

DEPARTMENT OF TOXIC SUBSTANCES CONTROL

Region 4

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file
M60050.002639
MCAS EL TORO
SSIC #5090.3

April 18, 1996

Mr. Joseph Joyce
BRAC Environmental Coordinator
U.S. Marine Corps Air Station - El Toro
P. O. Box 95001
Santa Ana, California 92709-5001

**COMMENTS ON DRAFT PHASE II REMEDIAL INVESTIGATION REPORT FOR SITE 24, OPERABLE
UNIT 2A, MARINE CORPS AIR STATION (MCAS) EL TORO**

Dear Mr. Joyce:

The California Environmental Protection Agency (Cal/EPA) has completed the review of the above subject document dated February 1996, prepared by Bechtel National, Inc. The report presents the results of Phase II Remedial Investigation conducted at Site 24. Site 24 is one of two sites in Operable Unit (OU) 2A designated as potential Volatile Organic Compound (VOC) source areas. Investigation of the other OU-2 site, the Major Drainages (Site 25), has not been completed and the results will be provided to the regulatory agencies as an addendum to this report.

This letter is to transmit the enclosed Department of Toxic Substances Control (DTSC) comments and the Regional Water Quality Control Board comments dated April 4, 1996 on the report. The report is well written. It is apparent after review of the *Report*, the BRAC Cleanup Team (BCT) commitment to the "interactive work plan" approach with regard to the remedial investigation for Site 24 has proven successful. Although there are still comments that must be addressed, the brevity of this review is a direct result of the information exchange at the pre-scheduled weekly technical meetings. A few clarifications and modifications are needed as outlined in the enclosed comments.



Mr. Joseph Joyce
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Please incorporate the agreed upon comments, where appropriate, and send us a response to comments along with a revised document. Thank you for your cooperation. If you have any questions, please call me at (310) 590-4891.

Sincerely,



Tayseer Mahmoud
Remedial Project Manager
Base Closure Unit
Office of Military Facilities
Southern California Operations

Enclosures

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Mr. Joseph Joyce
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DEPARTMENT OF TOXIC SUBSTANCES CONTROL
Comments on
Draft Phase II Remedial Investigation Report For Site 24, OU-2A
Marine Corps Air Station-El Toro
Dated February 1996

1. Executive Summary, Conclusions

Explain, in the text, that Data Quality Objectives (DQO) #1 satisfies the horizontal and vertical extent of VOC-contaminated soil to evaluate response actions.

2. Section 1.1.1, Guidance and Agreement, Figure 1-1

Add Remedial Design (RD) step before Remedial Action (RA) on Figure 1-1. Also, you may want to add the Certification as the last step in the process.

3. Section 1.2.2.2, Recent Station Operations

Revise the 1st sentence in the 2nd paragraph to read as follows: Currently, hazardous materials/wastes are managed under appropriate Federal, State, local, and DoN requirements.

Also, reference to on-Station RCRA-Interim-Status Storage Facility is not accurate because the term Interim-Status refers to temporary authorization until a final permit is received from the regulatory agencies. Please note that MCAS El Toro was issued a RCRA Hazardous Waste Storage Permit in August 1993. DTSC terminated the permit on March 8, 1996 after we accepted the closure certification for Building 673-T3. MCAS El Toro is allowed to store hazardous waste at generator accumulation areas for periods less than ninety (90) days.

4. Section 1.2.4, Remedial Investigation, pages 1-13, 1-14, and 1-15

The number identifiers for Buildings 296 and 297 on all figures showing the various hypotheses are transposed. Please correct this error.

Please mention in either this section or the Nature and Extent section that the three conceptual models representing the hypotheses are best comparable to the B - B' cross-section. This type of information may aid to quickly orient and familiarize the reader that is not as closely associated with the site as the BCT.

5. Section 1.2.4.3, Hypothesis 3 - Detached Groundwater Hot Spot

Please evaluate the possibility of another volatile organic compound (VOC) source area near building 360 at boring 24B1 and how it affects the predictions for hypothesis 3. Soil contamination is shown on Figure 4-11, Cross Section DD.

6. Section 2, Figure 2-1

The correct total for soil locations is 173.

7. Section 2.5.3, Groundwater Monitoring Well Sampling

Reference to Field Sampling Plan Attachment W, Section 6.3.22 is not accurate. The correct reference is Section 6.3.2.

8. Section 3.1.2, Man-made Surface Features

The text indicated that there are 25 USTs at Site 24 however, the UST locations shown on Figure 3-1 are more than 25. Please provide the accurate number of tanks.

9. Section 3.1.2, page 3-3

The text does not indicate if pure solvents were used in the degreasing pits. If this information is available, it should be included.

10. Section 3.1.2.1, page 3-3, Building 296

The text mentions a nitrate strip tank. Provide more details of this if possible. Agricultural nitrates have been a groundwater concern and the distinction should be made here if warranted.

11. Section 3, Figures 3-1, 3-5, and 3-9

Some figures (e.g., Figure 2-7) showed a building 655; however, other figures (Figure 3-1, 3-5 and 3-9) shows the building number as 855.

12. Section 3.1.3.5, Abandoned Agricultural Wells

Reference to Figure 2-5 for location of abandoned agricultural wells is typographical error. The correct reference is Figure 2-7.

13. Section 3.5.2, Stratigraphy, page 3-30

Please note in this section the following excerpts: "Similar units [fined grained] were found continuous and laterally extensive on a large scale, yet highly heterogeneous vertically or on a small scale due to the interbedded nature in which they were deposited" and "Lenses of both units are laterally extensive on a large scale and show a high degree

of heterogeneity on a small scale.” These conclusions are a result of the cone penetrometer test (CPT) data collected during this phase of the remedial investigation. These conclusions regarding the stratigraphy of the site are in part the reason DTSC believes that the air sparging remedial action may not be the most favorable remedial alternative. This concern may be addressed after the evaluation of the air sparging pilot test results.

14. **Section 3.6.3, Vertical Flow, page 3-39**

DTSC disagrees with the conclusion that the stiff diagrams show a distinct difference in water chemistry between the shallow aquifer and deeper principle hydrogeologic unit across Site 24. Based on the stiff diagrams provided, there is very little distinction between the deep and shallow screened intervals. The only analyses that is distinctly different of the six stiff diagrams provided on Figure 3-13 is 24NEW5. All other diagrams show the same general pattern. Therefore, based on the set of analytical data provided in this section, we suggest that you delete the last paragraph of Section 3.6.3, stating “The differences in water quality between the shallow and deeper hydrogeologic unit suggest there is separation between the units. The significance of this separation is that VOC contamination of units deeper than the shallow aquifer would not be likely.” Perhaps hydraulic separation between the water table aquifer and principal aquifer may be shown with hydrogeologic evidence but by no means can separation be shown using the data provided in this section. Furthermore, additional deeper groundwater data still needs to be collected and analyzed before conclusion can be drawn regarding the extent of vertical contamination.

Figure 3-13, State on the figure that analyses are represented by patterns based on milliequivalent per liter (meq/L) and, in addition to elevations of screened intervals relative to mean sea level, also provide screened intervals relative to land surface.

The text indicates that magnesium shows a large disagreement between the shallow and deep samples on the Stiff figures. The actual disagreement is about 1 meq/L and is much less than that for calcium; however, the trend is evident.

15. **Section 4.1, Potential Source Identification, 1st Paragraph**

The statement that active VOC sources assumed no longer to exist at site 24 is not accurate. It is more accurate to state that active **above ground** VOC sources are assumed no longer to exist.

16. Section 4, Nature and Extent of Contamination

Please superimpose the interpretive geologic cross-sections shown on Figures 3-10 and 3-11 onto Figures 4-10 and 4-11. This type of visually display of data will aid in the conceptualization of the fate and transport of contaminants.

Further characterization in groundwater is needed laterally at depth beneath Building 296. This data may be collected during the design phase of the remedial technologies. However, this issue should be included for discussion at BRAC Cleanup Team (BCT) meetings.

17. Section 4.2.1, Soil Gas Analytical Results, Figure 4-3

Besides the four profile charts shown in Figure 4-3, consider plotting all four vertical profiles on one graph with a maximum y-axis of 7,000 $\mu\text{g/L}$. This presentation would show that trend with depth was weaker than the current presentation suggests.

18. Section 4.2.1, Soil Gas Analytical Results, page 4-40

Soil and soil gas data are evaluated for Section A-A'. However, the soil is not evaluated in the text for Sections B-B', C-C', and D-D'. For consistency, please discuss the soil data potential VOCs contamination in the vadose zone shown on Cross Section B-B', C-C' and D-D'.

19. Section 4.2.2, Soil Sampling Results

Estimate the mass of contaminants in the soil and draw the soil plumes. You may delete the statement regarding soil sampling results being plotted but not contoured after you draw the soil plumes.

The statement that low levels of organic carbon **inhibit** the adsorption of VOCs in the soil should be changed to **does not promote**.

20. Section 4.2.2, Soil Sampling Results, Table 4-9

Include the units of measure for the Total Organic Carbon.

21. Section 4.2.2, Soil Sampling Results, Table 4-10

Indicated in a footer that CAS was the on-site laboratory and the acronym is for Columbia Analytical Services.

22. Section 4.2.2, Soil Sampling Results, Figure 4-12

The units of measure for TCE analysis should be corrected to $\mu\text{g}/\text{kg}$.

23. Section 4.2.3, Regional Groundwater Conditions

The Figures provided to illustrate groundwater plumes does not show the vertical extent of contamination. Please illustrate the groundwater plumes in 3D diagrams and quantify the VOCs in groundwater plumes.

Figure 4-13: This map does not include a reference for the source of the data used for construction. Indicate if data are from CLEAN I and CLEAN II or CLEAN I alone or CLEAN I and Orange County Water District.

24. Section 4.2.4, Site 24 Groundwater Conditions, page 4-62, 2nd Paragraph

Trihalomethanes are organic chemicals formed during the chlorine disinfection process of drinking water. They are not "...water treatment chemicals..."

25. Section 4.2.4.2, Vertical Characterization

The text notes that the predominant trend for the nested well 18_BGMW03 was upward between 9/92 and 8/94. However, in Section 5.1.4.5 the text indicates that the trend for nested well 03_DBMW03 was variable. Since the title of Section 4.2.4.2 is "Vertical Characterization" the section should provide a consistent statement.

26. Section 5.1.2, Chemical Persistence, Figure 5-1

Identify the difference between the solid and dashed lines.

27. Section 5.1.2, Chemical Persistence, Table 5-1

Please discuss in the text the information presented in Table 5-1 regarding Abiotic, Hydrolysis/Dehydrohalogenation for the VOC species.

28. Section 5.1.3, Contaminant Migration in the Vadose Zone, Page 5-6, 2nd Paragraph

The text should probably note that for soils with low organic carbon content, water saturation will result in almost complete suppression of organic compound adsorption on soil minerals. This point is significant because if the mineral sorption and the organic partitioning are both negligible (as may be the case for subsurface soils at MCAS El Toro Site 24) then slow desorption and problems

associated with irreversibility of sorption would be minimized; thereby facilitating insitu restoration efforts.

29. Section 5.1.4.2, Dissolved Phase, Figure 5-4

The dispersion illustration at T2 should not show backward diffusion. The mechanical dispersion should be vertical and horizontal but forward only. Also, provide a footnote to clarify the acronyms used on Figure 5-4.

30. Section 5.1.4.3, Dense Nonaqueous-Phase Liquids

Provide the density of water in Table 5-2 for clarification.

31. Section 5.2.2.1 Aquifer Mixing Zone Calculations, Table 5-4

Define the equations presented in the header of the table.

32. Section 5.2.4.1, Primary Site 24 TCE Source Area, First Bullet Item, Pages 5-20

Appendix N does not include the calculations as indicated by the existing text. These calculations should be added.

33. Section 5.2.4.1, Primary Site 24 TCE Source Area, Table 5-6, page 5-21

The infiltration rate for the modeling was about 0.7 ft/yr for runs 2 and 3 and 1 ft/yr for run 1. The text (page 5-19) noted that the different values were used to test model sensitivity. To satisfy that objective, the table should provide a listing of the results for all runs, i.e., runs 1, 2, and 3 at 1 ft/yr and runs 1, 2, and 3 at 0.7 ft/yr.

34. Section 5.2.4.1, Primary Site 24 TCE Source Area, Table 5-6, page 5-21

The table includes a vadose zone gas correction factor of six; however, no explanation is provided until three pages later. Consider a cross referencing footnote to the table or move the applicable text on page 5-24 to page 5-20.

35. Section 5.2.4.2, Tertiary Source Modeling

Under the title "Limited TCE Sources" the text identifies simulations with "...soil gas at 10 feet with a concentration of 270 µg/L and soil moisture at concentrations of 87 and 750 µg/L, respectively." Please clarify what the soil moisture concentrations are with respect to. Furthermore, the results in the subsequent paragraph and figures and table do not seem to be directly linked to the soil moisture content.

36. Section 6, Risk Assessment

The equation for Upper Confidence Limit on the mean of a lognormal distribution is correct; however, the definition of the constant "H" should be changed to "H = H-statistic (e.g., from tables A-10 or A-12 of Gilbert, R.O. 1987. Statistical Methods for Environmental Pollution Monitoring. Van Nostrand Reinhold, NY, NY.)"

For additional comments on the risk assessment, see attached Memorandum dated April 9, 1996 from DTSC staff Toxicologist, Dr. John Christopher.

DEPARTMENT OF TOXIC SUBSTANCES CONTROL

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**MEMORANDUM**

TO: Tayseer Mahmoud
Office of Military Facilities (OMF)
Southern California Region, Long Beach

FROM: John P. Christopher, Ph.D., D.A.B.T.
Staff Toxicologist
Office of Scientific Affairs (OSA)
Human and Ecological Risk Section (HERS)



DATE: 9 April 1996

SUBJECT: MCAS El Toro: Draft RI for Operable Unit 2A, Site 24, VOC Source Area
PCA: 14740 Site: 400055-45

Background

Region 4 OMF has asked OSA for continuing support on issues regarding risk assessment at Marine Corps Air Station (MCAS) El Toro. This is a closing base in Orange County which is also designated a Federal Superfund site. Remedial activities at this base are being directed by Naval Facilities Engineering Command, Southwest Division (SWDIV). Site 24 or Operable Unit (OU) 2A is located in the southwest area of the base, near Buildings 296 and 297. OU2A is the suspected source of trichloroethene (TCE) and other volatile organic chemicals (VOCs) which have contaminated the regional aquifer.

Document Reviewed

We reviewed "Draft Phase II Remedial Investigation Report, Operable Unit 2A - Site 24, Marine Corps Air Station El Toro, El Toro, California". This document, dated 20 February 1996, was prepared by Bechtel National, Inc., contractors to SWDIV. OSA received a request to review this document on 23 February 1996.

Scope of Review

Our review was focused on Chapter 6, "Risk Assessment". The document was reviewed for scientific content. Minor grammatical or typographical errors that do not

affect the interpretation have not been noted. However, these should be corrected in any future version of the document. We assume that sampling of environmental media, analytical chemistry data, and quality assurance procedures have been examined by regional personnel. If inadequacies in this regard for the purposes of risk assessment were encountered, they are noted. Any future changes or additions to the document should be clearly identified.

General Comments

The draft risk assessment is thorough and well written. OSA agrees with the Navy's quantitation of potential risks to human health for OU2A. The final document can be made acceptable upon adequate response to our specific comments below.

Specific Comments

1. **Data Evaluation, Sec. 6.2.1, pp. 6-5 ff.:** We understand that preliminary data were used in the analysis presented in this draft report. If finalized data, when available, lead to significant changes in calculations of risk or in conclusions, please contact us to discuss possible changes for the final report. Also, please display prominently any such changes in the final report.

Steps 1 through 5 as shown summarize the recommended process for data validation. Steps 6 and 7 form a portion of selection of chemicals of potential concern. Please correct this.

Although this document is intended to deal with organic constituents only, it will eventually be necessary to tie the results of this risk assessment in with the results from OU1, the regional groundwater plume. Inorganic constituents dominated estimates of risk in OU1; therefore, it will be necessary to identify inorganic constituents of potential concern for OU2A and estimate risks and hazards.

2. **Sec. 6.2.2.3, pp. 6-9 ff.:** The *H*-statistic is incorrectly identified as Henry's Law constant. Please correct this. Also, on page 6-10, the arithmetic mean value for PM_{10} in the El Toro area is given as 43.1 mg/m^3 . Shouldn't this be $43.1 \text{ } \mu\text{g/m}^3$? If the wrong units were used in the inhalation terms of dose calculations, please correct these also.
3. **Table 6-4, p. 6-13:** Expressing concentrations in water in units of $\mu\text{g/L}$ instead mg/L would make this table much easier to read and understand.
4. **Table 6-5, p. 6-15:** The value for exposure interval is given as $7.9\text{E}08$ sec, which corresponds to about 25 yr. This value is appropriate for the industrial exposure,

but not for the residential or recreational settings. Please use a value corresponding to the selected exposure duration for the various scenarios.

5. **Table 6-7, p. 6-17:** We are accustomed to seeing risks for the residential being composed of 6 yr as a child and 24 yr as an adult. The value for "Exposure duration (cancer)" is 30 yr. What was used to calculate cancer risk for the resident? Also, for "Dermal absorption factor" and "Permeability constant", please correct the reference to "Table 6-6".
6. **Table 6-8, p. 6-21:** The second set of cancer potency factors for tetrachloroethene (PCE) are apparently those published by Cal/EPA. Please so indicate. The value for PCE via inhalation in the table (misprinted: "2.1E-02" not "2/1E-02") is about 10-fold higher than that published by USEPA. Cal/EPA values for TCE, the principal risk driver, are also higher than those published by USEPA. Please indicate in text what estimations of risk would be if Cal/EPA potency factors had been used.
7. **Discussion of Results, Sec. 6.2.4.3, p. 6-26:** Something is wrong with the second sentence of the second paragraph. Is a word missing? It is incorrectly stated in the fourth paragraph that the direction of bias cannot be determined when one-half quantitation limit is used in calculating average values. If limits of quantitation are steady, the bias is toward the low side. If some limits of quantitation are high, the bias is high. Please correct the text.

Uncertainties in risk quantitation for this site must be framed in knowledge and uncertainty about TCE, because this chemical represents some 99% of the risk and hazard for OU2A. Please include text on page 6-27 specifically on the subject of TCE.

Conclusions and Recommendations

The draft risk assessment is generally well done. It can be made acceptable to OSA upon adequate responses to the specific comments above.

Reviewer: Michael J. Wade, Ph.D., D.A.B.T.
Senior Toxicologist, HERS



cc: Mr. J. Paull, USEPA Region IX

Memorandum

To: Mr. Tayseer Mahmoud Date: April 4, 1996
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From: CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD - SANTA ANA REGION
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Telephone: CALNET 632-4130 Public (909) 782-4130

Subject: DRAFT PHASE II REMEDIAL INVESTIGATION REPORT, OPERABLE UNIT
2A, SITE 24, MARINE CORPS AIR STATION EL TORO, CTO 0073/0080

We have reviewed the subject report dated February 20, 1996 and received by us on February 22, 1996. We have the following comments for inclusion with other State comments.

SECTION 1 - INTRODUCTION

1.1.1 Guidance and Agreements

The FFA is a cooperative agreement between the DON, US EPA, and the California Environmental Protection Agency (CAL/EPA), represented by the Department of Toxic Substances Control (DTSC) and the Santa Ana Regional Water Quality Control Board (RWQCB) who are signatories to the agreement.

The Base Realignment and Closure Team (BCT) consists of representatives from the Navy (SWDIV), Marine Corps, U.S. EPA, and CAL/EPA (DTSC, RWQCB). Please note, all references to CAL/EPA include DTSC and RWQCB.

1.1.2 Remedial Investigation Approach

Under guidance documents used to develop Data Quality Objectives (DQOs), the fifth bullet should read, "Water Quality Control Plan for the Santa Ana River Basin".

1.3 CONCEPTUAL SITE MODEL

This section should be expanded to explain/demonstrate how the data supported the chosen conceptual site model.

SECTION 3 - PHYSICAL CHARACTERIZATION OF THE STUDY

3.6 HYDROGEOLOGY

Please include an explanation regarding the groundwater monitoring schedule. Also, during the Phase I investigation the required four consecutive rounds of groundwater monitoring were not performed. The current groundwater monitoring program may add new information to what is known about the groundwater characteristics at this site.

SECTION 4 - NATURE AND EXTENT OF CONTAMINATION

It would be beneficial to show in this section a block horizontal cross section of the groundwater contamination similar to the soil gas diagrams on Figures 4-6, 4-7, and 4-8.

4.2.1 Horizontal Characterization

Two values on Table 4-14 that are attributed to CAS lab are actually ITS lab results according to Appendix J. The two values are TCE 980 μ g/L (24HCPT55-73W1003 ITS No. 24AS1 page J111-45) and TCE 1300 μ g/L (24HCPT81-73W1079 ITS No. 24AS2A page J111-47). Also, please explain the two elevated soil gas blank values in Appendix J page JIV-71, Station No. 24SG31 CAS No.s TVH and 79-01-6. The values were 1370 μ g/L TVH and 6120 μ g/L TCE.

If you have any questions, please call me at (909)782-4998.


Lawrence Vitale
DoD Section