ADMIN RECORD ET

STATE OF CALIFORNIA — ENVIRONMENTAL PROTECTION AGENCY

PETE WILSON, Governor

# DEPARTMENT OF TOXIC SUBSTANCES CONTROL

Region 4
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MCAS EL TORO
SSIC NO. 5090.3.A

May 16, 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 THE COMMUNICATION STATION LANDFILL, SITE 17, OPERABLE UNIT 2B, 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 March 13, 1996 received at our office on March 21, 1996, prepared by Bechtel National, Inc. The report presents the results of Remedial Investigation (RI) conducted at Site 17, the Communication Station Landfill. Site 17 is one of two sites in Operable Unit 2B for the MCAS El Toro.

This letter is to transmit the enclosed Department of Toxic Substances Control comments, the Regional Water Quality Control Board comments dated May 15, 1996, and the California Integrated Waste Management Board comments dated April 30, 1996 on the report. The report is well written and acceptable. A few clarifications and modifications are needed as outlined in the enclosed comments. Please incorporate the agreed upon comments, where appropriate, and send us a response to comments along with a revised document. We appreciate the high quality document and the effort of the consultant who prepared this huge report. We look forward to meeting you and your consultant to discuss the comments. 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

cc: See next page.

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DEPARTMENT OF TOXIC SUBSTANCES CONTROL
Comments on
Draft Phase II Remedial Investigation Report For Site 17, OU-2B
Marine Corps Air Station El Toro
Dated March 1996

GENERAL COMMENTS:

The report presents the results of the Remedial Investigation (RI) conducted at Site 17, the Communication Station Landfill, to support decisions regarding the need for and scope for future remediation at the site. Data to support the landfill extent includes visual mapping, surface geophysics, trenching (Five trenches which ranged from 8 to 180 feet in length and from 1.5 to 12 feet in depth), soil borings, topographic and base maps, aerial photograph review, and interviews with MCAS El Toro personnel. The report contains data and results from the Phase II RI. In addition, the report presented previous investigations such as the Phase I RI and Air SWAT. To determine the nature and extent of contamination, the report described the sampling activities performed in air, soil gas, soil, groundwater, and flora and fauna as follows:

Air Sampling: Four types of air sampling were conducted: instantaneous surface sampling over the entire landfill; 25-minute integrated surface samples from the landfill surface; 24-hour ambient air samples at the landfill perimeter; and isolation flux chamber samples from the landfill surface. Fourteen (14) air samples were collected during the Phase II RI, including three (3) integrated, six (6) ambient air samples and five (5) isolation flux samples were taken. In addition, instantaneous surface samples 2-3 inches from the surface were collected over the entire landfill. Air sampling indicated that volatile organic compounds (VOCs) are being emitted from the surface of the landfill at concentrations near the detection limits of the analytical methods and below regulatory limits.

Soil Gas: During a 1990 Air SWAT, seven soil gas samples were collected at a depth of approximately eight feet below ground surface (bgs). During Phase II RI, 23 shallow soil gas samples were collected at 20 locations from depths ranging between 3 and 15 feet bgs. Five of 21 soil gas samples detected 1,1,2-Trichlorotrifluoroethane (F-113) at between 1 and 2 µg/L. The F-113 concentration does not exceed the hotspot threshold of 300 parts per million by volume. Eight deep soil gas samples were obtained at depths ranging from 82 to 94.5 feet bgs. Freon-113 was detected in 1 of 8 gas samples (20 µg/L). Toluene was detected in 5 of 8 samples (1 to 3 µg/L).

Perimeter Gas Migration Sampling: Eight (8) perimeter soil gas samples were collected from two sampling stations during Phase II RI. Only two of six proposed sample locations were placed due to access difficulties or dense bedrock that prevented probe placement. The northern sample location (17PG2) obtained gas samples at 10, 25, and 40 feet bgs, and the southern sample location (17PG1) collected samples only at 10 feet bgs. The analyses of the samples detected 1,1,2-Trichlorotrifluoroethane (F-113), 1,1-Dichloroethane (1,1-DCE), and Methane.

Soil Sampling: Sixteen (16) samples were collected from 8 sampling stations during the Phase I RI. Fifteen (15) composite samples from 15 randomly selected locations (less than 1 foot bgs) were collected during Phase II RI. VOCs, TPH, SVOCs, Herbicides, Metals, and Aroclor were detected in shallow soil. The concentration of the VOCs did not exceed the U.S. EPA residential PRGs.

Ten (10) subsurface samples (greater than 10 feet bgs) were collected from two locations during Phase I RI. Fourteen subsurface samples were collected during Phase II RI soil borings and installation of lysimeters and monitoring wells. Levels of VOCs, SVOCs, pesticides, herbicides, radionuclides, metals, dioxins, and petroleum hydrocarbons were detected. No VOCs were detected above the U.S. EPA residential PRGs. One sample detected SVOC, but at a concentration below the U.S. EPA residential PRG.

Leachate: Three lysimeters were installed, however, due to technical difficulties, no moisture samples were collected.

Groundwater: Groundwater samples were collected from three locations: one upgradient and two downgradient wells. VOCs, SVOCs, metals, petroleum hydrocarbons and gross alpha and beta activity have been detected in groundwater samples. VOCs, SVOCs, and petroleum hydrocarbons were detected at levels below U.S. EPA PRGs. Manganese, selenium, and thallium were detected above either the U.S. EPA or California DHS MCLs.

Ecological: From Appendix Q, there were 15 plant samples collected for fixed based laboratory analysis of 70 organic, pesticide and herbicide chemicals along with 23 inoganic analytes; there were 14 mammalian samples collected for fixed based laboratory analysis of 53 organic, pesticide and herbicide chemicals along with 23 inorganic analytes.

For the reference site, there were 15 plant samples collected for fixed based laboratory analysis of 68 organic, pesticide and herbicide chemicals along with 23 inorganic analytes; there were 5 mammalian samles collected for fixed based laboratory analysis of 53 organic, pesticide and herbicde chemicals along with 23 inorganic analytes.

## SPECIFIC COMMENTS:

### 1. Executive Summary, Conclusions, page ES-9

The Data Quality Objectives decision "Are landfill gases migrating out of the landfill at ground surface or in the subsurface" should include a discussion of the perimeter soil gas sample analyses. Six of eight perimeter soil gas samples detected methane and one sample detected F-113 and 1,1-DCE. Two of the samples that detected methane are listed in Table 12 of Appendix F as ambient air samples. Is there a possibility that the perimeter soil gas samples are actually within the boundary of the

landfill?

**2. Section 1.1.1, Guidance and Agreement, Figure 1-3**

Revise Figure 1-3 to add the Remedial Design step before Remedial Action. Also, add Certification step after Operation and Maintenance.

Reference to Department of Health Services now being California Environmental Protection Agency (Cal/EPA) is not accurate. The correct reference is Department of Toxic Substances Control (DTSC). Both DTSC and California Regional Water Quality Control Board (RWQCB) are under the umbrella of CAL/EPA.

Rewrite the sentence regarding FAA signatory agencies as follows: "The BCT consists of representatives from SWDIV, U.S.EPA, and Cal/EPA (DTSC & RWQCB)."

**3. Section 1.1.2, Remedial Investigation Approach**

Reference to Cal/EPA should be changed to DTSC.

**4. Section 1.2.1.1 Site Characteristics, page 1-13**

Revise the term "OU-28" in the third sentence of the second paragraph to "OU-2B."

**5. Section 1.2.2.2, Recent Station Operations, page 1-17**

Revise the first sentence in the second 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.

**6. Section 1.2.3.1, PHASE I REMEDIAL INVESTIGATION RESULTS, page 1-21**

Please clarify whether the metal concentrations were compared to residential or industrial PRGs.

7. **Section 2.4 TRENCHING, page 2-6**

The report contains several maps which indicate the boundary of the landfill based on the RI. Appendix D contains several cross-sections of trenches excavated as part of the RI. The cross-section of trench 17TR1 indicates landfill debris in the southwest portion of the trench. Section 4.1.3 contains the comment that the southwestern 40 feet of this trench exposed landfill. However, Figure 2-1 on page 2-7 shows the trench outside the boundary of the landfill. Please clarify the rationale for not including the debris discovered in the trench 17TR1 within the boundary of the landfill.

8. **Section 2.7.1 Surface Soil Sampling, page 2-20**

This section states that in addition to the 15 sampling stations located at Site 17, 15 stations were located at a reference site west of Site 17. If Figure 2-5 contains the correct station locations, the "reference area"appears to be located southeast of Site 17. This section should explain the rationale for sampling the reference area. Please clarify the difference between reference samples and background samples.

9. **Section 4.3.2 Perimeter Gas Migration Sampling, page 4-32**

There are two discrepancies in the discussion of the Air SWAT. Please verify whether the first two sentences in the first paragraph are discussing site 2 or site 17. Also, the first paragraph and the fifth paragraph (on page 4-38) contain different number of samples collected and sampling stations.

10. **Section 4.4.2, Subsurface Soil, page 4-69**

The bulleted items indicate that pesticides were detected, yet, on page 4-70, the text states that pesticides were not detected. Please clarify the discrepancy in this section.

11. **Section 4.5 LEACHATE, page 4-70**

The third sentence in the first paragraph states that groundwater contamination is not present. This contradicts section 4.5 which states that VOCs, SVOCs, metals, petroleum hydrocarbons and gross alpha and beta activities have been detected in groundwater samples. Although many of the compounds are not at concentrations above their respective MCLs, their existence in the groundwater indicates the likelihood that leachate is migrating to groundwater.

**12. Section 4.6.1.2, MONITORING WELL GROUNDWATER SAMPLES, page 4-95**

In the first paragraph, the text misidentified groundwater monitoring wells 17NEW1 and 17NEW2 as 12NEW1 and 12NEW2, respectively. The last sentence of the first paragraph contains two incorrect statements; that four sampling events were conducted during Phase I, and the reference to figures 4-18 and 4-19.

**13. Table 4-21, Compounds Detected In Groundwater - Phase I and Phase II, pages 4-97 though 4-21**

The analysis for groundwater monitoring well 17NEW1 is missing from the Table. Also, please spell out the words for the initial TRG (See Notes, page 4-101).

**14. Section 5, Fate and Transport, page 5-1**

Pleas revise the first sentence of the fourth paragraph to state that the site conceptual model was developed for the Communication Station Landfill.

**15. Section 5.1.1.2, Geology/Hydrology, PAGE 5-2**

The third paragraph in this section states that groundwater at the southern end of site 17 "is encountered approximately 200 feet bgs in alluvial sediments where the flow turns to the west under the Tustin Plain." However, Figure 5-2 appears to indicate that the groundwater flow direction at the southern end of site 17 is to the north.

**16. Section 5.1.2.3, Groundwater, page 5-4**

There appears to be a discrepancy in the statements made in the first and second paragraphs. The first paragraph states that "Concentrations for VOCs and SVOCs were detected in the downgradient wells, ...," yet, the second paragraph contains the statement "These results (for the metals, manganese, selenium, and thallium) are the only indication of a potential impact to the groundwater in the area of the landfill, ...." VOCs and SVOCs detected in the groundwater are indications that the groundwater has been impacted by the landfill.

**17. Section 5.3.2 Groundwater Transport, page 5-21**

The report is minimizing the potential that the groundwater is transporting contaminants. The low concentrations detected in the monitoring wells can be an indication that 1) the landfill does not contain a large quantity of contaminants, 2) the majority of the contaminants have already flowed out of the landfill, 3) the contaminants are leaching out at a low rate, or 4) the contaminants detected in the wells are indicating the front of a contamination plume. At least another round of

groundwater samples should be collected to determine if the concentration fluctuates over time. This issue should be included for discussion at BRAC Team (BCT) meetings.

18. **Section 5.4, Summary of Fate and Transport, page 5-21**

The fate and transport summary stated in this section is not consistent with the Executive Summary (page ES-5). The Executive Summary states that leaching and surface water transport are the most significant transport mechanisms. Section 5.4 states on page 5-22 that migration in groundwater is the most significant for transport of contaminants. Please clarify this discrepancy.

19. **Appendix S, Ecological Risk Assessment, Tables S-9 and S-10**

The number of samples, N, should be specified.

20. **Section 6 and Section 7, Human-Health Risk Assessment and Ecological Risk Assessment**

For additional comments, please see attached Memorandum dated May 14, 1996 from DTSC staff Toxicologist, Dr. John Christopher.

21. **Section 8.1.3, Fate and Transport, page 8-13**

The second paragraph should be revised to state that ".... the fate and transport of contaminants at site 17 are important ...."

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# MEMORANDUM

**TO:** Tayseer Mahmoud
Office of Military Facilities (OMF)
Region 4, 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:** 14 May 1996

**SUBJECT:** MCAS El Toro: Site 17
PCA: 14740 Site: 400055-45

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## 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 17 is a landfill in the northern portion of the base. It has significant ecological resources both on the sites and close by. Under the current reuse plan, future development for residential use could occur nearby.

## Document Reviewed

We reviewed "Draft Remedial Investigation Report, Operable Unit 2B, Site 17, Marine Corps Air Station El Toro, California". This document, dated March 1996, was prepared by Bechtel National, Inc., contractors to SWDIV.

## Scope of Review

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

1. **Overall Impression:** The risk assessments of human and ecological health are quite thorough but not always clear. OSA disagrees with some of the methods used. Several clarifications are required. The document can be made acceptable with respect to risk assessment upon adequate responses to the comments below.

2. **Ambient Concentrations of Metals:** The Navy used the maximum value detected in the set of background values for metals in soil, which might have led to inappropriate elimination of cadmium as an inorganic constituents of concern. The Navy's analysis of their set of background values for soil is incomplete.

3. **Human Health Risk Assessment:** The assessment is quite thorough and well written, but we believe the Navy has overestimated risks for the site. Potential exposures to organic chemicals were estimated using the maximum value detected instead of the recommended 95% upper confidence on the mean. Dermal intakes might have been overestimated.

4. **Ecological Risk Assessment:** We cannot accept the Navy's conclusions regarding non-human receptors because of questions about the methods used. Exposure point concentrations did not match those used to assess human health. The derivation of the toxicity criteria was not clear.

## Specific Comments

1. **Ambient Concentrations of Metals, Appendix G:** OSA does not approve of the use of upper tolerance limit (UTL) for estimating quantiles of distributions of ambient concentrations of metals, as described on page G-2. The UTL, which is an upper bound on a quantile, can yield an inflated estimate when the sample size is small. For this reason, we recommend using a simple estimate of the quantile, provided the raw or transformed data can reliably be fitted to a normal distribution. If metals are selected as chemicals of potential concern with this procedure but these metals are actually present within the range of background, subsequent levels of decision in the process, i.e. risk assessment and risk management, can be used to correct inequities.

In fact, the method used for selection of inorganic constituents of concern was to compare the highest value detected ($C_{MAX}$) at the site to the highest detected value among 43 samples judgmentally determined not to have been impacted by site-related activities. OSA does not agree the use $C_{MAX}$ for this purpose for two reasons. First, chemical analysis samples might reveal anthropogenic impacts where none were thought to occur. Second, simple statistical methods, such as plotting cumulative probability, are readily available to determine whether $C_{MAX}$ is a reasonable estimator. These simple methods have been employed successfully at several other Navy bases in California.

Table G-4 presents the summary statistics for ambient metal concentrations. The column labeled "Calculated UTL Value" contains the value for $C_{MAX}$ for 11 of 23 metals, which would seem to make "UTL" a misnomer. With the exception of cadmium, the values shown in this column are similar to values we have seen to represent the upper range of ambient conditions for other military bases in Orange County. The value for cadmium is extremely high; $C_{MAX}$ for cadmium was perhaps one order of magnitude higher than we would have expected. We are accustomed to seeing the 95th quantile for cadmium between 1 and 2 mg/kg. The use of 11.4 mg/kg could have led to inappropriate exclusion of cadmium as a chemical of concern. The Navy should present a detailed analysis of ambient cadmium concentrations.

2. **Chemicals of Potential Concern (COPC) in Water, Secs. 6.1.3, Table RI-2:** The value for selenium in the upgradient well, 56.8 µg/L, is surprisingly high. Please explain this. It seems possible that this metal might have been inappropriately eliminated as a COPC.

3. **Exposure Point Concentration (EPC), Sec. 6.2.3, p. 6-8, p. R-1, Table RI-1:** A potential problem arises when $C_{MAX}$ is used as the EPC. The rules described on page R-1 for selecting EPC seem reasonable, especially if high detection limits or very low frequencies of detection are encountered, because these conditions make estimates of the mean uncertain or artificially inflated. However, in Table RI-1 for Site 2, $C_{MAX}$ is selected as the EPC for 34 of 44 detected organic chemicals, even though detection limits are acceptably low for nearly every chemical. Surely, something is wrong with such a method. The Navy and the agencies should meet to arrive at a consensus on this subject.

Table RI-1 also shows "Background UTL" values for six pesticides. We do not see any purpose for these values. They were clearly not used for selection of COPC. They cannot be used for estimation of risk in background, because this would

require 95% upper confidence limits on mean values as EPCs. Please remove this column from this table.

4. **Dermal Absorption Factor, Table RII-1:** We assume that the values in this table are intended for application into the equation on page R-14 for dermal contact with soil. As such, no value greater than about 25% (2.5E-01) is likely and no value greater than 100% (1E-00) is possible. However, many values in this table are greater than 50%, even much greater than 100%. We recommend that the Navy use the values in the Department's *Preliminary Endangerment Assessment Guidance Manual* (DTSC, 1994).

   It seems likely that dermal intakes for many chemicals might have been overestimated. We strongly urge the Navy to verify that reasonable values were used for estimation of dermal intakes.

5. **Risk Characterization, Sec. 6.4, pp. 6-16 ff.:** Figures 6-1 through 6-7 are particularly well done. The conceptual site model is easy to understand; contributions to risk and hazard by pathway and chemical are clearly and dramatically shown for each receptor group

   We do not disagree with the Navy's conclusions regarding human health risk as given in Section 6.4. However, the factors enumerated in comments 3 and 4 suggest that the Navy has overestimated human risks and hazards at Site 17, especially via the dermal route of exposure. We concur that the greatest cancer risk arises from residential exposure to arsenic and volatile organic chemicals in groundwater (Figure 6-3), while the greatest non-cancer hazard comes from exposure to metals in groundwater.

6. **Uncertainty in the Exposure Assessment, Sec. 6.5.2, p. 6-28:** Somewhere in this section, the Navy should present a discussion of how the use of $C_{MAX}$ as the exposure point concentration might have overestimated risk or hazard.

7. **Chemicals of Potential Ecological Concern (COPEC), Sec. 7.2.2.3, p. 7-6, Table 7-1, Sec. T1.1, p. T-2:** Departmental guidance on ecological risk assessment, cited in the Navy's report, does present a discussion on why COPC do not necessarily have to match COPEC. We note that the following metals were selected as COPEC (Table 7-1) but were deselected as COPC for human health after comparison with background (Table RI-1): aluminum, antimony, cobalt, and vanadium. Comparison with background should yield identical lists of metals. Treatment of background concentrations of metals continues to be a problem; the Navy, the Department, and USEPA must resolve this confusion and controversy.