisco Bay site that is currently being used for Hunter's Point, may be best site for MFA, this warrants further discussion.

Since the biological surveys will not be a detailed cataloging of the entire biological community, which specific species will the survey focus on to ensure that species that may be impacted are not overlooked. Will the sediment biological survey focus on the whole benthic population present or just select organisms? Will a census on all birds present be conducted or just on specific key species? How will the "health of the special status species" be monitored?

Response: The ecological monitoring is scheduled for 5 years. At the end of this time, the results of the monitoring will be reviewed to evaluate appropriate actions.

The sediments of concern are in the Northern Channel, Eastern Diked Marsh, and stormwater retention pond.

The species of bivalve larvae to be used for the monitoring have not been selected.

The Navy will discuss the location of a potential reference site with the regulatory agencies.

A detailed ecological monitoring work plan has not yet been prepared. If required, a detailed plan will be prepared and submitted to the regulatory agencies for comment during the remedial design.



Tetra Tech EM Inc.

1099 18th Street, Suite 1960 ♦ Denver, CO 80202 ♦ (303) 295-1101 ♦ FAX (303) 295-2818

February 5, 1998

Mr. Stephen Chao/Mr. Hubert Chan
Department of the Navy
Engineering Field Activity West
Naval Facilities Engineering Command
900 Commodore Drive, Building 210
San Bruno, California 94066-5006

CLEAN Contract N62474-94-D-7609 (CLEAN II)
Contract Task Order 0153

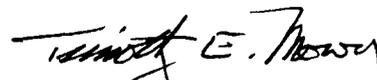
**Subject: Response to Comments on the Draft Final Station-Wide Feasibility
Study Report,
Moffett Federal Airfield**

Dear Messrs. Chao and Chan:

Enclosed are three copies of the above-referenced report. Copies of the response to comments have been distributed to the regulatory agencies and project personnel on the attached list. If you have any comments or questions, please call me at (303) 312-8816 or Tim Mower at (303) 312-8874.

Sincerely,


Theodore T. Ball, Ph.D
Project Geochemist


Timothy E. Mower, R.G.
Project Manager

TTB/jed

Enclosure

cc: Distribution List

DISTRIBUTION LIST

Response to Comments Draft Final Station-Wide Feasibility Study Report Moffett Federal Airfield

<u>Individual</u>	<u>Number of Copies</u>
Mr. Stephen Chao/Mr. Hubert Chan, EFA WEST	3
Mr. Don Chuck, EFA WEST	1
Mr. Michael Gill, EPA	2
Mr. Joseph Chou, RWQCB	1
Mr. Jim Haas, USFWS	1
Mr. Scott Flint, Cal F&G	1
Ms. Laurie Sullivan, NOAA	1
Mr. Peter Strauss, Strauss Associates	1
Mr. Ted Smith, SVTC	(letter only)
Ms. Sandy Olliges, NASA	1
Ms. Tina Pelley, SAIC	1
Mr. Alex Terrazas, City of Mountain View	1
Mr. Stewart McGee, City of Sunnyvale	1
Mr. Kenneth Eichstaedt, URS	1
Ms. Kim Walsh, MW	1
Dr. James McClure, HLA	1
Ms. Ingrid Chen, Raytheon	1
Mr. Dennis Curran, Locus	1
Mr. V. Thomas Jones, Schlumberger	1
Ms. Cathrene Glick, RAB Co-Chair	1
RAB THE Committee (c/o Dr. James McClure)	4
Information Repository	2