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Code 018C, 1200 Pacific Highway  
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Subject: REVIEW OF DRAFT RI/FS WORK PLAN  
MCAS EL TORO, EL TORO, CA

Dear Mr. Nuzum:

We have completed our review of the Draft Remedial Investigation/Feasibility Study Work Plan for the Marine Corps Air Station El Toro, El Toro, California. The document was prepared for the Naval Facilities Engineering Command - Southwest Division.

Our review indicates that the proposed fieldwork effort is especially welcome in regard to Operable Unit 1; however, the proposed fieldwork for Operable Units 2 & 3 is inadequate for the existing data needs of the various sites.

The following are general comments which are directed toward the overall Work Plan and those areas which we feel should be modified in order to fulfill the data needs of the site and to provide an adequate foundation for subsequent activities.

1. All sampling locations which are proposed to be sampled at 2.5' and 5.0' should be advanced to a minimum depth of 20 feet with sampling at 2.5', 5.0', 10.0', 15.0' and 20.0'. This modification is requested due to the pressing need for analytical data from these depths at the present time.

The potential types, variety and quantities of chemicals and/or compounds which were discharged/spilled have a significant potential for far-deeper vertical infiltration in the subsurface sediments of the base, given the volumes estimated. This is demonstrated by the deep, primarily vertical plume movement of the JP-5 leakage at the Tank 398

site, a discharge of a substance with a greater viscosity and a greater likelihood of being adsorbed onto soil particles.

Also, volatilization of the lighter, more mobile components could have a significant effect on the analytical results from soil samples obtained from the 2.5 and 5.0 foot depths. The mobile and more toxic nature of these compounds does not allow for generation of premature conclusions which are based on an insufficient scope of data collection, even in the first phase of the field effort. The 2.5' and 5.0' sampling plan may be appropriate for Site 11, the Transformer Storage Area.

2. The groundwater monitoring wells to be installed at the majority of the IRP sites provide an extremely significant opportunity for securing soil data which would generate a greater level of understanding for every site where they are proposed. Should contamination be found at any of these sites in the shallow borings, the data collected from the monitoring wells would be available and would not impose the delay in site understanding until a later phase of fieldwork.

It would be more costly in terms of both time and expenditures to approach these sites in a "successive small-step" manner rather than to provide a sufficient initial data set at the earliest date possible. It is our position that the second phase of RI fieldwork will be required to explore the findings of the first phase and it is reasonable to attempt to gather as much data during the first phase as possible. After all, the stated objective of the Remedial Investigation is "to acquire sufficient data to estimate risks to human health and the environment from contaminated sites at MCAS El Toro."

The sampling of the monitoring well boreholes would not require an alteration of the proposed drilling methods. Soil sampling was performed during the Tank 398 investigation while drilling with an air-percussion drilling rig. It would be appropriate to alter the sampling frequency in the monitoring wells to every ten feet below a depth of fifty feet in order to minimize the number of samples while providing sufficient samples to maintain adequate resolution.

Additionally, it is highly recommended that the soil sampling be performed with the use of a five-foot sampling barrel in order to provide the on-site geologist the greatest amount of sample to observe and monitor for evidence of contaminants. The sampling of the groundwater monitoring wells boreholes will allow for the relocating of those soil borings which were proposed in areas adjacent to the monitoring wells.

3. Given the very low level of existing data on the presence or absence of soil contamination and the potential unrecorded spills and/or waste discharge practices to have occurred in the general area of the suspected sites, the effort to secure credible background samples in the immediate vicinity of the specific sites is inappropriate.

With the present level of understanding regarding possible contamination at the sites, the primary goal for the expenditure of resources in this first Remedial Investigation fieldwork effort should be to collect data from within the areas of concern for each site. Inevitably, some, if not most, of the borings will not encounter contaminated soils and thus, while not qualifying as valid background samples in all respects, these samples will provide significant and sufficient data on ambient, local conditions.

Therefore, it is requested that all borings and groundwater monitoring wells presently proposed as background data collection points be relocated into the areas of concern. There may be specific sites where the securing of background soil or groundwater data may be appropriate and/or necessary at this stage of the investigation and this will be noted in the comments regarding individual sites.

The securing of a valid data set of background analytes concentrations is indeed a necessary data need of the Remedial Investigation. However, the pressing need for site data should indicate that this effort should be planned for the second portion of the proposed or anticipated fieldwork. These samples should provide a statistically-valid data set obtained from areas remote from the area where the activities with potential for contaminant discharges occurred. This effort should be approached as a basewide task and not attached to any specific site. Many of the background wells proposed for the regional groundwater investigation of Site 18 may provide suitable sites and activities for securing some of these samples without an overall increase in drilling scope.

4. It is inappropriate to have "detailed" site maps which are not scalable, do not indicate topography, offer insufficient details in regard to physical structures or other improvements, or are of suspect overall accuracy, as shown during the recent site tour. While it is recognized that resources could be conserved by the utilization of existing diagrams, an investigation such as this with the given need for proper understanding of the physical land surface, possible areas of discharges and the appropriate locating of exploratory efforts requires site maps based on a more complete data set. At a minimum, given the timeframe of the

work plan, field checking and distance measurements are needed.

In the effort to provide specific geographic data for all upcoming field efforts, a necessary, and ultimately resource-saving task should be performed a comprehensive aerial photograph survey and interpretation of the entire base. This task should be accomplished in the early stages of the initial phase of fieldwork for use in interpreting the findings of these field efforts. The survey should encompass all available photographs and not be limited to the presently-listed sites. This aerial photograph survey would provide a greater factual level of understanding of the specific site details and an indication of possible undocumented contaminant spill/discharge areas.

The following are comments on specific areas of the Work Plan.

#### **Executive Summary**

While "It is generally not possible to identify all data needs at the offset of the RI/FS process; ...", it is possible to plan to obtain a sufficient amount of data to provide a good and adequate foundation of knowledge for the planning of subsequent phases. It is agreed that there is a strong possibility that additional data will be needed after the first portion of the RI fieldwork is completed. However, this should not suggest that the first phase of fieldwork should be cursory or limited to a small number of points or to shallow depths. The second phase is intended to be the last phase of RI fieldwork, and should address the data deficiencies of the first phase.

Regarding the statement that "...thus a phased approach to the RI/FS is proposed.", it is fully understood that this Remedial Investigation will be an iterative process and that, presently, two phases of the RI activities are proposed, separated by the issuance of a technical memorandum. The second phase of the RI fieldwork on OU-1, -2, and -3 should be preceded by a workplan for review by the FFA members. Modification of the text should be made to indicate the phasing of both the RI and the FS.

Regarding the statement that "22 potential hazardous waste sites (and) possible contaminants were identified based on information obtained from a records search and onsite surveys.", it should be acknowledged that some discharges were real and are not to be considered "potential" sites of contamination. Also, it should be acknowledged that there are additional sites/areas where discharges of contaminants probably have occurred which were not documented in base records.

In regard to the statement that "Suspected contaminants ... are mostly petroleum products and municipal wastes in landfills." and that "Suspected VOC source areas onstation include ...", why are not VOCs called out specifically as "suspected" contaminants, especially when there is an Operable Unit designated for suspected VOC source areas?

In agreement with the statements that "The conceptual site model ... indicates that the major environmental medium of concern is the groundwater..." and "A second medium of concern is contaminated soil or sludge.", we acknowledge that there is a real need to give attention toward the soils below 5.0', at the soils encountered during the drilling of the groundwater monitoring wells, and at the groundwater in the downgradient direction from the sites. While these areas of attention may seem obvious, the point is to show that there are areas where data collection is not the main need of the investigation, at this time.

The statement "The schedule (of the draft document submittal dates) may be revised as more information becomes available during the investigative process." is an acknowledgement of the pressing need to replace the existing void of knowledge regarding the nature and extent of the discharges which have occurred onbase.

Similarly, the statement "The purpose of the field investigations will be to satisfy data deficiencies to permit evaluation of potential remedial alternatives." is an acknowledgement of the need for extensive data collection efforts, not the need to "go slow" in data collection activities.

## 1.0 Introduction

### 1.2 Purpose and Scope

Regarding the statement "This document, therefore, describes the procedures and programs necessary to characterize the nature and extent of contamination at the sites, and presents the preliminary baseline risk assessment, and the proposed methodology to develop, screen and evaluate remedial action alternatives.", we offer the following.

It is our position that, this document does not "describes all the procedures and programs necessary to characterize the nature and extent of contamination at the sites ...". While the Work Plan does outline some investigative steps in this direction, additional fieldwork and other activities, which can either be included at this stage or can only be described after the findings of this stage are acquired, are needed for the fulfillment of the statement. For example, where is the methodology to develop, screen and evaluate remedial action alternatives in this document?

Regarding the statement "The scope of the RI/FS, under this workplan, will encompass an evaluation of (the) 22 sites grouped into three operable units through a field investigation and/or risk assessment evaluation.", additional activities, which are not within this workplan, are anticipated to encompass an adequate evaluation of the 22 sites.

Specific summaries of the background documents which were "reviewed and summarized" and any other prepared scoping documents should be included in the Work Plan for completeness and to support the proposed field efforts' direction and detail. These summaries and scoping documents may be appended to the Work Plan as Appendices.

**2.0 Site Background and Physical Setting**  
**2.2.2 Previous Site Investigations**

Regarding the Initial Assessment Study performed by Brown & Caldwell (within which the majority of the presently-listed IRP sites were first identified), some review comment on the methods, thoroughness, specific findings and recommendations, and possible oversights of this study should be part of a more elaborate discussion of this document. For example, why was site 22 not included in the earlier list of IRP sites, while it was researched in the IAS?

Similarly, an elaboration is needed regarding the large-scale similarities between the presently-proposed Work Plan and the fieldwork proposed by James Montgomery in 1987. In light of the listing of MCAS El Toro on the National Priority List, it would seem necessary that the potential extent of contamination be determined without delay and addressed in a more substantial manner than that which may have been appropriate in 1987. What were the findings of the Site Investigation Plan of Action study which was underway in 1987?

It seems that it would be most appropriate to discuss the findings of the SIPOA and the Perimeter Study Investigation in detail in this portion of the site history. In the effort to gather the greatest level of understanding about the sites and their existing data needs, the findings of these investigations would provide important details which would allow for the proper focusing of the upcoming data collection activities.

A comment is requested on the greater concentration of the VOC in the recovered groundwater on the downgradient edge of the base which is greater than that detected in other sampling points. These comments should include a discussion of the probable site(s) where this contamination may originate.

Regarding the statement that "The project team reviewed the reports mentioned above, as well as other documents pertinent to past disposal practices at the facility.", please provide a listing of these "other documents", as well as a summary of the important findings generated from this review and the resultant rationale for the selection of the three additional sites, and a description of those sites which were considered but were not added to the list and why.

### **2.2.3 Summary of Environmental Hazards**

Regarding the statement "This inconsistency between the suspected contaminants and the detected groundwater contaminated will be addressed in the RI/FS investigation.", an elaboration is requested as to how this inconsistency will be addressed by the proposed field efforts.

### **2.2.5 Monitoring Well Inventory**

Please modify the text to reflect that the OCWD wells are included in the monitoring well inventory, Appendix A.

### **3.0 Initial Evaluation**

#### **3.2 Conceptual Site Model**

In reference to the two statements "The term "conceptual" should be stressed due to the lack of analytical data from the potential contaminant sources or from migration pathways." and "The site model is based solely on information from records searches and onsite surveys documented in previous reports and will need to be refined as more data becomes available.", we agree that this situation exists and requires a comprehensive field effort with the goal of providing an adequate understanding of the nature and extent of contamination by the agreed-upon date for draft Remedial Investigation submittal.

### **3.3 Operable Units**

Regarding the statement that "These OU-3 sites generally address the VOC groundwater contamination as a secondary issue.", this sentence should be rephrased to indicate that the effort toward the initial collection of data from the groundwater underlying OU-3 sites is a substantial priority of the proposed fieldwork. However, the further characterization or remediation of any finding of VOC-contaminated groundwater would be handled with OU-1.

## 5.0 Remedial Investigation/Feasibility Study Tasks

### 5.3.1 Offstation Groundwater Operable Unit

The objectives of the regional VOC investigation are given as:

1. Identify potential sources of VOC contamination at MCAS El Toro
2. Assess the horizontal and vertical extent of contaminated groundwater on base and offbase as necessary to complement the OCWD investigation.
3. Derive horizontal and vertical gradients of groundwater flow
4. Characterize the geochemical facies of groundwater on and near MCAS El Toro
5. Evaluate whether leakage occurs between shallow and deeper aquifer zones
6. Derive physical aquifer parameters and determine the rate and direction of groundwater flow
7. Describe the geological stratigraphy
8. Assess whether surface water runoff into washes has been a source of contamination

#### 5.3.1.1 Groundwater Investigation Unit

The proposed fieldwork is acceptable as a proposal to significantly increase our understanding of the hydrogeology of the areas on- and off-base. However, it is strongly recommended that additional cluster wells be installed in the central and eastern portions of the base to provide data regarding the presence of contaminants, the watertable elevations, and the stratigraphy of the portion of the base closer to the foothills (and the landfills). Clearly, if the possibility that the landfills are contributing to the groundwater contamination problem is proven or disproven at an early date, this would benefit the entire investigation markedly. Overall, the proposed field effort of OU-1 is well received.

Clarification is requested on how often the groundwater monitoring wells will be sampled. Also, does the objective to complement the OCWD investigation indicate that the Navy accepts their investigation and findings? Elaboration of the Navy's position on this matter is requested. It is our position that either the OCWD wells are be included in this regional groundwater contamination investigation as an integral part, or a substantial discussion as to why it is felt that they should not be included should be presented. Also, the details regarding the aquifer testing of the wells installed for the specific sites should be elaborated upon, as to what testing procedures will be performed at each of the well sites.

#### 5.3.1.3 Soil Sampling Points

It seems that the use of only one angle setting of the borehole attitude will provide soil samples at depths which very well may be below the areas of contamination. As opposed to the fieldwork at the 21 specific sites, this proposal aims for subsurface levels which may be too deep without securing samples from near-surface elevations.

Consideration should be given toward either the use of drilling equipment which allows for different borehole attitudes or lighter drilling equipment and alternative techniques to obtain samples from shallower depths below the stream bottoms. Additionally, consideration should also be given to drilling these angled borings from both sides of the stream channels to obtain overlapping coverage.

#### 5.3.2 Onstation Sites

Similar to the Section 5.3.1, the objectives of this portion of the investigation should be listed.

##### 5.3.2.1 Groundwater Sampling and Analysis Strategy

The overall comments made earlier should be applied to this section. In response to the comment that "wells are proposed for installation as close as practicable (sic) to the suspected source", it is recommended that the monitoring wells be located a small but sufficient distance downgradient of the suspected source to ensure their sampling of the groundwater for every possible indication of contamination.

Similarly, in response to the comment that "Upgradient and downgradient wells are proposed for each site selected for groundwater sampling", it is recommended that all groundwater monitoring wells be placed on the assumed downgradient side of the suspected site of contaminant discharges with sufficient spread to detect any trace of contamination. This is the purpose of the field effort and if contamination is detected, then an upgradient well should be installed to determine the quality of the groundwater flowing toward the site.

##### 5.3.2.4 Soil Sampling and Analysis Strategy

The proposed soil sampling is insufficient and inappropriate considering the actual data needs of the investigation. There are numerous descriptions of the discharges of compounds which can readily migrate vertically through the coarse-grained sediments anticipated to be encountered.

Given the timeframe over which many of these discharges occurred, the types of possible discharged contaminants, the lack of existing soil data, and the acknowledged presence of VOC-contamination at the downgradient base boundary, the present situation demands that the initial effort at subsurface sampling extend to a minimum depth of twenty feet.

Such a field effort would provide a significantly greater quantity of pertinent data from essentially the same field effort and would be an action directed toward the essential objective of the RI, "to acquire sufficient data to estimate risks to human health and the environment from contaminated sites at MCAS EL Toro." It is too late to be approaching the characterization of the extent of soil contamination at these sites with such cursory steps.

Additionally, the allocation of field activity resources toward the specific task of collecting "background" samples outside of the areas of concern is inappropriate. Given the degree of uncertainty regarding the actual location of the documented, let alone the suspected, discharges, many of the presently proposed soil sampling points established by "a combination of random and judgmental" techniques should be expected not to encounter soil contamination. These samples can provide initial indications of "ambient" conditions in unaffected areas. The borings intended for background sampling should be relocated into the areas of concern to increase the level of data collection efforts in these areas.

If you should have any questions regarding this matter, please contact me for clarification.

Sincerely,



Kenneth R. Williams  
Associate Engineering Geologist  
Special Projects Section

KRW/ms

cc: John Hamill - U. S. EPA  
Manny Alonzo - Dept. of Health Services