



Oil/EPA

Department of
Toxic Substances
Control

December 19, 1997

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Peter M. Rooney
Secretary for
Environmental
Protection

**DRAFT FINAL ONSHORE REMEDIAL INVESTIGATION REPORT,
NAVAL STATION TREASURE ISLAND (SEPTEMBER, 1997)**

Dear Mr. Galang:

The Department of Toxic Substances Control, in conjunction with the San Francisco Bay Regional Water Quality Control Board and Department of Fish and Game, has reviewed the Draft Final Onshore Remedial Investigation Report for Naval Station Treasure Island, dated September, 1997.

In general, it appears that the Navy has not done itself justice in presenting data for which it has expended considerable resources to obtain. The reader must wade through convoluted descriptions of Remedial Investigation activities and results in order to try and determine if each site has been adequately characterized as to nature and extent of contamination. Many of the enclosed comments are more appropriate for a draft report, but they are provided here so that the Navy can produce a final report that is as comprehensible to the public and other agencies as possible. Specific areas of concern addressed in the enclosed comments include TPH screening levels, application of groundwater modeling results, clear presentation of the rationale for various decisions and conclusions, the use of Toxicity Reference Values for ecological risk assessment, and uncertainties related to the predictive assessment for raptors.

Mr. Ernesto Galang
December 19, 1997
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If you have any questions regarding this letter,
please contact me at (510) 540-3814.

Sincerely,

Mary Rose Cassa

Mary Rose Cassa, R.G.
Engineering Geologist
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enclosures

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<i>Admin Record</i>	<i>(3 Copies)</i>	

DEPARTMENT OF TOXIC SUBSTANCES CONTROL
COMMENTS ON DRAFT FINAL ONSHORE REMEDIAL INVESTIGATION REPORT,
NAVAL STATION TREASURE ISLAND (SEPTEMBER, 1997)

General Comments

1. The Navy seems reluctant to use the term "operable unit" in referring to the onshore portion of its basewide (comprehensive) cleanup program, "because separate onshore operable units may be formed at a later date." The potential subdivision of the onshore OU into several contiguous OUs, or the designation of additional operable units should not preclude the formal designation of the onshore operable unit pursuant to the National Contingency Plan: ". . . a discrete action that comprises an incremental step toward comprehensively addressing site problems . . . The cleanup of a site can be divided into a number of operable units, depending on the complexity of the problems associated with the site" (emphasis added).
2. The report contains references to reports (both past and anticipated) and actions (e.g., fuel pipeline investigation/removal) that are not up to date. Please ensure that all such references are as current as possible.
3. Early in the process of developing the workplan for this RI, the BCT discussed the fact that considering individual IR sites separately would not accurately reflect the extent of contamination. To this end, the BCT agreed on a grouping of IR sites, based on proximity, which would aid evaluation of contaminant distribution. This agreement was not adhered to in the Draft RI report, and meaningful maps are therefore still missing from the Draft Final report. In order to adequately (and accurately) display information needed to evaluate the nature and extent of contamination at NAVSTA TI, it is imperative that maps be generated which show all relevant data from adjacent IR sites. These maps may be contained in a separate summary chapter in order to facilitate report revision and production of the final report. Sites which require this evaluation include Sites 5/17/24A and Sites 6/12/20.
4. The Navy recommends no action under CERCLA for several sites, due to the fact that groundwater at NAVSTA TI does not meet criteria for drinking water and has been recommended for dedesignation as drinking water beneficial

use in a draft RWQCB Report, and that existing contamination does not exceed criteria for the protection of aquatic species. Designation by the RWQCB that an aquifer is not a source of drinking water may address a Regional Board ARAR, but does not satisfy the requirements of the California Health and Safety Code (Chapter 6.8) or CERCLA. If the Navy desires to propose cleanup levels other than those appropriate for unrestricted use, an institutional control (e.g., deed restriction) must be proposed as the remedy in a RAP/ROD and implemented as any other remedy. This also applies to sites where soil contamination does not pose an unacceptable risk under current conditions (e.g., IR Site 07), but may pose a risk if conditions change.

5. It would be helpful if representative TPH chromatograms were included in an appendix so that the reader can evaluate the conclusions that certain samples contain various petroleum products (e.g., diesel, "weathered diesel," "oily waste," etc.). In addition, text referring to output traces from chromatographic analysis should be corrected to refer to chromatograms, not chromatographs (the analytical instrument).
6. The use of the term TPHi for results of immunoassay field screening for TPH is confusing, if not misleading, because similar terminology (TPHg, TPHd, TPHm) is used to identify classes of hydrocarbon compounds. DTSC recommends selecting a different designation to identify immunoassay field screening results.
7. In cases where immunoassay was performed and selected samples sent to an offsite laboratory for confirmation, the text should read, "offsite analyses included [analytes]," not "offsite samples were analyzed for [analytes]."
8. Analytical Results figures: Note 1 on these figures states, "The figure only presents detected results. A blank space in the data table indicates that the analyte was not detected or was not analyzed." The note should be expanded to include information regarding sample location that are shown by the appropriate symbol, but no data table is shown (i.e., all analytes were non-detect).

9. The Navy must ensure that NAVSTA TI has been adequately characterized with respect to soils that may contain lead from any source at levels which may pose a threat to human health and the environment. In many cases, this assessment may be made based on knowledge of building construction and maintenance practices, and the condition of the ground surrounding buildings, without the need for extensive additional sampling.

Specific Comments

1. Section 1.4.1, Separation of Petroleum Sites From the Remedial Investigation: The designation of IR sites for corrective action under RCRA (CCR Title 23, Chapter 15) still requires monitoring for CERCLA substances to ensure that concentrations remain at or below CERCLA action levels. Should concentrations exceeding action levels be detected, cleanup pursuant to CERCLA (CA Health and Safety Code, Chapter 6.8) will be necessary. Please include language to this effect in this section.
2. Figure 1-2, compared with Figure 12-1: Figure 1-2 indicates the former ammunition storage area, including a representation of the locations of former bunkers and apparent service roadways. This information is not exactly the same as information depicted on Figure 12-1. Specifically, the locations of former roadways may help provide insight into the distribution of contamination at Site 12. This information should be verified and evaluated for inclusion in the Site 12 additional investigation.
3. Chapter 4: Preliminary Identification of Applicable or Relevant and Appropriate Requirements: This chapter is deficient in the identification of potential ARARs. Several ARARs are missing that apply to the remedial investigation, and many are missing that may apply to remedial actions. Please revise this chapter using the enclosed table.
4. Section 6.8, Conclusions and Recommendations (IR Site 03):
 - a. The text states, "low concentrations of PCBs were detected in wipe samples collected in 1987 from stained asphalt areas." Please provide the data to support this statement.

- b. The text states, "Two soil borings were drilled during the remedial investigation . . . to delineate potential soil contamination beneath the wipe sample locations." The sample location map (Figure 6-1) does not show borings collocated with wipe sample. Please clarify the relationship between wipe samples and boring samples.
5. Figure 7-2, Organic Analytical Results for Soil and Water, IR Site 05: The depth for sample 05-TP03 is indicated as zero; however the sample was taken at the bottom of the test pit. Please correct.
6. Chapter 7, IR Site 05: Upon evaluation of the information provided in this chapter, the reader might wonder why the second highest TPHd concentration (11000 mg/kg) is sixty feet from the fuel pipeline. The answer to this question is likely addressed in Chapter 13, which discusses adjoining IR Site 17 (Tanks 103 and 104). That chapter describes a release of 20,000 gallons of diesel fuel onto unpaved ground in 1983, before the berm was installed. This is an example of why adjoining sites must be considered together, as requested in General Comment #3.
7. Figure 9-1, Site Location Map, IR Site 08: Please add CalTrans borings to the legend.
8. Section 9-5, Field Geology and Hydrogeology, IR Site 08: Please include geological information obtained from the CalTrans borings, as appropriate.
9. Chapter 11: Please add missing text (pages 11-8/11-9).
10. Section 11.5.3, Groundwater Flow Patterns and Velocity, IR Site 11: The text states, "The reason for this anomalous [5.2 feet between May 1995 and November 1995] drop in water level was not determined." It would be helpful if the Navy would propose several explanations for this behavior, then rule out those that are incompatible with the known facts. The text does not indicate if measurement error was considered. The text further states, "The times that the November water level measurements were recorded are unavailable . . ." Please indicate if the times were not recorded, or if the information is lost or missing.

11. Section 11.9.2.1, Organic Chemicals of Concern in Soils, IR Site 11: Please correct the figure reference for spatial distribution of PAH COCs. The text incorrectly references Figure 11-10, which is TPH Immunoassay Results.
12. Section 12.1, Site Description and Operational History, IR Site 12:
 - a. The text refers to "two additional former activities" at Site 12 that may have contributed to potential contamination. Please clarify if the "underground oil storage tank" is the same as the "Former Buried Oil Tank" noted on Figure 12-1. Please add the former air strip to figures.
 - b. Please include all relevant features such as "oil tank" site(s), rubbish disposal area(s), and landfill area(s) on all figures so that the reader can evaluate decisions to concentrate sampling in these areas, and the adequacy of data in characterizing potential contamination from these features.
13. Section 12.5.3, Groundwater Flow Patterns and Velocity, IR Site 12: The text describes groundwater flow at Site 12 as radial, whereas the flow pattern is really a component of radial flow for all of Treasure Island. Please correct.
14. Figures 12-5a, 12-5b; 12-7a, 12-7b: These figures should be revised so that the data are split geographically (e.g., east/west) and so that soil and groundwater maps can be overlaid to aid evaluation. If all data points are to be shown on all maps, then those data points for which data are presented on the companion map must be identified as such. If this is not done, then locations without data are taken to represent nondetect for all analytes (see General Comment #8). The figures as presented are counterproductive and do not aid evaluation of the data for which the Navy has expended considerable resources to obtain.
15. Section 14.1, Site Description and Operational History (IR Site 21): The second and third paragraphs should be combined to describe the process of waste oil recovery at Site 21. The text as written does not accurately describe the process. Reordering the sentences would help improve the accuracy.

16. Section 15.9.1, Evaluation of Adequacy of Data Collection (IR Site 24): The first paragraph states, "Groundwater analytical results indicate that the center of the solvent plume is located beneath Building 99." This sentence would be more relevant if it stated that the groundwater contours, based on analytical results, indicate that the source of the solvent plume is the east end of Building 99. Please revise as appropriate.
17. Figure 15-1, Site Location Map, IR Site 24: Please add the Site 24A/24B boundary to the legend.
18. Section 15.9, Nature and Extent of Chemicals of Concern, IR Site 24: The Navy should consider using detailed sampling through profile sampling or multi-level sampling to further evaluate the vertical distribution of chlorinated hydrocarbon contamination in groundwater and evaluate remedial alternatives.
19. Chapter 16, IR Site 28: Please include the map from the Blaine report. It is difficult to evaluate the existing information without knowing where the original samples were located. It is possible that most of those sample locations are now covered as a result of slope stabilization efforts.
20. Chapter 18, Conclusions and Recommendations: DTSC cannot concur on conclusions for sites 12, 24, 11, 28, and 29 until the proposed addenda are submitted.
21. Section 18.2, Recommendations and Conclusions:
 - a. Those sites recommended for no action under CERCLA and transfer to the Navy's UST Program (Sites 9 and 17) must continue to be monitored for CERCLA substances. This information should be evaluated by the Regional Water Quality Control Board. Any evidence of CERCLA releases must be forwarded to DTSC.
 - b. The Navy should clarify that Site 24A (dry cleaning facility) is subject to further Feasibility Study; Site 24B (5th Street fuel release) is recommended for transfer to the UST program.

22. Table 18-1, Recommendations for IR Sites:

- a. The last column ("Recommendations/Conclusions") does not really contain conclusions; that word should be deleted from the column heading.
- b. Site 1: The table should include information about source control activities.
- c. Site 5: This summary does not make it clear if fuel contamination in pit TP03 will be addressed under the UST program, even though the contamination is located some distance from the fuel line. The Navy should consider combining Sites 5, 17, and 24A.
- d. Site 7/10: Please separate risk calculations for Sites 7 and 10 to support the "No action under CERCLA recommendation for Site 7.
- e. Site 12: Please include "Possible recommendation for FS following conclusion of additional investigation."
- f. Site 24: The table should include dividing Site 24 into 24A and 24B (and rationale for doing so) in the recommendations.

23. Appendix O: Response to Agency Comments on the Draft Remedial Investigation Report

DTSC General Comment #3: The Navy's response states, "It was further agreed that the project managers would meet at another time to discuss an evaluation of the beneficial uses associated with groundwater at NAVSTA TI." Please provide an update on the planning for this meeting.

DTSC Comment #5, Appendix G: The Navy's response states, ". . . EPA agreed to determine if a utility worker scenario was being evaluated at any other Naval installations." Please provide an update on this information.

Additional comments submitted by State reviewers (enclosed):

James M. Polisini, Ph.D. - DTSC, Human and Ecological Risk Division (please note: Dr. Polisini commented, "HERD was not involved in the April 4, 1997 meeting . . ." Dr. Polisini did not attend that meeting, but HERD was represented by Calvin Willhite, Ph.D.)

Calvin C. Willhite, Ph.D. - DTSC, Human and Ecological Risk Division

Susan R. Ellis, Department of Fish and Game

California Environmental Protection Agency (Cal/EPA)
 Department of Toxic Substances Control (DTSC)
 Potential Applicable or Relevant and Appropriate Requirements (ARARs)
 Naval Station Treasure Island, San Francisco, California

Note: DTSC reserves the right to amend this list pursuant to the intent of the
 Superfund Amendments and Reauthorization Act.

ARAR	Type of ARAR	Citation	Description
California "Superfund Law" - Hazardous Substance Account Act/ Hazardous Substances Cleanup Bond Act	Action Specific	Health and Safety Code (H&SC), Division 20, Chapter 6.8	Provides site mitigation and cost recovery programs to provide response authority for releases of hazardous substances including spills and hazardous waste disposal sites that pose a threat to public health and the environment. DTSC issues an Imminent or Substantial Endangerment Order to or enters into an Enforceable Agreement with responsible parties to implement both State and federal cleanup requirement.
Resource Conservation and Recovery Act (RCRA) State Authorization	Action Specific	California Code of Regulations (CCR), Title 22	Since August 1, 1992, DTSC has been authorized by USEPA to administer its hazardous waste management program under the federal RCRA. California's RCRA authorization is based on equivalency of the State and Federal RCRA programs and many provisions adopted under the Hazardous and Solid Waste Amendments of 1984. Any RCRA program implemented by USEPA since December 20, 1990, will need to be adopted by the State.
Identification and Listing of Hazardous Wastes	Chemical Specific	CCR Title 22, Chapter 30	If a chemical is either listed or treated and found hazardous, the disposal of the waste should comply with Title 22 requirements. Tests for identifying hazardous characteristics are also described.

Department of Toxic Substances Control (DTSC)
 Applicable or Relevant and Appropriate Requirements (ARARs)
 Potential Applicable or Relevant and Appropriate Requirements (ARARs)
 Naval Station Treasure Island, San Francisco, California

Note: DTSC reserves the right to amend this list pursuant to the intent of the
 Superfund Amendments and Reauthorization Act.

ARAR	Type of ARAR	Citation	Description
Laboratory Certification	Chemical Specific	H&SC, Division 20, Chapter 6.5, Section 25198	The analysis of any material under the State's hazardous waste management and cleanup programs shall be performed by a laboratory certified by the Environmental Laboratory Accreditation Program (ELAP).
Standards Applicable to Generators of Hazardous Waste	Action Specific	CCR Title 22, Division 4.5, Chapter 12	Applies to generators who treat, store, or dispose of hazardous waste on-site and who ship hazardous waste which they generate at their facility. Covers whether or not the generator has a hazardous waste, accumulation of hazardous waste, recordkeeping, reporting.
Hazardous Waste Haulers Act	Action Specific	H&SC, Division 20, Chapter 6.5, Section 25167.1, CCR Title 22, Chapter 13	Hazardous waste must be transported by a hauler registered by the State. Applicable to redisposal of waste as well as disposal of incinerator ash if these materials are hazardous.
Land Disposal Restriction	Action Specific	CCR Title 22, Chapter 18, RCRA Subtitle C, Part 268	Requires treatment of waste to reduce toxicity, mobility, and volume prior to land disposal.

Department of Toxic Substances Control (DTSC)
 Applicable or Relevant and Appropriate Requirements (ARARs)
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 Naval Station Treasure Island, San Francisco, California

Note: DTSC reserves the right to amend this list pursuant to the intent of the
 Superfund Amendments and Reauthorization Act.

ARAR	Type of ARAR	Citation	Description
California Environmental Quality Act (CEQA)	Action Specific	California Public Resources Code 21100 et seq.	Requires the State lead agency to prepare Environmental Impact Reports or Negative Declarations for Remedial Action Plans, Removal Action Workplans, and occasionally, parts of some remedial investigations and feasibility studies.
State Action Levels	Chemical Specific	H&SC, Division 20, Chapter 6.8, Section 25356(c)	DTSC criteria used for site screening. Numerical limits are designed to protect human health and the environment.
Community Relations Policy and Guidance Manual	Site Specific	H&SC, Division 20, Chapter 6.8, Section 25356.1(d)	A Community Relations Plan (or Public Participation Plan) must be prepared during the early stage of site mitigation. The guidance for development in the plan is based on this document.
Health and Safety Plan; Occupational Health and Safety Act	Action Specific Chemical Specific Site Specific	Labor Code, Division 20, Chapter 6.2, Section 25280 et seq.	Regulations to assure safe and health working conditions by implementing a State-approved H&S Plan during field investigation and cleanup activities.
State Natural Resources Co-Trustees Designation	Site Specific Action Specific	CERCLA, SARA Section 107(f) (2) (B); 42 USC Section 9706(f) (2) (B); Oil Pollution Act of 1990, Section 1006(b) (3)	The State of California Governor's designation of the Cal/EPA's and the Natural Resources Agency's secretaries as co-trustees for all natural resources within California. A memo dated 08/23/93 announces the designation. DTSC has been designated by Cal/EPA. RWQCB has similarly been designated.

Department of Toxic Substances Control (DTSC)
 Applicable or Relevant and Appropriate Requirements (ARARs)
 Potential Applicable or Relevant and Appropriate Requirements (ARARs)
 Naval Station Treasure Island, San Francisco, California

Note: DTSC reserves the right to amend this list pursuant to the intent of the
 Superfund Amendments and Reauthorization Act.

ARAR	Type of ARAR	Citation	Description
Memorandum of Understanding: DTSC, State Water Resources Control Board, Regional Water Quality Control Board	Site Specific Action Specific	H&SC, Division 20, Chapter 6.8	Specific provisions which address the protocol the parties will follow for the cleanup of sites, including: lead agency determination; roles and responsibilities of lead and support agencies; procedures to be followed to ensure coordination.
Toxic Substances Control Act	Chemical Specific	40 CFR 761	PCB action levels; see also National Oceanographic and Atmospheric Administration Administrative Screening Guidelines and U.S. EPA OSWER Directive No. 93555.4-01 FS (8/90)

PAGE 1

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SOUTHWEST RECORDS OFFICE TO LOCATE THE MISSING
PAGE. THIS PAGE HAS BEEN INSERTED AS A
PLACEHOLDER AND WILL BE REPLACED SHOULD THE
MISSING ITEM BE LOCATED.

FOR ADDITIONAL INFORMATION, CONTACT:

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**Regional Water Quality Control Board, San Francisco Bay Region,
Comments on the Draft Final Onshore Remedial Investigation Report,
Naval Station Treasure Island, dated September 1997.**

GENERAL COMMENTS:

1. For a number of sites, the results of the Remedial Investigation (RI) indicate that the only chemicals of concern are petroleum hydrocarbons, and that these sites will be addressed under the Navy's UST program. Please provide a plan and schedule for integrating these sites into the UST program and the corrective action planning process.

2. The document uses the TPH screening levels proposed in Appendix N as the basis for conclusions regarding the need for further action with respect to petroleum hydrocarbon contamination. These values are still under review by RWQCB staff and have not been agreed upon. Consequently, any changes to the screening values will require reanalysis of environmental data at the sites addressed in this report to confirm the appropriateness of conclusions developed. Comments on Appendix N will be provided under separate cover at a later date.

3. The exposure of human receptors to site contaminants via ingestion of fish exposed to site contaminants is addressed in a cursory and perfunctory fashion. Please provide a more complete and detailed description of how this pathway, which appears to be complete, will be addressed.

4. The presentation of the groundwater modeling results in the text is inconsistent and confusing. For some sites, results are summarized in the ecological risk assessment. For other sites, the results are summarized in the description of the nature and extent of chemicals of concern. The latter does not appear appropriate, as the groundwater modeling leads from COPCs to COCs. The document should be reviewed for consistency of presentation of the summaries of groundwater modeling results.

5. The issue of point of compliance and appropriate criteria for assessing the significance of elevated concentrations of chemicals in groundwater needs to be discussed as part of the overall monitoring strategy for Treasure Island.

SPECIFIC COMMENTS:

1. Section 2.5.1.3, p. 2-9. Does the Navy have any observations or explanations for the high values of TDS measured at a number of locations well



inland of the estimated extent of tidal influence? Examples include wells 20-MW01, 24-MW03, and several wells at Site 25.

2. Section 2.9 and Figure 2-19. Please verify that Figure 2-19 addresses only onshore RI sites at TI and YBI. The note on the figure stating that the ingestion of fish is evaluated using non-site-specific data is misleading, as noted in the following comment. Note also that in subsequent sections this figure is referenced as Figure 2-17.

3. Section 3.7.3.2, p. 3-35. The discussion of exposure to fish caught in the bay is more akin to a literature review and does not constitute even a qualitative evaluation of potential risks associated with Navy activities via this pathway. This exposure pathway appears to be complete. The Navy needs to provide a more thorough, site-specific, quantitative evaluation of the risks associated with exposure of humans to site contaminants via fish in the bay.

4. Section 4.1. The beneficial use of groundwater for freshwater replenishment is not addressed in this section. In addition, the ARARs evaluation for the IR sites is inadequate in that State Water Resource Control Board Resolutions 68-16 and 92-49 are missing. The regulations pertaining to waste discharges to land which may threaten water quality presented in Title 23, Division 3, Chapter 15 of the California Code of Regulations (CCR) also are not evaluated. Please revise this section to include these ARARs.

5. Section 4. The Navy notes that agency advisories, criteria, and guidance may be considered for particular releases, and notes a Cal/EPA advisory regarding consumption of fish from the bay in Section 3.7.3.2, but has not provided an evaluation of this advisory as an ARAR or TBC in Section 4. Please provide an evaluation of this advisory.

6. Section 7.5.2, p. 7-7. The contour maps for this site suggest that Site IR-5 is upgradient of Site IR-17, not downgradient. Please review and revise the text as appropriate.

7. Section 7.9.2, p. 7-20 and Section 7.11, p. 7-22. Please provide additional detail regarding approach and schedule for investigation and removal of petroleum hydrocarbons under the Navy's UST program.

8. Section 8.10.2, p. 8-26. Could the Navy provide some references or other supporting material regarding the important processes affecting the distribution of metals in groundwater?

9. Section 9.2, Figure 9-1. Please check that the Caltrans boring locations are shown on the figure and add them if they are not represented.



10. Section 9.6.2, p. 9-7. The Navy concludes that based on the results of a TCLP test that DDT, DDD, and DDE are not mobile. The TCLP provides information on leachability of the compounds tested, and may be used to infer something regarding mobility in a dissolved phase. This test, however, would provide no information on the mobility of these compounds if adsorbed to sediment and moving as a suspended phase.

11. Section 9.6.3, pp. 9-7 and 9-8. The Navy's conclusion that no further evaluation or sampling of storm water runoff is required at this site does not seem warranted. The need for further evaluation is indicated by the presence of 4,4'-DDT in the only runoff sample collected at this site, and by the presence of DDT in a Phase 1 sediment sample collected immediately adjacent to the site (one of only two samples where DDT was detected in offshore sediment, as presented in PRC, Phase II Ecological Risk Assessment Final Work Plan, April 10, 1997). In addition, what is the rationale for comparing the DDT detection to an instantaneous maximum value, as opposed to other available criteria?

12. Section 11.9.3, p. 11-31, last paragraph. While the presentation of a concentration map does not in itself constitute or imply a problem, the repeated exceedances of AWQC in water samples collected at the site are of concern. The distinction drawn between analyte concentration maps and contaminant plume maps is not clear; addition of isoconcentration lines to an analyte concentration map is not the same as comparison to a regulatory level or cleanup level. It would seem that either method of data presentation (analyte values or plume maps) can be compared to criteria of interest. In fact, the analyte data presented are compared to AWQC.

Please clarify what is meant by the statement that reported concentrations are relative; relative to what? Also, please clarify what is meant by the statement that many maps are included for analytes that do not appear to be a problem. For each of the 7 metals plotted, there are AWQC exceedances. Are some of these not proposed for evaluation in the FS proposed for this site? If so, please state which ones and provide a rationale.

13. Section 11.9.3, Figure 11-15. Please check the notations on this figure of AWQC exceedances; it appears that well 11-MW02 should be indicated with an asterisk.

14. Section 11.10.1, p. 11-34. RWQCB staff concur that this unengineered landfill is acting as a continuing source of contaminants to groundwater, and most likely to the bay as well.



15. Section 11.11, p. 11-35. How and when will coordination and integration of the data generated from this investigation and the data generated from the UST investigations near and within this site occur?
16. Section 12.5, p. 12-9, last paragraph, and Section 12.5.1, p. 12-10. Please explain or clarify the discrepancies between the hydraulic conductivity values presented in these two locations.
17. Section 12, Figure 12-10. Please check this figure for completeness and accuracy. It appears that some hydropunch data for the sampling period represented on the plot (August-November 1995) are not included. See for example concentrations of TPH-diesel at 12-HP027 and 12-HP076 from samples collected in September and October 1995.
18. Section 13.9.2, p. 13-20. The uncertainty with regard to the extent of contamination at this site is noted. How and when will this uncertainty be addressed?
19. Section 13, Figure 13-4. It appears that results for 17HP05 are missing from this figure.
20. Section 13.11, p. 13-22. No conclusions or recommendations for beryllium are presented. Please clarify.
21. Section 14.9, p. 14-18. Please provide a rationale for dismissing chlorinated solvents in the absence of specific criteria. Please provide a rationale for the use of unadjusted acute criteria for TCE in the absence of chronic criteria. Chronic criteria for PCE are over 20 times lower than acute criteria for PCE. It seems appropriate to use a similar factor as a point of comparison for chronic effects of TCE on aquatic receptors.
22. Section 15.5.1, p. 15-9. The high measured hydraulic conductivity at well 24-MW03 may not be anomalous but may represent a preferential pathway at this site. Using the lower value of conductivity measured at 24-MW02 may underestimate groundwater velocities.

Appendix M, Response to Regulatory Agency Comments on the Draft RI Report, Addendum Number 1.

Response to Comment 2. Please identify those monitoring well locations between the inland edge of the tidally-influenced zone (point of compliance) and the shoreline where chemical concentrations exceed AWQC but where chemicals were not identified as COCs based on modeling results. Please also identify the chemicals.

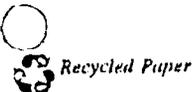


Response to Comment 4. While modeling of fuel mixtures as a whole is a simplification of complex processes, such modeling is not necessarily an oversimplification. This issue may need to be revisited once ecotoxicity values for TPH are agreed upon.

Appendix O, Response to Regulatory Comments on the Draft Remedial Investigation Report.

The Navy's response to the RWQCB's comment on Chapter 7 (Site IR-05) notes that MTBE is part of the VOC analytical suite, per the Interim Groundwater Monitoring Plan. Appendix C of the Interim Groundwater Monitoring Plan does not include MTBE. Please confirm that MTBE is part of the VOC analytical suite, and include a detection limit for MTBE.

Navy's response to RWQCB's comment on Chapter 9, Site IR-08. See comments on Section 9.6.3.



DEPARTMENT OF TOXIC SUBSTANCES CONTROL

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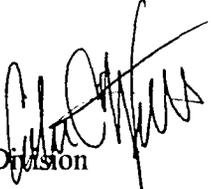
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**MEMORANDUM**

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DATE: November 21, 1997

SUBJECT: Naval Station Treasure Island (NAVSTA TI)
San Francisco, California
Volume I, Onshore Remedial Investigation Report

PCA:14740 Site-WP: 200231-47

The Department of Toxic Substances Office of Military Facilities requested on October 8, 1997 that the Human and Ecological Risk Division (HERD) review and provide written comment on the five volume set: "Onshore Remedial Investigation Report. Naval Station Treasure Island. San Francisco, California" (Comprehensive Long-Term Environmental Action Navy[CLEAN I] Contract Task Order No. 0199)", dated September, 1997. These documents were produced by PRC Environmental Management, Inc. on behalf of the Department of the Navy, Naval Facilities Engineering Command, San Bruno, California. This memorandum covers only Volume I of the five volume set, the remainder to follow.

BACKGROUND

These reports present the findings by study area of the remedial investigations conducted at NAVSTA TI in San Francisco Bay. The remedial investigation was conducted by the Navy to determine the nature and extent of contamination from past military activities and to determine the risks to human health and the environment. The investigation was performed under the Navy's Installation Restoration Program in accord with the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) and the Federal Facility Site Remediation Agreement (September 29, 1992); signatories to that agreement include the U.S. Navy, the DTSC and the California Regional Water Quality Control Board. The City of San Francisco and the U.S. EPA are also represented on the Base

Realignment and Closure (BRAC) Cleanup Team. NAVSTA TI was designated for closure in 1993 and on September 30, 1997, NAVSTA TI was closed as an operational naval facility.

There are 29 total areas of concern identified at NAVSTA TI:

1. Medical Clinic (spilled X-ray developer)
2. eliminated
3. PCB Equipment Storage
4. eliminated
5. Old Boiler Plant (fuel lines, demolition debris)
6. eliminated
- 7/10. Pesticide Storage Area/Paint Shop (PAH, oil/fuels/metals, heptachlor)
8. Sludge Disposal (wastewater treatment plant sludge)
9. Foundary (paint shop/forge)
11. YBI Landfill (oil/fuels, metals)
12. Old Bunker Area (lead, PAH, metals)
13. eliminated
14. eliminated
15. eliminated
16. eliminated
17. Tanks 103/104 (PAH, oil, fuels, metals)
18. eliminated
19. eliminated
20. eliminated
21. Vessel Waste Oil Recovery (oil/fuel)
22. eliminated
23. eliminated
24. Fifth Street Fuel Release (abandoned fuel lines/dry cleaners)
25. eliminated
26. eliminated
27. eliminated
28. West Side on/off Ramp (lead)
29. East Side on/off Ramp (lead)

A brief rationale for those areas eliminated should be included in the Executive Summary text and a brief discussion of the rationale for their consideration under other programs at NAVSTA TI added (page 1-12). Some of these areas are contaminated with petroleum products only (e.g., 4, 6, 14, 15, 16, 19, 20, 22, 25), but others (e.g., 13, 27) dropped without explanation. Perhaps expanding the text discussion of Table 1-1 [to include the areas 1 and 3 (p. 3-26 and 3-27)] to more clearly explain the rather complex NAVSTA TI decisions as to which areas would be investigated at all, those dropped, those evaluated and those to be remediated would be appropriate and would increase reader understanding here. For example, what is CAP and how does it relate to the present document?

There are 14 sites included in the present analysis:

1. Medical Clinic
2. PCB Equipment Storage Area
3. Old Boiler Plant
4. Pesticide Storage Area
5. Army Point Sludge Disposal Area
6. Foundry
7. Bus Painting Shop
8. Yerba Buena Island Landfill
9. Old Bunker Area
10. Tanks 103 and 104
11. Vessel Waste Oil Recovery
12. 5th Street Fuel Releases/Dry Cleaning Facility
13. Westside On- and Off-Ramps
14. Eastside On- and Off-Ramps

Of the 25 original sites at NAVSTA TI requiring RI/FS attention (p. 1-4) and from a total of 29 original sites (p. 1-11), the 14 problem areas were identified and of those, seven are selected for no action: medical clinic, PCB equipment storage area, old boiler plant, pesticide storage area, army point sludge disposal area, foundry, and tanks 103/104. Four of the 14 are recommended to advance to the feasibility study phase: bus painting shop, YBI landfill, vessel waste oil recovery area, 5th Street fuel release/dry cleaning facility. Three of the 14 are recommended for additional risk characterization prior to final determinations: old bunker area, west side on- and off-ramps, eastside on- and off-ramps.

GENERAL COMMENT

Overall, the Navy has provided a useful analysis of project activities at NAVSTA TI. Problems remain such as the avian species inventory which appears to be superficial and incomplete (point #5, below), but the general discussion of habitat and biological resources is generally comprehensive being based in the main on 1986-1987 evaluations: Natural Resources Management Plan, Treasure Island Naval Station and the Draft Environmental Impact Study for Battleship/Battlegroup/Cruiser Destroyer Group Homeporting, the latter prepared for the U.S.S. Missouri and her escort. Closure of NAVSTA TI and other Bay Area Navy installations occurred subsequent to local political opposition to homeporting the Battleship Missouri and her support services.

Since the drafting of these documents, the NAVSTA TI has formally been closed; the introductions to these texts should be updated to indicate same.

Since many readers limit themselves to the Executive Summary of such volumes of data and their analyses, it is wise to spend a considerable level of effort on refining the presentation of the summary so as to ensure, insofar as is possible, that the very technical messages the authors wish to convey to the lay public are clear and understandable and demonstrate the considerable resources which have been devoted to the NAVSTA TI project. It would be helpful at the outset to indicate the disposition of the

original 29 sites and for those eliminated here (e.g., 27) why such was the case (moved to offshore investigation phase of NAVSTA TI project?).

SPECIFIC COMMENT

1. Page ES-3. Please provide reference from the text proper (p. 2-10) to supporting documentation that substantiates the contention that fresh groundwater at NAVSTA TI does not meet the provisions of SWRCB Resolution 88-63.
2. Page ES-3. Since it is possible that potential future commercial/industrial (p. 3-32: hotel, theme park, conference center, resort, housing) and residential land use at NAVSTA TI will involve demolition and construction (e.g., installation and service of utility corridors, foundation renovation, seismic retrofit), why was no construction worker exposure scenario included in the present discussion of health risk?
3. Page ES-3. Under the construction and industrial land use exposure scenarios, why are no comparisons made to 8 CCR 1532.1 and 8 CCR 5155 PEL values?
4. Page ES-4. Under the City of San Francisco reuse plan (jail, resort, conference center, film studio, theme park, hotel, family housing) - with commercial/industrial apparently the more widespread - it would be helpful to state whether the blood lead 10 ug/dL criterion at sites 11, 12, 28 and 29 is exceeded when the ingestion of homegrown produce is not considered a complete pathway?
5. Page ES-4. Ecological risk. In this section, it is worthwhile to re-emphasize at the outset of this section that Treasure Island is of artificial fill origin; thus, no native plants can by definition exist. However, the authors elected to exclude "terrestrial receptors" from the TI assessment, but it can reasonably be expected that birds will visit the island. It is helpful to the reader to state here whether it has been unequivocally determined that endangered, threatened or otherwise special status animals live on or near TI, with particular reference being paid to marine mammals. What species (bird, rodent, canine, feline, etc.) among all possible Bay Area animals, were eliminated from consideration here and why? Among the federal statutes specifically cited as ARAR in CERCLA include the Marine Protection Research and Sanctuaries Act, and special attention in the present assessment is needed for those species; it is worthwhile to point out clearly that attention in the Executive Summary.
6. Page ES-4. It is worthwhile to add a sentence to explain how the "selected terrestrial receptors of concern (deer mouse, falcon, kestrel)" were selected to either represent or to the exclusion of other possible/potential animals that may inhabit or visit YBI.
7. Page ES-4. What does the statement, "Collection of tissue samples preyed upon by the peregrine falcon is recommended to assess the falcon's exposure to contaminants from these sites", mean? Do the authors propose the Navy capture, kill and analyze adipose and other tissue from pigeons? red wing blackbirds? How would one know whether the bird(s) selected for analysis had not received their exposure from sources other than NAVSTA TI? It would help to explain in brief what is actually proposed here in somewhat greater detail, since oftentimes readers limit their impressions to what is presented in the summary of such large documents, especially since there are five such documents in the present case.
8. Page ES-4. Please explain in the Executive Summary why no similar studies of benthic organisms, many of them sedentary by nature, or near-shore aquatic food sources are proposed here to determine potential food chain bioaccumulation for wading/foraging birds, carnivorous fish and the like? If other studies or programs address these endpoints, please point that out for the reader.

9. Page ES-4. Describe what is meant by "total petroleum hydrocarbons": Bunker C? Marine diesel? Waste crankcase oil? Hydraulic oils? Please give brief mention of the name or regulatory agency approved 'groundwater model' used here.
10. Page ES-5. Please describe - in brief - how the "ecotoxicological testing" was carried out. If the chronic "threshold values" were determined only by acute toxicity testing of effluent or extract, the threshold values may not accommodate or address ecologic damage due to food web bioaccumulation into fish, birds or marine mammals.
11. Page ES-5. Please summarize - in brief - how the "ambient metals concentrations" for TI and the "background metals concentrations" for YBI were obtained, measured and calculated.
12. Page ES-5. The California SWRCB published various water quality criteria for enclosed bays and estuaries (e.g., 93-5WQ, May, 1993), yet it appears that the U.S. EPA ambient water quality criteria (AWQC) for saltwater life (chronic) were selected in lieu of California values? Since the SWRCB values include limits for saltwater aquatic life on common petroleum hydrocarbons (e.g., benzene, phenol, toluene), would it not be useful to include those comparisons here as well? Why were only "total petroleum hydrocarbon concentrations in groundwater compared to the petroleum screening levels developed from [acute?] ecotoxicological testing", rather than comparing the concentrations listed in SWRCB 93-5WQ (or promulgated equivalent) for enclosed bays and estuaries?
13. Page ES-6. Some rationale should be provided to substantiate the recommendation that additional soil and groundwater data need to be gathered for the old bunker area. It appears from the text as written that project management would be more efficient had all necessary site characterization data been collected prior to drafting the baseline risk analysis?
14. Table ES-1. Substantiation and explanation of footnote c for the PCB storage area, army point sludge disposal and the Bay Bridge on- and off-ramps should be added. For example, at the PCB storage area, it appears no detectable (?) PCBs were found in soil; should this be the case, then why would follow-on studies in this context be necessary?
15. Table ES-1. For all areas with groundwater metals established as constituents of concern (aquatic receptors) (e.g., beryllium, mercury, copper, zinc at the pesticide storage area/bus painting shop), how do the groundwater metals concentrations compare to the concentrations in brackish groundwater encountered normally elsewhere at Treasure Island? While the authors have made efforts to determine as best as possible to establish naturally-occurring ambient/background soil/rock metals concentrations, what efforts were made to determine background groundwater metals concentrations at YBI and at TI?
16. Table ES-1. Here and throughout the text, reference to "total petroleum hydrocarbons" is inadequate. The authors should specify whether the petroleum found is gasoline, diesel (automotive), marine diesel, Bunker C, waste crankcase oil, hydraulic oil or other fractions.
17. Table ES-1. Provide a footnote to explain MCPP (not listed in pages ES-13 footnotes?).
18. Table ES-1, footnote e. DTSC guidance (Use of Soil Concentration Data in Exposure Assessments, July, 1992) indicates that health risk should be calculated to depth 10' below ground surface, yet the authors elected to use a depth of 2' bgs. What rationale or federal guidance can be listed in the footnotes to explain the discrepancy?

Based on the City of San Francisco projected land use, this reviewer must point out that the author's assumption that no intrusive (e.g., construction excavation) activity will occur at TI. Given the City's use projections, it is possible that some or many of the existing Navy structures with deferred maintenance will be demolished and replaced entailing "significant soil mixing". With this uncertainty,

this reviewer recommends that elimination of the construction worker exposure scenario and assumption that no future soil disturbance across the facility are not warranted from the text discussion as written.

19. Table 1-1, Pages 1-7, 1-8. For those areas removed from consideration (e.g., asbestos pipes, YBI fuel line breaks, broken storm water culverts), please provide footnotes to the table to explain why these areas were dropped.

20. Page 1-7. Citation to historic accounts and reports to support the contention that TI is "constructed (completely?) of materials dredged from the San Francisco Bay" is in order here. Given that imported fill from other areas of the Bay Area perhaps occurred, leading to potential difficulty in assignment of the ambient or reference metals values for soil/rock at TI, it is necessary that all such statements be supported carefully.

21. Page 1-10, Section 1.3. It should be made clear in paragraphs 2 and 3 in this section whether DTSC and U.S. EPA oversight of NAVSTA conclusions in the PA/SI were approved, the date(s) of approval and means by which (e.g., formal public hearings, consent agreement, remedial action order, letter to the site file, etc.) regulatory concurrence with elimination of sites 2, 8, 18 and 23 was achieved and documented. The reason(s) and rationale for additional work at sites 6 and 14 should be listed briefly along with reasons for supplemental study at sites 8 and 12.

22. Pages 1-10, 1-11. Since many of the problems at NAVSTA TI concern fuels and petroleum products, a reasonably detailed explanation of the UST and fuel line removal efforts should be given here. Rationale for not including those activities in the current documentation should be outlined in brief and the description of soil and groundwater cleanup activities and the agency responsible for oversight of those activities should be clarified. For example, why would a UST be located in the YBI landfill (site 11)? Can some brief description and rationale for 'closing in place' (as contrast to removal) for these UST be given?

For those readers not completely familiar with CERCLA petroleum exclusion clause (p. 1-12) and DTSC Management Memorandum EO-94-015-MM, a brief summary is in order here (sites 4,6,14,15,19,20,22,25).

23. Page 2-6. Cite report titles, biologic details to document the source(s) of artificial fill at NAVSTA TI (Section 2.3.2.2.1)?

24. Page 2-7, Section 2.3.2.2.2. Is the Colma formation here the same or similar to that referenced in Presidio of San Francisco RI/FS (attachment)? Are the native concentrations of metals in Colma formation at YBI consistent with those for Colma lithology at the Presidio?

25. Page 2-7, Section 2.3.2.2.3 Do the Franciscan assemblage rocktypes referenced here correspond to those found at the Presidio? Do the metals concentration profiles for this formation resemble those found in Presidio background investigations?

26. Pages 2-10, 2-11. Please provide a summary table in the text for the range of naturally-occurring metals in groundwater for both TI and YBI; failure to make such account has led to considerable confusion, delay, debate and controversy at the Presidio of San Francisco (R. Fuentes, DTSC Project Manager, Presidio of San Francisco).

27. Pages 2-12, 2-13. Are data published or are reports available which assign relative source contribution (POTW, refineries, storm water runoff, surface street drainage, ship discharge, etc.) to the various sources of pollution in the Bay? Such reference would serve to support the general statements made in Section 2.6.1

28. Pages 2-13 and 2-14. Please describe the sanitary sewer system and treatment outfall at YBI and TI in relation to the storm sewer system .

29. Page 2-14. It would assist the reader a great deal if the authors were to provide details of plans, if any, by either the Navy or the City of San Francisco to repair, replace or otherwise upgrade the obviously poor existing collapsed/cracked/broken storm water drainage system, its outfalls and 5 pump stations.

30. Page 2-15, Figure 2-18. Given the aggressive efforts of the State of California to eradicate eucalyptus on nearby Angel Island State Park, please describe plans, if any, for similar restoration efforts at YBI. Such eradication of non-native plants would be expected to alter considerably the existing ecology and biological makeup/diversity of YBI.

31. Page 2-16. Figure 2-18, Table 5. Along the shoreline of YBI do not beaches of some type exist? If so, would not these be areas where visitors might engage in beach activities or where wading birds (e.g., snowy egret, sandpiper, sanderline, Great Blue Heron) might forage? Is it not important to include the food sources for these animals in the assessment to document whether NAVSTA TI runoff or outfall may have contributed to chlorinated hydrocarbon or mercury (or other constituent of concern) accumulation in these animals?

Specifically, what data are available to determine the contribution of fuels, metals, chlorinated materials and other chemicals at NAVSTA TI to anthropogenic degradation of the environmental quality of the San Francisco Bay?

As Table 2-5 is written, it is not clear how the column "Status" was verified (footnote a); are these animals present at NAVSTA TI or not? If not, and as they are common in the Bay Area, why not? While a brief inventory or overview may not have established the presence of *Ardea herodias* or other shore birds at a particular location or date, these are common animals even along freeways of the Peninsula and East Bay where standing water accumulates. Would not such birds be reasonably anticipated to inhabit YBI or other shores of NAVSTA TI, in that these animals are so common in the Bay Area intertidal/marsh zones?

32. Pages 3-4, 3-5. For the reader unfamiliar with magnetometry and ground penetrating radar, or the rationale for their use, please add a brief description why these techniques were employed at sites 11, 5 and 24 (Section 3.2.2) (e.g., suspected fuel lines, buried metallic debris, UST).

33. Page 3-21. Section 3.5.3.2 Navy operations commonly use marine diesel and Bunker C, whereas NAVSTA TI results are given as 'TPH-diesel' (usually restricted to automotive diesel No. 2) and 'TPH-m' (motor oil). At the paint shop and other areas, mineral spirits, Stoddard solvent and related products would be in likely common use. Are the marine diesel, gasoline (unleaded? leaded?), Bunker C, kerosene, heating oils, Bunker C and other heavy oils properly characterized (D.A. Zemo et al. The application of petroleum hydrocarbon fingerprint characterization in site investigation and remediation. Ground Water Monitoring Report Spring 1995, pp. 147-156)?

34. Describe, please, the risk analysis implication of the statement: "It was common that the characterization of the petroleum product does not match the fuel type quantitated by the laboratory".

35. Page 3-23, Section 3.6. Please compare/contrast the "ambient" and "background" values for the 19 metals to the off-site reference background for the immediate Bay Area (attachments), rather than to U.S. continental or values for California from lithologies which may have no relation to those found locally.

Please compare the mean and range of the 21 and 200 samples (using detected empirical, verified values as contrast to including the 1/2 LOD theoretical estimates in the calculations) for YBI and TI,

respectively, to the mean and range for the two attached Bay Area background references; please comment on the variations and similarities in lithology between these locations.

Please explain why, in contrast to TI where 200 background locations were assessed, only 21 background locations were studied at YBI and why - in brief with reference to the applicable appendices - those particular locations were selected as representative of ambient and background values; in short, why were those locations considered pristine or uncontaminated?

36. Page 3-23. What statistical analyses, if any, were utilized to determine "outliers"? It is not clear why data were eliminated. provided appropriate quality assurance/quality control was achieved, given that so few YBI background locations were collected and that numerous different geologic features/formations (with likely differing metals concentration profiles) occur at YBI (Fig. 2-5)?

What is "current practice in the environmental industry"? It is much preferred that the authors reference standard statistical texts, standard computerized programs/services and U.S. EPA documents (with accession numbers) to clarify the methods used and to verify their correct applications.

37. Tables 3-3, 3-4. Please replace the PRG column with the mean and background range for LBNL and the Presidio background values. A short discussion of how NAVSTA TI metals concentrations compare to those for these nearby, robust quality data sets (by lithology) is in order here.

The text would benefit by expanding the discussion of location-specific geology to more clearly explain in brief the background determinations; e.g., "Although site 11 is located at YBI, site metals concentrations were compared to the TI ambient concentrations since the geology at site 11 is similar to the artificial fill at TI"?

38. Page 3-28. Please discuss the protocol, "Estimated values ('J' qualified) were included in the data set...". How were these values estimated? What EPA guidance was followed or used to do so? Please cite U.S. EPA or DTSC guidance and methods for calculation of 'J' qualified data. In discussions of the results of calculations using such 'J' data, how do the results and conclusions compare and contrast with similar results when estimated values are not included?

39. Table 3-5. The major problem with this table is inclusion of the range of U.S. and unrelated California soil/rock (including data for mines and salt flats) which are not necessarily informative about local conditions or applicable to NAVSTA TI. While presentation of U.S. and California soil/rock metals values are an adjunct to the local geologic measurements, these ranges may have little or no bearing on site decision-making at NAVSTA TI. First, are the range of values for any metal or element (calcium, iron, magnesium, potassium, sodium) at NAVSTA TI consistent with empirical background in any of the areas of concern at NAVSTA TI? Second, were the concentrations of these elements increased in any of these study areas due to Navy operations or release? Third, are the soil concentrations in the areas of concern consistent with empirical background (YBI) or ambient (TI) and are those concentrations consistent with local published Bay Area background values for these elements?

40. Page 3-30. A paragraph discussion of the "similar geology" at YBI Site 11 to the whole of TI is in order here.

41. Page 3-31. Describe in detail and provide complete bibliographic source citation to explain point #4 "regional information" which was used to eliminate metals from the BHHRA. Provide reference to memorandum of understanding and date(s) to verify the regulatory and responsible party agreement for the 10% screening level.

42. Page 3-32. DTSC guidance (OSA, Use of Soil Concentration Data in Exposure Assessments, July, 1992) specifies residential risk assessment to be carried out to include depths of 10' bgs. Since depth

to brackish and fresh water at TI is varied (Fig. 2-8), it may be that the DTSC default guidance cannot be applied directly at TI; however, such rationale would not necessarily apply at YBI (Figs. 2-5, 2-17, Section 2.5.2). Therefore, the depth to 10' should be used at YBI and the maximum depth sampled to no greater than depth to groundwater should be used at TI? The text is confusing on this matter.

43. Page 3-34. Regardless of PRG comparisons, the flux chamber data and estimated VOC concentrations should be compared with BAAQMD ambient air ("background") concentrations for these materials. A statement as to whether site ambient air VOC concentrations are greater than, less than or about the same as other Bay Area locations for common VOC such as dry cleaning solvents should be added.

44. Page 3-5. As with all sport and commercial fish, there is both benefit and risk to dietary seafood. The authors overstate by a wide margin in their conclusion, "It is well documented that ingesting fish caught in San Francisco Bay can result in adverse health effects" and "The principal adverse health effects associated with chronic exposure to high levels in fish of these six chemicals of concern include cancer, developmental delays or brain damage in children, and kidney damage". Do the authors really believe that eating fish from the Bay (either sport or commercial) causes brain damage?

While the page 3-36 section is technically accurate, it would be complete to replace these alarmist conclusions on page 3-35 with a brief outline of the ongoing off-shore sediment studies conducted by the NAVSTA TI cleanup team and by introducing the concept of dose (exposure). For example, those sediment studies will determine whether PCBs, mercury, chlordane, DDT, dieldrin and dioxins (p. 3-35) - that are ubiquitous environmental contaminants - were used, generated or otherwise originated at NAVSTA TI and if so, whether their use contributed to, leached or were discharged directly to the waters and sediments of the Bay. Do the authors plan to compare NAVSTA TI benthic species tissue concentrations to concentrations in those same species elsewhere in the Bay? Are the local concentrations to be compared for these six chemicals (why six?) to the Mussel Watch program results or plan to simply measure near-shore outfall sediments? Greater detail here would improve the presentation considerably.

Finally, it is far from clear why commercial fish were excluded in the OEHHA advisory as in contrast to sport fish only. Are not both commercial and sport fish, often identical species, both subject to the same potential bioconcentration of the same six chemicals?

45. Page 3-39. The failure of Cal/EPA and U.S. EPA to publish SF or RfD for dalapon makes due diligence of the responsible party to carry out their task most difficult. As an approximation, it is recommended that the authors derive a RfD for dalapon from its acute toxicity database (available summarized in RTECS) and using the method of Layton et al. (Deriving allowable daily intakes for systemic toxicants lacking chronic toxicity data. *Regulatory Toxicology and Pharmacology* 7: 96-112, 1987) and that dalapon then be carried through the present assessment in the usual manner.

46. Page 3-39. Why weren't petroleum hydrocarbon toxicities evaluated using published toxicology data summaries for diesel (e.g., Millner et al. Human health-based soil cleanup guidelines for diesel fuel No. 2. *Journal of Soil Contamination* 1(2): 103-157, 1992), gasoline (ATSDR, Toxicological Profile for Automotive Gasoline, June, 1995), and Bunker C (e.g., Soil Cleanup Levels for High-Boiling Point Petroleum Hydrocarbons, EMCON, August 1995) for the whole product? Since weathered/degraded materials contain little BTEX and PAH are virtually absent from gasoline and mineral spirit/solvent cut petroleum fractions, how was the toxicity of the remaining materials handled? Was ethyl benzene handled as a carcinogen (U.S. National Toxicology Program, PB93-149722; clear evidence male rat,

some evidence female rat, both sexes mice/ NTP Management Status Report July 9, 1997) or as the previous IRIS non-carcinogen?

47. Page 3-8. This section and the first sentence here are in direct conflict with the last sentence on page 2-15 ("Because of these factors, TI was not considered for ecological risk assessment for terrestrial receptors.")

48. Page 3-46. Since only two days of bird surveys, taken only one week apart (June 15 and 22, 1994), were taken, how can this be considered even preliminary? Migratory birds are seasonal and would be expected to change in composition and numbers throughout the year, or from year-to-year. This appears to be a fundamental omission in the NAVSTA TI site characterization.

49. Page 4-5. The Navy has failed to identify 40 CFR 761 (*Federal Register* 59: 62788) as potential PCB ARAR or to cite NOAA [HAZMAT Report No. 94-8] Administrative Screening Guidelines and U.S. EPA OSWER Directive No. 93555.4-01 FS (August, 1990) PCB soil cleanup levels.

The Navy has failed to identify the Water Code, Division 7, Chapter 1, Section 13000 as either action-specific ARAR or TBC criteria.

50. Pages 5-2, 5-3. Cite the Kodak MSDS in the bibliography. Please clarify the discussion of wind and surface water transport of silver from the X-ray developer; is not this area overlain by Building 257, effectively reducing substantially (perhaps to negligible amounts or levels) any such hypothetical transport?

51. Page 5-4. Groundwater metals and ambient water quality criteria: just as mean ambient soil As concentrations at NAVSTA TI are greater than the U.S. EPA Region IX PRG values, so are groundwater zinc and nickel concentrations greater than AWQC. Please add a section to 2.5.1.4 and 2.5.2 to establish ambient/background pH and metals concentrations in NAVSTA TI groundwater.

52. Page 5-6. Please indicate whether remaining silver concentrations at Bldg. 257 are greater than, less than or about the same as the applicable U.S. EPA soil PRG for projected land use (e.g., Table 3-3).

53. Pages 6-1, 6-2. Please compare wipe sampling PCB results to ARAR for surfaces (Toxic Substances Control Act 40 CFR 761, <10 ug/100 cm non-porous surface, should such be relevant in this situation.

54. Page 6-4. The DTSC project manager is notified to inquire whether two soil/asphalt sampling locations are adequate to characterize a 100 square foot PCB transformer storage area, how those two locations were selected and where various spills had been documented in the past.

55. Page 7-2. The bottom paragraph conclusion concerning migration of fuel components to the Bay will depend on the nature of those products; while the heavy oils move little unless dissolved or disturbed, the light fractions of diesel, gasoline, kerosene or mineral spirits can migrate readily. The authors should clarify the fuel or petroleum product type(s) in pipelines, soil and groundwater referenced here.

56. Page 7-9. The authors compared the weathered diesel at Site 5 to a "TPH screening level of 430 ppm". It is far from clear how this generic 'screening level' was derived or the toxicologic or other endpoint upon which or the chemical(s) upon which it was determined (ecologic, leaching potential, carcinogenesis?). While 'TPH' values of 7200-26,000 may appear 'high' in relation to a 430 ppm generic or default value, site-specific human health risk assessments show that in the absence of overt PAH contamination, heavy oil fractions in that range are consistent with commercial land use exposure scenarios, in the absence of substantive off-site migration (Soil Cleanup Levels for High-Boiling-Point Petroleum Hydrocarbons, Emeryville, California. EMCON, August, 1995).

Unequivocal identification of heavy oil (Bunker C) or fresh or used crankcase or hydraulic oils is essential here. Clear identification of the materials of concern, not use of acronyms or generic or vague terms, will increase reader understanding of NAVSTA TI considerably.

57. Pages 7-9, 7-10. Since the petroleum constituents are co-mingled with chlorinated solvents and inorganic Hg, it is this reviewer's understanding that the CERCLA petroleum exclusion {cited on p. 1-12} would not apply here (DTSC Management Memorandum Eo-94-015-MM, December 5, 1994). For DTSC project management, it is important to establish that sites 4, 6, 14, 15, 16, 19, 20, 22 and 25 present no other chemicals (e.g., PAH, metals) that prevent application of petroleum exclusion at those locations.

58. Section 7.7.2.2 Given that no deed restriction or other controls to prevent excavation as in theme park construction at site 5, construction activities could result in dermal contact with and volatilization of chemicals from groundwater in trenches/foundation borings and pits. To complete the construction exposure scenario, those pathways should be added to the soil contact ingestion/percutaneous absorption scenario.

59. Section 7.7.5.; Page 7-20. This reviewer recommends interpretation of ambient soil beryllium to take into account the Bay Area regional background range for this element, given that no location Site 5 historical use (Old Boiler Plant) suggests beryllium or beryllium compounds were ever used by the Navy at the steam plant.

60. Section 7.7.5.2 Please compare recent ambient BAAQMD background concentrations of 1,2-DCE, PCE, TCE and petroleum constituents (e.g., benzene, toluene) to the values listed here. Are nearby or average BAAQMD locations greater, less than or about the same as the values referenced here?

61. Page 7-18. Please compare Site 5 groundwater arsenic, copper, mercury and nickel concentrations to the ambient concentrations of these elements in groundwater at NAVSTA TI.

62. Page 8-3. From the text as presented, it appears that a variety of liquid waste was probably poured down the Building 335 floor drain, now a cement-patched area. Did this floor drain pipe remain intact, or is it cracked, broken or otherwise serve to convey these wastes to soil/groundwater beneath and/or nearby to Building 335?

The current storm drain catch basin work (Section 8.6.3) would not necessarily account for the 5-10 gallon floor drain discharges/week over a 20 year history (p. 8-1).

63. Page 8-12. Please comment whether San Francisco municipal drinking water was used in any groundwater hydraulic punch, well drilling or other sample collection activities. Given that THM are characteristic of chlorinated drinking water, a 2 ppb chloroform finding is quite possibly spurious or is due to the incidental THM presence in sample collection waters.

64. Pages 8-13, 8-21. Please compare Site 7 and 10 soil metals concentrations to filtered ambient groundwater metals found at NAVSTA TI.

65. Section 8.7.1.4 Please compare Site 7 and 10 soils metals concentrations to Bay Area range of background for beryllium, silver and vanadium (attachments).

66. Page 8-19. Typo: micro

67. Section 8.9 Please describe how the 200 year criterion was established?

68. Page 8-24, Section 8.9.3 Please indicate whether soil pH contributed to migration of copper, mercury, nickel and zinc.

69. Figure 9-1. For sludge disposal (YBI Site 8), it seems unlikely that the entire Army Point east end at YBI was the disposal area? Would not a specific or circumscribed location be a more likely dump?

While the Navy has provided site history here (Section 9.1), it is not clear whether any visually evident sludge or its remnants remain anywhere in the area?

70. Section 9.6.3 Were surface water metals concentrations less than, greater than or the same as AWQC values?

71. Section 9.7.1.3 Please compare site 8 soil aluminum, barium, beryllium, cobalt, copper, lead, manganese, mercury, nickel, silver and vanadium to the range of Bay Area background concentrations (attachment). It may be appropriate to delete those metals from the site risk analysis should the values be consistent with off-site Bay Area background but are only slightly different from the immediate empirical data for TI and YBI.

72. Sections 9.7.5, 9.9.2 and throughout. Since site 8 is directly downwind and directly beneath the Bay Bridge, is the lead measured as inorganic Pb or is tetraethyl Pb present in these areas? What is the relative source contribution of weathered paint chips from the Bay Bridge as contrast to the Pb arising from military activities?

73. Section 9.8.4 The review of ecologic risk is deferred here to HERD staff with specific expertise in such assessments. As the text is written, however, it appears that metals associated with sludge dumping pose a chronic discharge source by surface run-off to the Bay. The page 9-18 text would benefit from a clear presentation of Site 8 future land use for if residential/commercial buildings are indeed to be built at Site 8 and the old concrete foundations and sludge remains off-hauled and/or capped as a result of or prior to development, much of the concern from a practical point of view would be reduced.

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**MEMORANDUM**

TO: Mary Rose Cassa
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700 Heinz Street, Suite 200
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FROM: Calvin C. Willhite, Ph.D. *Calvin C. Willhite*
Human and Ecological Risk Division
400 P Street, 4th Floor
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DATE: December 16, 1997

SUBJECT: Naval Station Treasure Island (NAVSTA TI)
San Francisco, California
Volume II, Onshore Remedial Investigation Report

PCA:14740 Site-WP: 200231-47

The Department of Toxic Substances Office of Military Facilities requested on October 8, 1997 that the Human and Ecological Risk Division (HERD) review and provide written comment on the five volume set: "Onshore Remedial Investigation Report, Naval Station Treasure Island, San Francisco, California" (Comprehensive Long-Term Environmental Action Navy [CLEAN I] Contract Task Order No. 0199), dated September, 1997. These documents were produced by PRC Environmental Management, Inc. on behalf of the Department of the Navy, Naval Facilities Engineering Command, San Bruno, California. This memorandum covers only Volume II of the five volume set, the remainder to follow; Volume I review was dated November 21, 1997.

BACKGROUND

These reports present the findings by study area of the remedial investigations conducted at NAVSTA TI in San Francisco Bay. The remedial investigation was conducted by the Navy to determine the nature and extent of contamination from past military activities and to determine the risks to human health and the environment. The investigation was performed under the Navy's Installation Restoration Program in accord with the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) and the Federal Facility Site Remediation Agreement (September 29, 1992); signatories to that agreement include the U.S. Navy, the DTSC and the California Regional Water Quality Control Board. The City of San Francisco and the U.S. EPA are also represented on the Base

Realignment and Closure (BRAC) Cleanup Team. NAVSTA TI was designated for closure in 1993 and on September 30, 1997. NAVSTA TI was closed as an operational naval facility.

There are 29 total areas of concern identified at NAVSTA TI:

1. Medical Clinic (spilled X-ray developer)
2. eliminated
3. PCB Equipment Storage
4. eliminated
5. Old Boiler Plant (fuel lines, demolition debris)
6. eliminated
- 7/10. Pesticide Storage Area/Paint Shop (PAH, oil/fuels/metals, heptachlor)
8. Sludge Disposal (wastewater treatment plant sludge)
9. Foundry (paint shop/forge)
11. YBI Landfill (oil/fuels, metals)
12. Old Bunker Area (lead, PAH, metals)
13. eliminated
14. eliminated
15. eliminated
16. eliminated
17. Tanks 103/104 (PAH, oil, fuels, metals)
18. eliminated
19. eliminated
20. eliminated
21. Vessel Waste Oil Recovery (oil/fuel)
22. eliminated
23. eliminated
24. Fifth Street Fuel Release (abandoned fuel lines/dry cleaners)
25. eliminated
26. eliminated
27. eliminated
28. West Side on/off Ramp (lead)
29. East Side on/off Ramp (lead)

Volume II concerns the former foundry (Site 9), YBI Landfill (Site 11) and the Old Bunker Area (Site 12). Since the drafting of these documents, the NAVSTA TI has been closed; the introductions to these sections should be updated to indicate same; for the large 90 acre 'Old Bunker Area' in sections where military housing is built, please indicate whether the homes are currently occupied, and if so, what are the population demographics of the occupants?

1. Page 10-2, Section 10.3. It would assist the reader in descriptions presented here to note the physical condition of the Bldg. 41 foundry/paintshop/welding school/wood shop/vehicle repair and maintenance facility. For example, is the floor intact? Is there visual evidence of hydraulic fluid leaking from the 30-gallon storage tank? Is the floor drain intact or is it cracked, broken or otherwise in

disrepair so as to permit leaking of shop solvents, oils and other materials into surrounding soils? Is there evidence that the concrete floor or other features of the building itself are free of contamination?

2. Page 10-3, Section 10.4. From the text as written, it is not clear how the four soil boring locations were selected or whether four samples are adequate to characterize the facility. Why would one collect floor drain water samples when the facility is currently a wood shop? Is it not more likely past solvent disposal/release during paint shop activity would have leaked from the floor drain in Building 41? Does the 30-gallon storage tank contain hydraulic oil or other materials or is it presently empty? Does the "hydraulic lift trench" show visible oily stain or residue?

From the text as written, it is very difficult to determine why the various "field activity" described here represent a comprehensive (In this context, please note the title of the documentation: "Comprehensive Long-Term Environmental Action Navy.) evaluation of Bldg. 41 and if so, what rationale is used to reach that conclusion?

3. Page 10-4, Section 10.4.1.2; Table 10-1. It is not clear from Figure 10-1 and the text how the soil boring locations and numbers were determined; while site characterization may, in fact, be adequate, the text does not communicate that position and supporting rationale to that effect is missing. Are the locations given in the figure beneath an intact concrete floor or are these taken in bare soil? Would not borings just to the north of the former paint booth directly adjacent to Bldg. 41 be more likely to reveal potential contamination?

4. Page 10-6, Section 10.4-2. What is the meaning of the phrase, "...result of repeatedly poor sample recovery"? Why were only three of the 35 total (Table 10-1) soil samples analyzed for Cr+6?

5. Page 10-9. Since PCB concentrations in soil increased with depth at location 09-HP003, why were no analytical results at depths greater than 1 foot bgs presented?

6. Page 10-10. While it is clear that diesel fuel cut hydrocarbons contaminate soil (38,000 ppm) at Bldg. 41, the lateral and vertical extent of this problem is not evident from the presentation.

7. Page 10-11. It is not clear why analyses for metals in groundwater were restricted to inorganic lead (Section 10.6.2)? Why are only unfiltered data presented here? Are not the environmental/toxicologically relevant endpoints associated with concentrations of metals in filtered groundwater?

8. Page 10-12. Monitoring Well Survey. Are data available for filtered groundwater samples? At a minimum, the results summarized here should be compared (arsenic, chromium, copper, lead, mercury, nickel, zinc) to ambient TI metals groundwater concentrations and to results for filtered groundwater analyses.

9. Page 10-14, Section 10.7.1.3. Ambient metals comparisons should be completed for groundwater just as has been done for artificial fill soil/rock per se.

10. Section 10.7.2.2. Media of Concern. The media of concern listed is limited to soil only; however, it is apparent that oily tanks, pits and other features of the two buildings themselves at Site 09 are stained, filthy or otherwise possibly contaminated. PCBs were apparently eliminated due to gross oil interference with the analysis - leading to a 10 ppm detection limit (Section 10.6.3) - a value far in excess of any candidate ARAR (e.g., < 1 ppm at soil surface, 40 CFR 761). How do non-porous surface PCB ARAR values (< 10 ug/100 cms) compare to PCB concentrations, if any, in the features in the buildings stained with oil at Site 09? Are the structures themselves contaminated and if not, what data are available to show that this is, indeed, the case? Are PCBs present or do the authors intend to carry out risk assessment calculations assuming values greater than ARAR in soils and concrete or

other paving surfaces at the one-half limit of detection? Why are the samples not cleaned up prior to analyses for PCBs?

Were any ambient air samples collected at the site? If not, why not? Why are only 'qualitative' comparisons made using flux chamber extrapolations?

11. Page 10-6, Section 10.7.3 As stated in previous reviews, the use of aromatic constituents-based approach for diesel fuel and waste crankcase oil/hydraulic oil cannot be considered comprehensive inasmuch as benzene, xylene, toluene and ethylbenzene are present even in fresh fuel at only minimal concentrations (benzene = 0.01-0.082 ppm; toluene = 0.25-4.7 ppm; ethyl benzene = 0.17-0.43 ppm; xylene = 0.66-2.5 ppm), and are virtually non-existent in the heavier cuts. The diesel assessment would be handled most directly using a whole-product approach as outlined in Milner et al. (*J. Soil Contam.* 1(2): 103-157, 1992).

12. Page 10-17, Section 10.7.5.1 Please discuss a) any possible historic use of beryllium or its compounds at site 09 and b) compare soil beryllium to regional (Bay Area only) background data for the range of beryllium concentrations in East Bay and Presidio formations prior to including soil beryllium results here.

13. Page 10-18. Please expand the discussion of a) soil lead concentration mean and range, b) compare and contrast adult blood Pb results, normal child blood Pb predictions to the predicted results for the assumed pica child. Identify the percentage of the assumed residential population classified as pica children.

14. Page 10-18. Why were no ambient air samples collected both inside and outside the two buildings at Site 09? Why are no direct comparisons made to Bay Area background air measurements published by the BAAQMD for the VOCs? The conclusion, "Thus, it is likely that the VOC concentrations in air at Site 09 are lower than those at the three monitored sites described in Appendix I", is speculative. No empirical data are supplied which support directly the conclusion drawn.

15. Page 10-19, Section 10.8. Unless supported by a defined use plan with assurance that future activities will, in fact, occur as stated (e.g., "in the event that the pavement is removed from these sites, it is likely that it will be replaced with additional buildings, lawns or landscaped areas."), the lack of an ecologic risk assessment here makes the document incomplete.

16. Page 10-20. Include parenthetical soil concentrations of acetone and toluene in the text along with residential PRG values for ready comparisons. Indicate whether toluene and acetone are present in groundwater at Building 41 as supporting or detracting from the conclusion that the data "does not indicate a plume of contamination".

17. Page 10-20, Section 10.9.1 Are soil beryllium concentrations listed here (0.2-0.4 ppm) (residential PRG = 0.1 ppm) consistent with Bay Area background range for this metal? Given the observations of 0.73-0.96 ppm beryllium at 09-SB03, and in the absence of comparisons to Bay Area background (e.g., Presidio of San Francisco, Lawrence Berkeley National Laboratory) by comparative lithology, the conclusion, "The source of beryllium is likely to be related to the presence of metals in artificial fill material since there is no known source of beryllium at this site.", is speculative.

18. Page 10-21. It would be helpful to compare the soil diesel fuel concentrations (21-38,000 ppm) in the former lift system trench to the values published by Milner et al. [*Journal of Soil Contamination* 1(2): 103-157, 1992]. The text fails to highlight a) the diesel fuel source: tanks? pipes? spillage? vehicle washing operations? b) the lateral and vertical extent and the volume of soil affected by the diesel fuel problem. The text would be improved by simply presenting the total volume and location(s) of the diesel fuel problem at Site 09.

19. Page 10-21, Section 10.10. It appears from the text as written ("No COCs in groundwater are identified at Site 09 based on ecotoxicologic testing for the development of screening levels...") that deep soil petroleum at 12,000-38,000 is a source for continued degradation of site groundwater?

20. Pages 10-21, 10-23. The Fate and Transport section presented here is wholly inadequate. A comprehensive and quantitative analysis should be included here, particularly as regards the petroleum found at 7 feet bgs. The no action proposed in Section 10.11 is not at all supported by any quantitative data at all.

21. Page 11.1. What is the meaning of the phrase "... shrubbery that is regularly cut or turned under"?

22. Page 11.1 From the text as written, this reviewer must conclude that site characterization at YBI Landfill (IR Site 11) must be incomplete ("The USTs and fuel pipeline may be sources of contamination and will be investigated..."). It would appear to make more sense to have deferred any risk analysis or determinations of future management options until the UST areas have been characterized fully, including analyses of soil and groundwater, during UST remediation activities and confirmation sampling is complete.

It is not clear why UST 270 (which is said to lie not within the landfill area) is addressed here or how it relates to YBI Landfill Site 11?

23. Page 11-13. In text discussion, please include a summary of the total numbers of samples analyzed for each petroleum ('TPH') fraction, the numbers of positive findings and the mean and range of the concentrations for each material found. Please indicate whether these locations are within the YBI landfill itself and/or whether they are located up- or down-gradient of the landfill proper.

24. Pages 11-14, 11-15. Please list the PAH concentrations (including the range, the maximum and as appropriate the average) and locations where such were found in the text. By location, please indicate whether these materials are associated with normal concentrations found in diesel fuels (IARC Monographs on the Evaluation of Carcinogenic Risks to Humans: Occupational Exposure in Petroleum Refining, Crude Oil and Major Petroleum Fuels, Vol. 45, pp. 72-77, Lyon, France, 1989) or whether this is due to waste crankcase oils or other wastes contaminated with PAH. Please provide an explanation why concentrations are greater in November and May than in February. Is this due to diesel fuel dissolution of otherwise generally immobile PAH compounds to facilitate their movement into groundwater?

25. Page 11-15. Please list the concentration range for each metal appearing here and compare the concentration to background metals concentrations at both YBI and TI.

26. Page 11-2, Section 11.2. Describe the total volume, lateral and vertical extent of the YBI Landfill. When did garbage disposal at Site 11 cease? When was a soil cover (p. 11-8) installed? Please indicate whether UST 270 was located up- or down-gradient from the YBI landfill? What was the disposition of the soil with the 61,000 ppm diesel? Was the entire 150 square foot contaminated area contained, removed or otherwise addressed in 1990?

Are data or records available on the source(s) of fill material at YBI Landfill (IR Site 11)? Do lithologic records confirm the same landfill materials as make up TI proper? Some clear assurance of this point is needed here.

27. Page 11-2.; 11-3. Are data/records available to preclude disposal of radioactive, liquid or hazardous waste (along with documented solid waste) burial at YBI Landfill?

28. Page 11-3. Given the size of the landfill, please justify in brief here how a total of 17 soil borings and 3 pits (to what depth? rationale for location selection?) are adequate to characterize fully the YBI Landfill size, composition and extent of contamination. The rationale provided (p. 11-5, "The exact

locations of the test pits were selected based on the results of the surface geophysical survey...") tells the reader very little. On page 11-11, 22 different locations (total 90 soil samples) are mentioned; how does this relate to the pages 11-3 and 11-4 summary figures?

29. Page 11-8, bottom; Page 11-9, top. A section of the text is missing.

30. Page 11-5. While TDS for 11-MW02, 11-MW04 and 11-MW07 is not given, please list and compare the PAH (as individual compounds and as total PAH concentrations) found in groundwater to the 30-day average of 31 ng/L from SWRCB 93-5WQ for the California Enclosed Bays and Estuaries Plan or equivalent. What is the source of the PAH in these wells? Leaking fuels, waste crankcase oil dumped into the YBI Landfill?

31. Page 11-16. The weathered diesel fuel in Site 11 groundwater listed here ordinarily would not contain the elevated PAH concentrations found in MW02, MW04 and MW07 (e.g., W.H. Griest et al. 1986. Comparative Chemical Characterization of Shale Oil - and Petroleum-Derived Diesel Fuels. DE86003310; Oak Ridge National Laboratory, Analytical Chemistry Division, Oak Ridge, TN).

Please compare diesel fuel concentrations in Site 11 groundwater to ambient water quality criteria published for enclosed bays and estuaries for the individual constituents of the fuel (e.g., benzene 21 ug/L; isophorone 610 ug/l; toluene 300 mg/L). Does the motor oil found here correspond to waste crankcase oil with elevated metals and PAH values? Dumping used motor oil into an uncontrolled 'landfill' has been a common historic practice both on private, public as well as military lands.

Please list the concentration ranges of and compare all chlorinated pesticide concentrations in groundwater to their corresponding 93-5WQ SWRCB values.

32. Page 11-9, Section 11.7.2.2 Unless construction/excavation restrictions (by deed or other administrative control) or removal of the YBI Landfill is complete, this reviewer cannot concur with the assumption that construction crews will not contact site groundwater during foundation/utility installation. Assuming contact to only 2 feet bgs at YBI cannot be justified from the rationale presented here. What is the basis for the statement, "Because it is likely that Site 11 may be used for commercial industrial and recreational purposes without any construction or other activities that would disturb soils..."? Is Site 11 slated to become a visitor parking lot? DTSC Guidance (OSA, 1992, Use of Soil Concentration Data in Exposure Assessments) indicates that in the absence of information to the contrary, risk analyses should include consideration of depths to 10' bgs.

33. Pages 11-22; 11-24. Please review the beryllium issues presented here in light of comment #17 (above).

34. Page 11-22. Were no empirical ambient air data collected at Site 11? The conclusion, "Thus, it is likely that the VOC concentrations in air at Site 11 are lower than those at the three monitored sites described in Appendix I", is speculation.

35. Page 11-25. Given that lead is found here at >5000 ppm, please indicate also the pH of the soil samples in which the elevated Pb was detected. Please clarify, given the discussion of automobile exhaust Pb associated with proximity of Site 11 downwind of the Oakland-San Francisco Bay Bridge, whether the Pb referenced includes only inorganic Pb or whether analyses were conducted to determine tetraethyl Pb. A brief discussion of relative source contribution or attribution, if any, should be added here, with particular emphasis on surface soil deposition as contrast to Pb values found at increased depths.

36. Page 11-26. The authors should explain the page 11-35 risk management recommendations in light of the overall conclusion for terrestrial ecologic receptors: "Analytical results derived from food-chain evaluation indicated an unknown potential for risk to terrestrial mammals..."

37. Page 11-26. It appears that the authors are relying on the reproductive capacity of environmental species to overcome the impact of "chemical [waste] - related effects" proposed to be left behind at YBI? What is the meaning of the Navy's conclusion: "Thus, any potential adverse effects on individuals exposed to contamination at this location are not likely to affect small mammal populations as a whole"?

38. Page 11-27. As with the previous (#37) comment on mammals, what is the precise meaning of the Navy's conclusion regarding avian species: "...the effect on a few individuals [death? disease? in raptor populations?] will not reduce the local raptor population as a whole"? How many of the local raptors are calculated to be adversely affected by the contaminants at YBI and TI? Rather than limitation of the calculations to YBI Landfill given the author's observations, "Raptors tend to have larger territories (than Site 11?)...", should not the analyses presented here take into account total exposure to these animals from lead, organochlorine pesticides and other COC at TI/YBI in relation to the raptor's exposure due to environmental contaminants over the whole of the Bay Area or other defined locale? For migrating species, how do these conclusions apply?

It must be noted here that treatment of relative source contribution in the current documentation is largely superficial. The analysis could be improved considerably in this regard.

39. Page 11-27. Are Bay Area endangered plant species considered in the YBI/TI ecologic risk assessment as was done at the Presidio of San Francisco? If not, why not?

40. Page 11-28. How do the conclusions on TPH (64,000 ppm) and metals in groundwater justify a no action alternative at Site 11 (page 11-35)?

41. Page 12-1. Figure 12-1. It is not clear why so large and diverse a site as IR Site 12 is handled as a single unit? Is IR Site 12 "Old Bunker Area" synonymous with "Rubbish Disposal Area"? What does "rubbish disposal area" mean? Is "rubbish disposal area" a landfill similar to that at YBI (IR Site 11)? In Section 12.1, please indicate where on the 90 acres mentioned each of the listed activities: waste incineration (Please be specific here and throughout: does this mean burning of household garbage? Does this mean burning of materials which would today be categorized as hazardous materials?), radioactive material dumping, trash burial, oil storage, etc. occurred. From the text as written, it appears that the location of historic bunkers and homes is not related to DTSC-regulated activities? The reader cannot determine from the text whether homes were constructed on radioactive or hazardous waste? If so, are such homes currently occupied? If not, are plans in place for structure demolition, removal or other activities? Were the 'steel drums' mentioned here empty?

42. Page 12-2. Please list the specific activities and identify all radionuclides stored in the two above ground concrete cooling tanks. Were these tanks intact? List half-lives of each radionuclide. If Br82 was the only material stored here, please indicate same with reference to supporting documentation. Please indicate here the type of oil stored in the tank mentioned; has this tank and associated piping been removed?

43. Page 12-4. Please delete reference to U.S. native soil background levels (Shattuck and Boemgen, 1984) and compare the antimony (18.8 ppm) and cadmium (9.4 ppm) concentrations to contemporary Bay Area background values for these elements.

For the housing sandy play areas, please compare the antimony, cadmium and lead concentrations measured to the range of Bay Area background values.

44. Page 12-5. In summary of release (spillage/dumping/tank overage and leakage/leaching) to the Bay, rather than so general a conclusion across the entire 90 acre parcel (unless the parcel is homogeneous),

it would be helpful to be more precise and list what activity occurred in which location(s) of the 90 acres. Unless Site 12 is uniform, please be specific which receptor(s) and activities are located in which portion(s) of the 90 acres.

45. Page 12-5. How can a total of 4 soil borings (RI Phase I) and 8 "geoprobe borings" be considered a comprehensive evaluation of a diverse 90 acre parcel with different historical activities? The specific rationale and supporting evidence should be supplied and discussed here. Since records are scant (p. 12-7), what steps were taken to ensure a complete site characterization for the whole of the 90 acres?
46. Page 12-8. It is not clear why dioxins were target analytes, given that no evidence of PCB release or combustion of dioxin precursors (e.g., pentachlorophenol) occurred (page 12-15)? Please clarify.
47. Page 12-8. Please be specific here, "...results indicated that well 12-MW16 may be within a plume..." What chemicals are in the plume? Did data suggest a plume and if so, the size and extent of same should be given here.
48. Page 12-9. What is the physical description of the 'metal' found "at several monitoring well locations"? Rebar? Auto parts? Fine dusts/powders? At what depth was "trash" encountered and what was the physical description of same?
49. Page 12-12. Please be specific and summarize briefly where the 56 samples were collected (i.e., how many samples from how many soil borings?) Are the metals, pesticides, SVOCs located in surface or at depth? Increased text detail - in brief - would aid the reader here. What 'explosives' were included in the soil analyses here?
50. Page 12-13, 12-14. it may be helpful here to include a text figure showing a typical chromatogram of fresh fuels (gasoline, diesel) and motor oil, with a detailed accompanying figure legend explanatory text to substantiate the conclusions presented in the text as submitted. Please also identify the general nature of the contents of the rubbish "debris disposal areas" (e.g., household garbage, building demolition materials, drums, etc.) particularly for those areas at the shore (e.g., 12-HP032, 12-HP067, 12-HP075).
51. Page 12-15. For all the PAH locations listed here and throughout the document, it would be helpful to indicate whether these findings are consistent with PAH concentrations normally found in diesel fuel, or Bunker C and whether these findings are consistent with native uncontaminated fuels or whether these data are consistent with dumping of waste oils (e.g., vehicle crankcase oil, waste hydraulic fluids and grease, etc.). Are the PAH encountered due to combustion by-products (e.g., trash burning on site)? Are the PAH found due not to either of these situations, but are they due to urban ("background") anthropogenic concentrations found in the Bay Area?
52. Page 12-17. Please give a brief summary of source of tetrachlorodibenzofuran, HPCDD and OCDD. Are all locations where these are found associated with former incinerator activity? At what depth(s) are these substances found?
53. Please identify the "explosive" found in groundwater and its concentration. Do other monitoring wells indicate explosives contamination? If not, is this due to locations of the current monitoring effort or is the groundwater contamination highly localized? What data support one or another hypothesis?
54. Page 12-19. It would aid the reader if the depth to groundwater for VOCs, SVOCs, pesticides, PCBs and explosives were supplied in the discussion presented here. Please include applicable comparisons to SWRCB 93-5WQ or equivalent in addition to the U.S. EPA AWQC values listed here. For chemicals without any environmental regulatory values, it would be helpful to place the concentrations found into context by comparisons to state and federal MCLs in order to provide reader perspective.

55. Please reference and list for RDX, HMX and all explosives the regulatory and guidance values summarized in applicable ATSDR reviews [e.g., Toxicological Profile for Tetryl, June, 1995; Toxicological Profile for RDX, June, 1995].
56. Page 12-20. What were the concentrations of aromatics like benzene, xylene, toluene and ethylbenzene in the gasoline at 12-MW05, 12-MW07, 12-MW08, 12-MW09, 12-MW14, 12-MW16? Please compare AWQC and SWRCB 93-5WQ (or equivalent California values) for aromatics found in site 12 groundwaters.
57. Pages 12-21, 12-22. Describe in the context of co-contaminants the PAH results in the same wells (p. 12-19) whether the motor oil found in the Site 12 groundwater represents waste (used) oil or whether the analytical results are consistent with fresh or weathered uncontaminated petroleum products. Are the heavy fractions referenced only as TPH-d and TPH-m actually representative of heating oil, hydraulic or other industrial oil, grease or Bunker C rather than as "diesel" or "motor oil"?
58. Page 12-22; 12-23. Please list concentrations of metals in filtered groundwater samples; if unavailable, please provide same from the next scheduled round of groundwater monitoring. Please compare all metals values in Site 12 groundwater to ambient ("background" "reference") groundwater concentrations in fill at TI in uncontaminated areas.
59. Page 12-26. The conclusion, "None of the values detected exceeded the AWQC standards", is an over-simplification of the situation at hand; the statement is of course correct, but since there are no or only very few such standards and no values are available for most of the more pervasive or problematic materials (e.g., gasoline, oil, diesel), the situation is incomplete. Since dioxins were found in Site 12 soils, what are the results of groundwater monitoring efforts for these substances?
60. Page 12-28, Section 12.7.1.3 Please expand and discuss the range of naturally-occurring Bay Area background concentrations for metals in addition to the results of Appendix F comparisons to Site 12 results.
61. Page 12-29, Section 12.7.2.2. Since DTSC Guidance specifies that risk assessments should account in residential risk assessments for soil depths to 10 feet bgs, please justify the use of soil depth to 2 feet bgs here. Would not future construction or utility workers possibly encounter soils with groundwater intrusion and receive dermal and/or inhalation (e.g., VOC) exposure from contaminated groundwater? The analysis should include those potential pathways in order to be complete.
62. Page 12-20. Provide toxicologic justification (with citation of applicable literature) for surrogate RfD for phenanthrene and benzo(g,h,i)perylene.
63. Page 12-32, 12-33. Please spell out TCDF acronym here. Please compare the range of Bay Area background metals concentrations (antimony, arsenic) prior to "chemical risk-driver" conclusions. Why are no groundwater calculations included here? Do HPCDD, OCDD and TCDF exist in site groundwater? Are the PAH listed here associated with waste oils? If so, please point out that the PAH and TCDF found are neither discrete chemicals or neat materials, but are associated with oil, incinerator dust, combustion products or are unknown. Are these substances associated with the current housing areas that cover 60% of site 12? Are these substances limited to discrete areas or was incinerator ash/soot dispersed over the 90 acre parcel? For example, is the lead contamination (residential land use) due to house paint chips? Are current residents contacting the dioxins/furans listed on page 12-32 under residential land use?
64. Page 12-34. The authors neglected an ecologic risk assessment for terrestrial receptors, including avian species as "receptors of concern have not been observed to frequent the area"(?). For areas of

Site 12 directly adjacent the Bay (e.g., pages 12-37, Section 12.9.2), it would appear the rationale presented for excluding wildlife is very weak indeed.

65. Page 12-34, 12-35. Define and discuss in detail the methods and results of the "conservative screening level modeling" used to support the conclusion that various pesticides, metals and waste petroleum will not reach the TI shore and Bay at levels harmful or that will result in foodweb biomagnification of residues.

66. Page 12-35. Discuss here the basis of the 14.3 (?) ppm "TPH" screening level.

67. Page 12-35. What are 'step-out' locations?

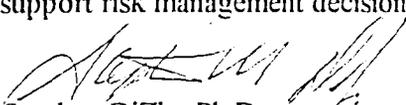
68. Page 12-36. What are dioxin concentrations in surface soils? This is important since surface soils (e.g., 12-HP113) show evidence of oil and other contamination.

69. Page 12-38. List and summarize the rubbish disposal / debris disposal / ammunition bunker lead concentrations that are greater than the 'residential PRG'.

70. Page 12-38. Please include concentrations of silver in filtered groundwater for comparisons to the unfiltered results listed here.

71. Please indicate the physical form of the metals found in soil (e.g., rusted concrete rebar, slag, batteries, auto parts, etc.) in relation to bioavailability of the metals. Are site 12 metals present as fine dusts from incinerator ash or are these materials found in non-respirable or in intact materials buried on site?

For the PAH discussion, the substances (unlike the impression gained by reading the text as submitted) highly mobile when dissolved in gasoline or diesel - which appears to be the case here. The page 12-40 discussion and apparently qualitative judgments made in Sections 12.10.1 and 12.10.2 are inadequate to support risk management decisions.


Reviewed by: Stephen DiZio, Ph.D.
Senior Toxicologist



Cal/EPA

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Pete Wils
Governor

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MEMORANDUM

TO: Mary Rose Cassa, Project Manager
Office of Military Facilities - Berkeley
700 Heinz, Building F, Second Floor
Berkeley, CA 94704

FROM: James M. Polisini, Ph.D.
Staff Toxicologist
Human and Ecological Risk Division (HERD)

DATE: November 4, 1997

SUBJECT: RESPONSE TO REGULATORY COMMENTS ON THE DRAFT
REMEDIAL INVESTIGATION REPORT
[PCA 14740, SITE 200135-47 H:20]

Background

We have reviewed the documents titled *Appendix O Responses to Regulatory Comments on the Draft Remedial Investigation Report* and *Appendix J Ecological Risk Assessment Methodology and Results*. These documents were delivered to our offices by overnight courier on October 20, 1997. This review is in response to your written work request dated October 20, 1997.

General Comments

Our main concern regarding the response to comments is the contention by the Navy and Navy contractors that the potential adverse effect on small mammal populations at some sites is mitigated by emigration from surrounding unaffected populations. We do not agree that this is sufficient basis for a no further action decision at these sites.



Specific Comments

1. HERD was not involved in the April 4, 1997 meeting where there apparently was agreement among regulatory agencies that a 'ten percent rule' could be applied to inorganic potential contaminants in selecting the contaminants of ecological concern, as described in the response to specific comment number 3. We know of no other DTSC site in California where this criterion has been applied. We continue to recommend two methods for evaluating inorganic elements for exclusion from further consideration: 1) a comparison with an upper quantile of a background data set; and/or 2) an appropriate statistical test to determine whether the site-specific data are statistically different from an appropriate background data set. The spatial location of any samples excluded must also be evaluated to determine whether the excluded samples represent a localized elevated concentration (i.e., a 'hot spot').
2. The response to specific comments number 8, 15, 19 and 23 misstates the original HERD comment. The original HERD comment began with the phrase 'We do not agree...' ^{believe} The response to comments presents the HERD comment as 'We do ^{believe} agree...' Please correct the HERD comment in the response to comments to accurately reflect our original comment.
3. The response to specific comment number 12 makes reference to the Greek letter M. The original HERD comment was: There appears to be a typographic error where the Greek letter Φ appears where the units are either 'mg/l' or ' μ g/l' not ' Φ g/L'
4. We disagree with the response to specific comment number 1 on Appendix J. While the method of estimating the deer mouse tissue concentration based on the total amount of contaminant consumed over six months may be protective for some inorganic elements, it may not be protective for organic contaminants with high bioaccumulation potential. HERD can offer the DTSC risk manager no exact opinion on the contaminants for which this method of estimating bioaccumulation is protective. Therefore we recommended sampling of soil and deer mouse tissues as the appropriate method for decreasing the uncertainty in the predictive assessment for raptors.
5. The response to comment 1 also states that 'While there may be potential effects on individual mice or raptors, adverse effects will not occur at the population level.' While this conclusion could be supported for the hawk, if additional detail is provided on home range and site-use factors, we do not believe it is appropriate for small mammals. No population studies were made of Treasure Island deer mouse populations, nor is there any reference cited which has studied the number of

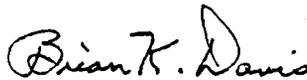
individual deer mice, which can be removed from the population without serious adverse effects on the population. We continue to recommend soil and deer mouse food item sampling to decrease the uncertainty inherent in the predictive assessment evaluation of the deer mouse.

6. We disagree with the response to specific comment number 6 on Appendix J. The point of specific comment number 6 was that the risk manager might gain some insight into the contaminants which might be of concern by examining the range of hazard quotients based on the numerically low toxicity reference value (TRV) and the numerically high TRV. For example, a contaminant with a 'low' hazard quotient of 0.9 and a 'high' hazard quotient of 900 would, most probably, deserve more consideration than a contaminant with a 'low' hazard quotient of 0.01 and a 'high' hazard quotient of 10. The 'low' and 'high' hazard quotients for both hypothetical contaminants differ by the same order of magnitude, but the 'low' hazard quotient of the first is closer to unity. This indicates that the distribution of potential hazard quotients for the first hypothetical contaminant has a greater probability of being greater than one and therefore of concern.
7. Future commercial or residential development of Site 08 is the basis for recommending no further action in the response to comment number 8 on Appendix J. The DTSC risk manager should identify the method which will guarantee that commercial or residential development will definitely occur at Site 08, if future commercial or residential use is the rationale for considering future ecological exposure pathways incomplete.

Conclusion

HERD agrees that sampling of red-winged blackbirds or other peregrine falcon prey and analysis of the tissue concentration is appropriate as a validation study for the peregrine falcon. Additional justification based on home range and site-use factors is required to support the selection of no further action for the hawk. Without soil and deer mouse food item analyses HERD cannot provide any guidance regarding whether the no further action alternative is protective of mammals for Sites 08, 11, 28 and 29. We continue to recommend these analyses as outlined in the DTSC guidance for ecological risk assessment.

Reviewed by: Brian K. Davis, Ph.D.
Staff Toxicologist, HERD



cc: Michael J. Wade, Ph.D., DABT
Senior Toxicologist, HERD

Mary Rose Cassa
November 4, 1997
Page 4

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State of California
MEMORANDUM

To: Ms. Mary Rose Cassa
Department of Toxic Substances Control
700 Heinz Avenue, Bldg. F, Suite 200
Berkeley, CA 94710

Date: November 25, 1997

From: **Department of Fish and Game**

Subject: Naval Station Treasure Island Validation Study for Sites 08, 11, 28, and 29
[PCA 60130 NTX506 SITE 200231: 28 hours]

Per your work request received October 17, 1997, I reviewed Appendix J and Appendix O of the Draft Final RI Report for Naval Station Treasure Island. Both Dr. Gerald Chernoff and I participated in a conference call with the Navy and other agencies on November 4, 1997. During that call I requested Chapters 9, 11, 16, and 17 of the Draft Final RI Report, which are those Chapters which describe and make recommendations for four IR Sites on Yerba Buena Island, IR Site 08, IR Site 11, IR Site 28 and IR Site 29. After review of those sections I offer the following comments at this time.

General Comments

In the sections provided to me, I was not able to find the locations of the background samples, nor the rationale for selecting those locations. Since COPCs were eliminated because they were below background, I need to understand how background numbers were derived. In addition, the rationale for using the "10 percent level" as a screening tool for risk assessment is not clear to me. This methodology does not address the possibility of "hot spots" and is not acceptable to the Department.

With respect to the use of Toxicity Reference Values (TRVs), it is the position of the Department that these numbers and this approach may not be wholly protective of fish and wildlife resources. The use of allometric conversions, high and low Hazard Quotients (and the interpretation of their meaning) and the need to screen out COPCs without TRVs from the overall analysis are some of our concerns.

Another area of concern for the Department is the position the Navy has taken with respect to protection of fish and wildlife resources which have no special legal status. As co-trustees for natural resources, it is the responsibility of the Navy, DTSC and the Department to protect all trust resources. Individual mice and birds are such resources. In order to determine if these resources are being adversely impacted, tissue samples of individual mice should be analyzed and soil bioassays should be performed. In addition, it can not be inferred that population impacts from the loss of individual mice will be ameliorated by immigration from other sites.

We agree with the Navy that tissue sampling of Peregrine falcon prey items should be pursued. The Navy's approach, which was discussed in the November 4, 1997 conference call appears to be appropriate. I have been contacted by Ms. Kristin Gade and have supplied her with the information necessary to obtain a State Scientific Collector's Permit for the necessary specimens. I also contacted Mr. Jim Haas at the U.S. Fish and Wildlife Service to notify him of the Navy's intention to collect and kill migratory birds. He will advise Ms. Gade regarding the required federal permits.

Specific Comments

IR SITE 08

Section 3.1.1.3 Summarizes the Risk at Site 08. This section should include a discussion of risk to receptors from pesticides found on site. A more thorough evaluation of the threat posed by pesticides may be necessary if the proposed reuse does not take place. In addition, as noted in the general comments, risk to individual rodents, is needed. It is premature to make a recommendation of "no further action" for this site.

IR SITE 11

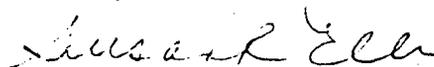
We do not believe that this site can be properly analyzed until the future reuse is determined. It is necessary for the Navy to determine if this landfill is in historic wetland and if there is off-site migration of contaminants. This must be addressed in the Offshore RI. Although capping was mentioned during our November 4, 1997 conference call, it should not be considered a remedy without additional investigation. Section 3.1.2.3 indicates that quantitative evaluation could not conclusively determine if there may be some level of risk associated with the site. The statement should be that the quantitative evaluations could not conclusively determine that there is not risk to the site. Further investigation in the form of invertebrate bioassays could answer this question. It is premature to make a recommendation of "no further action" for this site.

IR SITES 28 and 29

Again, bioassays and rodent tissue analysis should be used to validate to conclusion that these sites do not appear to pose significant immediate risk to terrestrial receptors. It is premature to make a recommendation of "no further action" for these sites.

Thank you for the opportunity to review and comment on the Validation Study and participate in the discussions of clean-up at this site. If you have any questions about these comments, please call me at (916)327-3196.

Sincerely,



Susan R. Ellis
Senior Biologist
Military Facilities Team

cc:

Department of Fish and Game
Mr. Don Lollock, OSPR
Mr. Jonathan Clark, OSPR
Gerald Chernoff, Ph.D.

U. S. Fish and Wildlife Service
Mr. Jim Haas