

**DEPARTMENT OF TOXIC SUBSTANCES CONTROL**

REGION 2

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BERKELEY, CA 94710-2737

(510) 540-2122



April 5, 1995

Commander  
Department of the Navy  
Engineering Field Activity, West  
Naval Facilities Engineering Command  
Attn: Mr. Stephen Chao, Project Manager  
900 Commodore Drive, Bldg. 101  
San Bruno, California 94066-2402

Dear Mr. Chao:

**DRAFT PHASE II SITE-WIDE ECOLOGICAL ASSESSMENT(SWEA) WORK PLAN,  
MOFFETT FEDERAL AIRFIELD**

The California Environmental Protection Agency (Cal/EPA) has reviewed the subject document. Comments regarding the document have been prepared by the Department of Toxic Substances Control (DTSC) and San Francisco Regional Water Quality Control Board (RWQCB). Please respond to all comments prior to the submission of the draft final Phase II SWEA work Plan. If you have questions, please contact me at (510) 540-3830.

Sincerely,

A handwritten signature in black ink, appearing to read "C. Joseph Chou".

C. Joseph Chou  
Remedial Project Manager  
Base Closure Unit  
Office of Military Facility

Enclosures

cc: See next page

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Mr. Stephen Chao  
April 5, 1995  
Page Two

cc: Mr. Michael Bessette  
Regional Water Quality Control Board  
2101 Webster Street, Suite 500  
Oakland, California 94612

Mr. Michael D. Gill  
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Region IX, Mail Stop H-9-2  
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Dr. Myrto Petreas  
Dept. of Toxic Substances Control  
Hazardous Materials Laboratory  
2151 Berkeley Way, Room 515  
Berkeley, California 94704

To: Joseph Chou Fax 3819  
From: Myrto Petreas and Donald Wijekoon, HML  
Re: Moffet Ecological Assessment Work Plan  
Date: March 19, 1995

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This is an overall well written and thoroughly planned work plan. Our comments will focus on the chemistry aspects of the proposed investigations.

1. Indicator PAH

It is unclear what the headings "510 mg/kg" and "1300 mg/kg" refer to in the middle of p.3-8. Also, IARC lists PAH ranges in used motor oil, which may be more appropriate to use in this case.

On p.3-10 : "These ratios will be compared to..." There is no statement of action following these comparisons. Also, how will PAHs be estimated from "Other" hydrocarbons?

2. Contract laboratory

Identification of the contract laboratories are crucial because of the special requirements of the proposed analyses. As we discussed during the conference call last month, the required reporting limits for PAHs and OC pesticides are significantly lower than what standard methods provide. In addition, congener-specific PCB analysis is not a standard method and it requires high resolution MS. Once the contract labs are identified we could talk directly with them, exchange methods and share our thoughts.

Recommended sampling methodologies are also deferred until a contract lab is identified (p.3-14). Therefore, we are unable to comment on this section.

3. Sampling locations

Is there any record of types and frequency of aerial spraying of the retention ponds (p.3-12)? Persistent organochlorine pesticides may be traced to that source.

The NE corner of the retention pond (reference site, p.3-12) appears to be in the runway flight path. Could this impact that site?

4. Sampling vs. reference sites.

What are the criteria (qualitative and quantitative) for comparison? On p. 3-21, the physicochemical properties are listed as: grain size, TOC, salinity, sulfides and ammonia. Are these ranked in order of decreasing importance? How "similar" must these measurements be to be considered

"similar"? What are the cut-off points? The same questions apply to the chemical profile. What are the cut-off points to decide whether or not "... the chemicals used ... have not impacted the site"? Are some chemicals more important than others? Are some organisms more susceptible to e.g., metals vs. pesticides? Could then a reference site be considered suitable for some types of bioassays but not for others? These scenaria should be thought out, and plans for appropriate action made, prior to conducting the bioassays.

5. Salinity should be expressed in parts per thousand (‰) and not ppt, which can be confused with parts per trillion.

**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD**  
**SAN FRANCISCO BAY REGION**  
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 OAKLAND 94812

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March 27, 1995  
 File No. 2189.8009(sfg)

Mr. Joseph Chou  
 Remedial Project Manager  
 Department of Toxic Substances Control  
 700 Heinz Avenue, Suite 200  
 Berkeley, CA 94710-2737

Subject: Phase II DRAFT Sitewide Ecological Assessment Workplan, dated February 17, 1995, for Moffett Federal Airfield

Dear Mr. Chou:

Enclosed are comments from staff of the Regional Water Quality Control Board on the subject document. Please contact me at 510-286-0840 if you have any questions.

Sincerely,

*Susan F. Gladstone*  
 Susan F. Gladstone  
 Remedial Project Manager

Post-It™ brand fax transmittal memo 7671		# of pages >	6
To	Joseph Chau	From	Susan Gladstone
Co.	DTSC	Co.	Zwabo
Dept.	Site Mt	Phone #	286-0840
Fax #	540-3819	Fax #	286-13986



- 01/28/1997 09:00 010200000
3. page 3-1, Section 3.1, Phase II Ecological Risk Assessment, Scope and Objectives, paragraph 1, sentence 3: The Navy should modify the sentence as follows. "If apparent toxicity ~~and bioaccumulation~~ due to the COPECs is supported by these additional data, then the potential ecological impact to the selected receptors for the Phase II SWEA will be evaluated by a risk characterization "
  4. page 3-5, Section 3.3, Proposed Phase II Investigations, top paragraph: This paragraph describes how the biological and chemical data will be used to determine effects from COPECs to selected receptors. There is no direct mention of the use of bioaccumulation test data in the modeling; only toxicity is mentioned. While it may be implicit, any reader of this document should be able to discern that bioaccumulation, as well as toxicity, will be factored into this assessment.
  5. page 3-5, Section 3.3, Proposed Phase II Investigations, second paragraph: This paragraph describes how direct results on exposed receptors (i.e., test organisms) will be used to estimate dose in higher trophic level organisms. Those dose-responses can be compared to Toxicity Reference Values (TRVs) derived from the literature. As a point of information, the ecological team for Concord Naval Weapons Stations is currently developing a method to derive a range of TRVs using dose estimates from literature, and developing decision criteria for identifying risk. The TRVs will be available to other Navy sites in San Francisco Bay region. This process was established at Concord, in part, so that consistent information will be applied to all sites. I suggest the Moffett team take full advantage of the efforts put forth by the Navy's contractor, PRC Environmental - San Francisco, in this work.
  6. page 3-6, Section 3.3.2, Chemical Characterization, paragraph 2: This paragraph discusses porewater versus bulk sediment chemical analyses. The proposal is to perform chemistry on bulk sediment only, and that chemical analysis on porewater will not be representative. While I agree with the reasons for performing chemistry on bulk sediment, the Regional Board's Bay Protection and Toxic Cleanup Program (BPTCP) and other researchers have indicated that measuring porewater chemistry is also a useful tool to evaluate the bioavailable fraction. Regional Board staff believe that both should be performed to establish potential exposure to COPECs either from adsorption through body walls (porewater) or via ingestion or dermal contact (bulk sediment). At the very least, porewater chemistry should be performed on porewater bioassays (FETAX and echinoderm larval development).

With regard to porewater extraction techniques, the BPTCP performed a side-by-side comparison of extraction methods (squeezing, centrifuge, and settling/passive) and found that centrifugation does not compromise the quality of the sample, and was the most representative of sediment chemistry. Regional Board staff have been strongly suggesting use of the centrifuge extraction technique at other sites in San Francisco Bay. I am attempting to obtain a copy of the protocol for this method, and will forward it on to the Navy's contractors. In addition, there are a number of labs in the Bay Area which should be consulted that do perform sediment centrifugation

7. page 3-7, Section 3.3.2.1, Rationale for Selection of an Indicator PAH, second full paragraph: As an information item, the toxicity values for sediments (ER-Ls and ER-Ms) have an updated reference which pertains to only marine and estuarine sediments. The 1990 Long and Morgan citation included both fresh and saline sediments.

Long, E.R., et al, 1995. *Incidence of Adverse Biological Effects Within Ranges of Chemical Concentrations in Marine and Estuarine Sediments*, Environmental Management, Vol 19, No. 1, pp 81-87.

8. page 3-7, Section 3.3.2.1, Rationale for Selection of an Indicator PAH, third full paragraph: This paragraph states that indicator PAHs will be identified after the analytical data from Phase II sampling are evaluated. The Navy should obtain concurrence from the agencies prior to finalizing the selection for indicator PAHs.
9. page 3-10, Section 3.3.3, Sediment and Surface Water Physicochemistry: Clarification is needed regarding the chemical and physical parameters described in the bullets on page 3-11. The parameters should be measured for each sample in which a bioassay will be performed. This is not merely to determine the "suitability of the habitat," but to assist in evaluating the responses exhibited in the test organisms. These chemical and physical tests must also be performed on the reference site samples, not "presumed" to be comparable to site samples, as stated in the text.

Bullet 1 - Sediment samples: If acid volatile sulfides (AVS) is to be measured to determine bioavailability of inorganics, then the method for measuring metals must be Simultaneously Extracted Metals technique (SEM). In addition, because the depth of samples will not be dependent upon whether they are in the oxic layer but on the need to obtain enough volume of sample material (see page 3-15, Section 3.3.4.2.1, a depth of 0 - 6 inches is proposed), field personnel should document in the field notes the depth of the oxic layer at the time of sampling. This information may be useful when interpreting the results of sediment toxicity tests. Lastly, salinity should also be measured in sediments, as well as in interstitial and surface water.

10. page 3-14, Section 3.3.4.1, Sampling Locations in the Eastern Diked Marsh: The proposal consists of four equidistant sampling locations in a shallow ditch to determine a contaminant gradient. It is unclear why this approach is being taken, as the results of the Phase I data gap samples indicated a chemical gradient was present.
11. page 3-15, Section 3.3.4.2.1, Sediment Sampling: As alluded to in comment # 9, Regional Board staff believe that appropriate sampling for bioassays includes only the oxygenated layer of sediments which is favorable to organisms (oxic layer). However, based on a conference call with the agencies and Navy contractors on March 22, 1995, obtaining a sufficient volume of sediment to perform all of the tests required may make obtaining only the oxic layer unreasonable. One method to resolve this issue would be to document the depth of the oxic layer for purposes of interpreting possibly confounding results of toxicity tests.

12. page 3-15, Section 3.3.4.3, Surveying of Sampling Points: Regional Board staff request that results of sediment chemistry and bioassay locations be reported with latitude and longitude for entry into our GIS. The BPTCP is building a database of all sediment samples taken in San Francisco Bay.
13. page 3-17, Section 3.3.4.5, Toxicity Bioassays, third paragraph: This paragraph describes diluting site sediments in the Northern Channel with reference sediments from the Storm Water Retention Ponds (SWRP) at 0, 25, 50, 75, and 100 percent dilutions. In workplan scoping meetings with the Navy contractors and the agencies, it was agreed that use of the SWRP reference site sediment is inappropriate for the Northern Channel. Based on conference calls of March 22 and 27, 1995 between the contractors and agencies, it was proposed that sediment dilution will be performed on two of three channel samples, with control or home sediment and not SWRP sediments, at dilutions of 0, 6.25, 12.5, 25, 50, and 100 percent. In addition, the third channel sample, selected in the area of highest chemical concentration, will have toxicity tests without dilution. This design was to attempt to obtain a gradient of toxicity results. Regional Board staff agree with this approach.
14. page 3-21, Section 3.4, Interpretation of Sediment Bioassay Results: This section proposes using the Ratio-to-Reference (R-T-R) method described by NOAA (1986) to evaluate toxicity and chemistry of the sediment samples. Regional Board staff have some reservation about accepting the use of R-T-R without first exploring with the other parties some of the other, or more rigorous, methods. For example, the Regional Board's BPTCP has used a statistical approach, and NOAA has used a contaminant loading approach to evaluate chemistry and toxicity. There is no standardized or formerly approved approach to determine sediment quality. The explanation of the R-T-R approach in this document is limited and does not provide enough rationale to indicate its acceptability.

The R-T-R approach was designed to evaluate sediments using a triad approach (measuring toxicity, chemistry, and benthic community structure). We are not using the triad approach at this site; it is unclear what the implications are of modifying R-T-R to the Moffett plan. It also assumes that the reference site has been unaltered by pollution. At Moffett, chemical data for the the proposed reference site has not yet been obtained to verify that pollutants are not present. In addition, the parties have not yet come to agreement as to what acceptability criteria we will use for the reference site results. Secondly, given the limitation of selecting a reference site within the confines of the Storm Water Retention Ponds, the locations selected would appear to represent the 'least' contaminated area of the site, or more of a gradient scenario, than a true reference site. Third, it is unclear as to how sediment chemistry and toxicity will be correlated. Lastly, the comparison of the mean of the reference site samples to the site samples provides only a relative measure of effects at each site and to the reference site. If the cut off point for establishing toxicity of any particular area is subject to interpretation, we may find it difficult to reach consensus on the risk management decision.

For reasons of ambiguity, Regional Board staff have typically been requesting that the approach used to evaluate sediments be agreed upon by all parties prior to beginning field work. However, given the time constraints and that field work is imminent at Moffett, I suggest that working meetings be held with all parties, perhaps with statisticians present, to discuss the most appropriate approach for this site. A tangential note: it may become necessary to perform Toxicity Identification Evaluations in order to resolve questions of determining which contaminant(s) causes toxicity.

14. page 3-23, Section 3.5, Risk Characterization: please see comment # 5

Concur:



Ron Gervason, Section Leader