

# JACOBS ENGINEERING GROUP INC.

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MCAS EL TORO  
SSIC # 5090.3

## LEAN TRANSMITTAL/DELIVERABLE RECEIPT

CONTRACT N-68711-89-D-9296

DOCUMENT CONTROL NO: CLE-C01-01F145-I2-0071

TO: Ms. Robin Green  
Contracting Officer, Code 0232.RG  
Naval Facilities Engineering Command  
Southwest Division  
Contracts Dept., Room 135  
1220 Pacific Highway  
San Diego, California 92132-5187

DATE: 01 November 1993  
CTO#: 0145  
LOCATION: MCAS El Toro  
TASK/WORK ELEMENT: \_\_\_\_\_

FROM: *John Dolegowski*  
John Dolegowski/Project Manager

*Ken Tomeo/M. Febrache*  
Ken Tomeo/Resource Center Manager

DESCRIPTION: Project Note No. PN-0145-101, DQO Meeting, RI/FS, MCAS El Toro.

TYPE:  Contract Deliverable  CTO Deliverable  Request For Change/Project Note

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Copies To:	<u>K. Reynolds - Code 1841.KR w attach</u>	<u>File - PMO w/attach</u>
	<u>A. Piszkin - Code 1812.AP w/attach</u>	<u>File - CTO Notebook/PMO w/o attach</u>
	<u>D. Villanueva - Code 0232.DV w/ attach</u>	<u>File - CH2M HILL w/attach</u>
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Delivered To: Contracting Officer  RPM/EIC  Date/Time Received 11/5/93 *mf*

Name: \_\_\_\_\_



PROJECT NOTE NO. PN-0145-101 CLE-C01-01F145-I2-0071		PROJECT NO. 01-F145-H6	
CONFIRMATION OF:	CONFERENCE X	DATE HELD	08 October 1993
	TELECOM	DATE ISSUED	01 November 1993
	OTHER	RECORDED BY	S. Diehl/CH2M HILL
SUBJECT	PLACE		Santa Ana
SUBJECT Contract Task Order (CTO) No. 0145 DQO Meeting MCAS El Toro RI/FS			
PARTICIPANTS: (* DENOTES PART-TIME ATTENDANCE)			
John Broderick - RWQCB John Christopher - Cal EPA/DTSC Ginny Cummings - Code 1853.VC Susan Diehl - CH2M HILL/SAC John Dolegowski - CH2M HILL/SCO Chuck Elliott - CH2M HILL *Moussa Essayli - Cal EPA/DTSC John Hamill - EPA *Renee Jenneskens - CH2M HILL/SCO John Lovenburg - CH2M HILL/SCO		Liz Miesner - CH2M HILL/SFO *Hooshang Nezafati - CH2M HILL/SCO *Larry Nuzum - Code 1812.LN Vish Parpiani - MCAS El Toro Bruce Peterson - CH2M HILL/SEA *Andy Piszkin - Code 1812.AP Davi Richards - CH2M HILL/CVO *Tim Smith - CH2M HILL/SCO Sebastian Tindall - Bechtel Corp Joe Zarnoch - Cal EPA/DTSC	
ACTION REQ'D. BY	ITEM		
	<p>The fifth meeting on Data Quality Objectives (DQOs) for the Marine Corps Air Station (MCAS) El Toro Remedial Investigation/Feasibility Study (RI/FS) was held in Santa Ana, California, at CH2M HILL on 08 October 1993. Participants represented the following organizations: the Naval Facilities Engineering Command, Southwest Division (SWDIV); MCAS El Toro; the U.S. Environmental Protection Agency (EPA); the California Regional Water Quality Control Board (RWQCB), Santa Ana Region; the California Department of Toxic Substances Control (DTSC); Bechtel Environmental, Inc. (EPA's consultant); and CH2M HILL (SWDIV's consultant). These meeting notes summarize the action items, and the discussion of the meeting.</p> <p><u>Action Items</u></p> <ul style="list-style-type: none"> <li>o CH2M HILL will send a copy of Volume II of the Sampling and Analysis Plan (SAP) Amendment (26 August 1992) to Bechtel.</li> <li>o CH2M HILL will send out the following documents by 09 November:             <ul style="list-style-type: none"> <li>- List of groundwater elevations measured during the two phases of sampling</li> <li>- Memorandum comparing the results of the two rounds of groundwater quality monitoring data</li> <li>- Memorandum about the submersible constant-speed pumps that are in some of the 5-inch monitoring wells</li> </ul> </li> <li>o CH2M HILL will investigate the contents of six vertical tanks that were located between the East Sludge Drying Bed and the Wastewater Treatment Plant.</li> </ul>		

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- o MCAS El Toro will set up interviews with long-term or former employees about past practices in the area of Buildings 295-297.
- o MCAS El Toro will find out about the construction schedule for Agua Chinon Wash and the status of Borrego Canyon Wash.

Partnering Issues

The team members introduced themselves. New to the team is Vish Parpiani, who has taken on LCDR Serafini's previous role as Director of Environmental Engineering at MCAS El Toro. Andy Piszkin/SWDIV announced his appointment as Base Realignment and Closure (BRAC) Environmental Coordinator (BEC), reporting directly to Base Commander General Williams. Allan Vancil will replace A. Piszkin as Remedial Project Manager (RPM) for MCAS El Toro, but A. Piszkin still plans to maintain close contact with the team. John Hamill/EPA has been appointed EPA representative to the BRAC committee. He will be the EPA RPM for El Toro only; a new EPA RPM will be appointed for the Marine Corps Logistics Base, Barstow.

John Dolegowski/CH2M HILL stated that he and John Broderick had discussed J. Broderick's concerns about information provided to the team and came up with some ideas to improve team communication. The team's health appears to be on track again. J. Hamill asked about the status of the planned team-building meeting; A. Piszkin responded that he had not had time to organize it yet. However, it is still scheduled for 02 to 03 December.

Joe Zarnoch/DTSC announced that he would like to set up a meeting with the regulatory agencies to coordinate their comments on the Phase II RI planning documents. He also suggested that the next DQO/RPM meeting be held sometime after 09 December.

At the suggestion of J. Hamill, the team agreed to skip the action items on the agenda and other remaining partnering issues, and move directly to the discussion of the DQO document.

Status of Research in the Area of Buildings 295-297

Tim Smith/CH2M HILL gave an overview of Site 24 and presented the results of his research of activities in and around Buildings 295-297.

Buildings 295-297 were built in the mid-1940s. According to the Initial Assessment Study of MCAS El Toro completed by Brown and Caldwell (May 1986), plating operations were conducted in the area for about one year in the mid-1940s. J. Zarnoch thinks that a duration of up to 10 years was probable. Maintenance activities, degreasing, and engine rebuilding has continued up to the present.

An employee from Building 1589 who had been working there since the 1960s reported the routine disposal of solvents or fuel in the area west of Building 297. The area reportedly was excavated before the installation of pavement in 1971. J. Zarnoch added that extremely dark stains on dirt were visible in historical aerial photographs of



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that area. Two abandoned wells are located in the area: one is in the area of aircraft matting at Site 10, the other is in the grassy area near Crash Crew Building 435.

J. Zarnoch said that he would like to be part of the team that is going to interview MCAS El Toro personnel about past activities in the Building 295-297 area. He emphasized that the employees are immune to liability. A. Piszkin suggested that both DTSC and EPA be involved in the "bottom-up review". He reported that LCDR Larry Serafini had offered to help find former employees to be interviewed. Vish Parpiani/MCAS El Toro said he could help with the search of historical documentation. J. Zarnoch stated that the addendum to the Preliminary Review/Visual Site Inspection Report (Jacobs Engineering Group, July 1991) is an important source for historic information.

J. Hamill expressed his concern that the soil gas investigation had not yet been funded. John Broderick/RWQCB asked the Navy to consider a soil gas investigation along the storm drains that lead to Agua Chionon Wash. Since they are made out of vitrified clay, they are very likely to be leaking.

Chuck Elliott/CH2M HILL recommended starting the soil gas investigation at the potential source areas identified by employee interviews and document research. Based on the results of the soil gas survey, strata would be defined inside Site 24. The Phase II RI Sampling and Analysis Plan (SAP) Amendment would then describe the number and location of samples to be taken in those strata. J. Dolegowski stated it would be impossible to prepare this SAP Amendment after the soil gas investigation and still start the Phase II fieldwork on schedule.

J. Zarnoch requested a proposal for the soil gas investigation. C. Elliott replied that the DQO document will contain the general approach of the soil gas survey, and that the detailed sampling strategy will be prepared later, in the Soil Gas Investigation Work Plan.

Round 2 Groundwater Sampling: Status and Data Review

Hooshang Nezafati/CH2M HILL distributed a memorandum and several trichloroethylene (TCE) concentration maps summarizing the first round and the (unvalidated) second round of groundwater sampling at MCAS El Toro.

J. Zarnoch expressed his concern that DQO decisions based on one set of groundwater quality monitoring data only would not be sound. He requested adding the second round of groundwater sampling data to the DQO document or at least to the SAP Amendment. C. Elliott responded that it was technically impossible to include these data in the DQO document within the current publication schedule. However, he assured the team that the data are being considered in the DQO design.

J. Zarnoch referred to the potential loss of volatile organic compounds (VOCs) through sampling with constant-speed submersible pumps at some of the 5-inch wells, and requested that a figure depicting these wells. He also requested a summary of the differences between the data from the two rounds of groundwater quality monitoring conducted to date. J. Dolegowski agreed to send out a memorandum on the submersible constant-speed pumps before 09 November. J. Zarnoch said it was



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crucial for a reviewer to have groundwater data presented on plan view figures along with regulatory criteria. C. Elliott responded that the plan view figures in the DQO document show only the chemicals of potential concern (COPCs), not the chemicals to be investigated further. J. Dolegowski suggested utilizing large-scale regional contaminant plume maps with groundwater contours. J. Broderick said that a large-scale plume map would be sufficient, and that plan view figures for groundwater data were not necessary. He also suggested that the Navy submit the groundwater quality monitoring data separate from the Groundwater Monitoring Plan. J. Dolegowski asked whether the groundwater quality monitoring data should be published before all wells of the Orange County Water District have been sampled. J. Zarnoch replied that the groundwater monitoring report should not be submitted later than the SAP Amendment, even if the data from the OCWD wells are missing. He requested a list of groundwater elevations by 09 November.

Sebastian Tindall/Bechtel asked for digitized maps of MCAS El Toro, to display the database in a more user-friendly way. Bruce Peterson/CH2M HILL said he could guarantee that a lot of coordination between Bechtel and CH2M HILL would be necessary in order to produce the same data queries and plots and in order to prevent confusion. J. Dolegowski was concerned that it is a waste of money to have two databases set up and maintained. J. Hamill responded that EPA/Bechtel was just asking for a copy of the digitized maps. Ginny Cummings/SWDIV wondered why it is not enough to share the hardcopies of the maps prepared by CH2M HILL.

Status of Agua Chinon Wash

A. Piszkin informed the team that he did not have the construction schedule for Agua Chinon Wash. J. Zarnoch said he wants to pursue a removal action at the Wash. The representatives of the regulatory agencies agreed to discuss that issue during their lunch break.

DQO Document: Introduction and Summary of Approach

C. Elliott presented an overview of the DQO process and showed how the EPA's seven DQO steps are being incorporated in the 10 text sections for each site in the DQO document. S. Tindall commented that the revised EPA DQO guidance document (1993) may require some changes in the structure of the DQO document.

J. Zarnoch stated he would like to have the inorganic constituents in subsurface soil screened against the background levels established for surface soil. J. Broderick disagreed, and John Christopher/DTSC explained that it is not necessary to screen inorganics in subsurface soil for human health, because there is no exposure. The only criterion needed is the potential of inorganics to reach groundwater, and that had been evaluated by the VLEACH program. J. Zarnoch agreed to keep the inorganics detected in subsurface soil in the list of COPCs. He said it would be useful to have a figure displaying the vertical distribution of COPCs in subsurface soil that had not been screened out by VLEACH.

J. Hamill thanked the CH2M HILL team members for sharing the internal working draft of the DQO document with the whole team.



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Discussion of Site 12

C. Elliott went through the description of Site 12 (Sludge Drying Beds) presented in the DQO document. J. Broderick and J. Zarnoch said that, based on their experience at other military installations, it was hard to believe that the facilities at the Wastewater Treatment Plant (WWTP) had originally been lined.

J. Zarnoch thought that the source of the polychlorinated biphenyls (PCBs) detected in the ditch at Site 12 may be the storage area south of Site 12, an area that had been investigated under the RFA. C. Elliott said it is important to stay focused on why a site had been established originally, and that contamination found outside a site will have to be addressed under base closure. J. Broderick disagreed, and stated it is the Navy's call as to when to investigate detected contamination.

J. Zarnoch asked the Navy to find out what had been stored in six vertical tanks located between the WWTP and the Eastern Sludge Drying Bed, and visible in aerial photographs from the 1950s and 1960s. C. Elliott agreed to investigate the tanks, and then to decide whether to include them in Site 12.

J. Zarnoch requested that the discussion and interpretation of Tables 3, 4, and 5 be added to Section 7 of the DQO for each site (Chemicals To Be Investigated in Phase II RI). (These tables are the Chemicals Detected in Phase I RI That Exceed Human Health Risk-Screening Criteria [3], Summary of Human Health Risk in Shallow Soil by Stratum and Chemical Class [4], and Chemicals To Be Investigated in Phase II RI [5]. Liz Miesner/CH2M HILL stated that this discussion is being presented in Section 8, but agreed that it would be more useful in Section 7. C. Elliott agreed to summarize the main information of Tables 3 through 5 in the text of Section 7. Davi Richards/CH2M HILL suggested that the master risk rollup table prepared by Bruce Peterson be included in the DQO document.

J. Broderick asked why there is no discussion about bench-scale testing in the DQO document. D. Richards explained this will be addressed later, in a work plan funded separately under the Feasibility Study.

J. Broderick requested the rationale for the number of sampling locations proposed in Section 10 (Phase II Remedial Investigation Design) of the DQOs. C. Elliott said that the rationale would be explained in detail in the introduction to the site DQOs. S. Tindall suggested adding a summary of the rationale in each site DQO to facilitate review. C. Elliott agreed to include a statement that the number of samples results from the selection of the Minimum Detectable Relative Difference (MDRD), based on the site-specific level of risk.

J. Zarnoch wondered whether it would be enough to sample only the surface soil in the Sludge Drying Beds at Site 12, and not to sample at 5 and 10 feet below ground surface (bgs). C. Elliott responded that fewer samples could be taken only if all regulatory agencies agree that the risk will still be adequately assessed. He prefers being conservative in order to make a defensible decision later on. A. Piszkin supported J. Zarnoch's questioning the rule of sampling in all cases from 0 to 10 feet bgs, but that agency approval is necessary to modify that rule. J. Christopher expressed concern that the risk of a stratum with contamination only at 0 feet and



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none at 5 and 10 feet would be assessed to be low, but that residents still would be in contact with the contamination at the surface. L. Miesner said that the regulators may feel that there are certain compounds that do not require investigation all the way to 10 feet bgs. J. Christopher said that, at Stratum 2 of Site 12 (where the investigation would be driven by PCBs only), it would be sufficient to sample at 0 and 5 feet, since PCBs are extremely immobile. At strata where PAHs are of concern, Method 8310 should be considered as a way to achieve lower detection limits.

J. Zarnoch said it may not be worthwhile to investigate Stratum 2 of Site 12 any further. J. Broderick disagreed stating that no stratum could be dismissed based on Phase I data only. J. Zarnoch then suggested that field screening be done at Stratum 2, and the stratum dismissed if no positive hits are detected. C. Elliott argued that risk assessors and regulators would have to agree that Level 2 data obtained by field screening is a valid basis for a risk decision.

J. Zarnoch said he feels uncomfortable with taking more Contract Laboratory Program (CLP) samples in a stratum that has little risk, than in a stratum with higher risk. B. Peterson replied that it is important to take more CLP samples in a stratum of low risk ( $10^{-5}$  to  $10^{-6}$ ) in order to make a defensible decision to not remediate the stratum. D. Richards added that areas of higher risk will be investigated by field screening (in addition to the CLP samples) to determine the extent of contamination.

Meeting Assessment

J. Zarnoch stated that he would like to have the next DQO/RPM meeting after 09 December. J. Dolegowski said that many subjects need to be discussed after the submittal of the draft DQO document (09 November). J. Hamill said that the EPA comments on the draft document will concentrate only on fatal flaws; EPA will not address items such as grammatical errors or mislabeled tables.

C. Elliott announced that CH2M HILL will conduct a 2-day working session the following week, and he invited the regulators to take part. S. Tindall and J. Zarnoch accepted; Ginny Cummings/MCAS El Toro said she might be able to attend one day.

S. Tindall brought up the fact that Borrego Canyon Wash is being excavated on MCAS El Toro property, and his concern that the construction activities will interfere with the investigation of Site 25. A. Piszkin said he did not think the excavated area is part of Site 25, but he will check on the status of the Wash.

A. Piszkin closed the meeting, noting that the team health seemed to have improved very much since the last DQO meeting.

# JACOBS ENGINEERING GROUP INC.

## MEMORANDUM

**TO:** Andy Piszkin/Code 1831.AP  
Rex Calloway/Code 09C.RC  
Dana Sakamoto/Code 183

**DATE:** 22 December 1993

**FROM:** John Dolegowski/CH2M HILL  
Davi Richards/CH2M HILL  
Hooshang Nezafati/CH2M HILL

**SUBJECT:** Operable Unit 1 Feasibility Study  
MCAS El Toro Remedial Investigation/Feasibility Study  
CLE-C01-01F145-G1-0298

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The purpose of this memorandum is to summarize the approach for development of the Feasibility Study (FS) for the Marine Corps Air Station (MCAS) El Toro Operable Unit 1 (OU-1), the regional groundwater contamination OU. This approach represents the consensus reached between the Navy and CH2M HILL at Naval Facilities Engineering Command, Southwest Division (SWDIV) on 30 November 1993. A one-page summary of this memorandum is attached.

### Operable Unit 1

OU-1 will address the regional groundwater contamination by volatile organic compounds (VOCs). The FS will include the Orange County Water District (OCWD) Desalter Project in the development of alternatives. The Desalter Project is planned to extract approximately 7 million gallons per day (mgd) of groundwater downgradient of the Station beginning in late 1995 or early 1996.

### Source Area

There appears to be multiple sources of the VOC groundwater contamination in the southwest quadrant of the Station. These sources are believed to be residual contamination in the vadose zone or adsorbed or potentially pure phase residue in the saturated zone. The exact locations of these sources within the southwest quadrant are not known.

OU-2 will pursue further investigation of the vadose zone and groundwater in the southwest quadrant of the Station, currently planned for the Phase II Remedial Investigation (RI) to allow a subsequent evaluation of source removal and control. Based on the OU-2 FS, groundwater extraction wells may be installed to optimize removal of the source(s) of the most highly VOC-contaminated groundwater, and other technologies, such as soil vapor extraction, may be implemented.

## Strategy for OU-1

For OU-1 to proceed to a final Record of Decision (ROD) in accordance with the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), it must either:

1. Provide a means to achieve Maximum Contaminant Levels (MCLs)<sup>1</sup> in the aquifer
2. Obtain a waiver for achieving MCLs

The Department of the Navy (DON) has indicated a preference for a final rather than an interim ROD.

The strategy for OU-1 will be to contain the groundwater with the most elevated levels of VOCs within a portion of the southwest quadrant so that the Desalter Project can more rapidly reduce VOC concentrations in the remainder of the aquifer downgradient of MCAS El Toro (see Figure 1). At present, the volume of groundwater expected to be contained is defined as above 50 micrograms per liter (ug/l) trichloroethylene (TCE) or above 5 ug/l benzene. This volume would also include most or all of the other VOCs detected in the southwest quadrant. The area corresponding to the volume to be contained will be designated the "Source Area."

The remedial objectives of OU-1 will not include removal of the residual source(s) in the Source Area. That is, OU-1 will not achieve MCLs in this area<sup>2</sup>. Evaluation and remediation of the response to the Source Area will be deferred to OU-2. For the OU-1 groundwater remediation, the points of compliance will be at the edge of the Source Area. Downgradient of these points, the Desalter will be expected eventually to achieve MCLs.

OU-2 (or OU-3) will address all remaining on-Station groundwater contamination.

## Alternatives to be Evaluated

Three to five FS alternatives will be developed and carried through the required detailed analysis: (1) No action; (2) OCWD Desalter only; (3) OCWD Desalter and upgradient, shallow extraction/containment wells in the southwest quadrant. If needed, Alternatives 4 and 5 will be the Desalter and additional configurations of shallow extraction wells. The groundwater extraction options will be defined by the end of December 1993.

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<sup>1</sup> Pending a review of state and federal applicable or relevant and appropriate requirements (ARARs), MCLs are assumed to be the remedial goals.

<sup>2</sup> "EPA believes that remediation levels should generally be attained throughout the plume, or at and beyond the edge of the waste management area, when the waste is left in place." 55 FR 8753. [Emphasis added.]

The current expectation is that Alternatives 3, 4, and 5 will include wellhead treatment for VOCs followed by discharge of the treated groundwater to the influent of the Desalter Project for further treatment and distribution with the Desalter effluent.

### **Technical Rationale**

The shallow containment/extraction wells to be proposed as additions to the Desalter are intended to serve the following functions:

1. Prevent the higher concentrations (> 50 ug/l TCE or 5 ug/l benzene) of VOC contamination from migrating into the capture zone of the Desalter, enabling the Desalter Project to achieve MCLs within the remainder of the aquifer
2. Decrease the vertical gradient of the groundwater to reduce migration of the VOCs into the deeper zones of the basin
3. Allow treatment to remove VOCs at a higher concentration from a smaller volume of extracted groundwater than at the proposed Desalter project, increasing the long-term cost-effectiveness of the groundwater remediation
4. Remove contaminant mass from the aquifer

### **Feasibility Study Limitations and Assumptions**

The OU-1 FS will estimate capital and operating costs for the shallow extraction wells, treatment and pumping systems, and other auxiliary components proposed in Alternatives 3, 4, and 5. The FS will base cost estimates of the Desalter Project on the *Irvine Desalter Facility Plan Project Report and Cost Sharing Analysis (OCWD, 1992.)*

The FS will not address the question of cost allocation between the Navy and OCWD for construction and operations/maintenance for the Desalter Project, the shallow extraction wells, wellhead treatment, and conveyance facilities. The FS will also not address hypothetical alternatives that the Navy may wish to develop in support of its negotiations with OCWD. For instance, an aquifer-wide system designed to optimize removal of VOCs (rather than to sell treated water) might be significantly smaller than the Desalter Project as now designed. Such a system might be an option in the absence of the Desalter Project but is not now an option in fact.

Wellhead treatment will be evaluated to remove VOCs only. For the purposes of evaluating and costing wellhead treatment, the FS will be based on removal of VOCs to one-tenth of their MCLs<sup>3</sup>.

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<sup>3</sup>OCWD intends to sell the treated groundwater for potable uses and has stated that it will therefore treat TCE to 0.5 ug/l, which is one-tenth the MCL for TCE.

Applicable or relevant and appropriate requirements (ARARs) will be identified for the Desalter Project as well as for the on-Station components of remediation, but verification that OCWD has fulfilled ARARs is beyond the scope of the FS.

A one-page summary of this memorandum is attached.

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cc: Robin Green - Code 0232  
Ken Reynolds - Code 1841 /K  
Ginny Cummings - Code 1853.VC  
Ken Tomeo - CH2M HILL  
File - PMO  
File - CTO Notebook/PMO  
File - CH2M HILL

**MCAS EL TORO RI/FS  
SUMMARY OF OU-1 FS APPROACH AND STRATEGY**

**OU-1**

Response to regional VOC contamination; will include Orange County Water District (OCWD) Desalter Project.

**SOURCE AREA**

Area in southwest quadrant of MCAS El Toro with apparent VOC sources in vadose and/or saturated zones, exact locations unknown.

**STRATEGY FOR OU-1**

Contain the most highly contaminated groundwater in the southwest quadrant to enable the Desalter to reduce VOC contaminations in remainder of aquifer; further source investigation and response in OU-2.

**ALTERNATIVES**

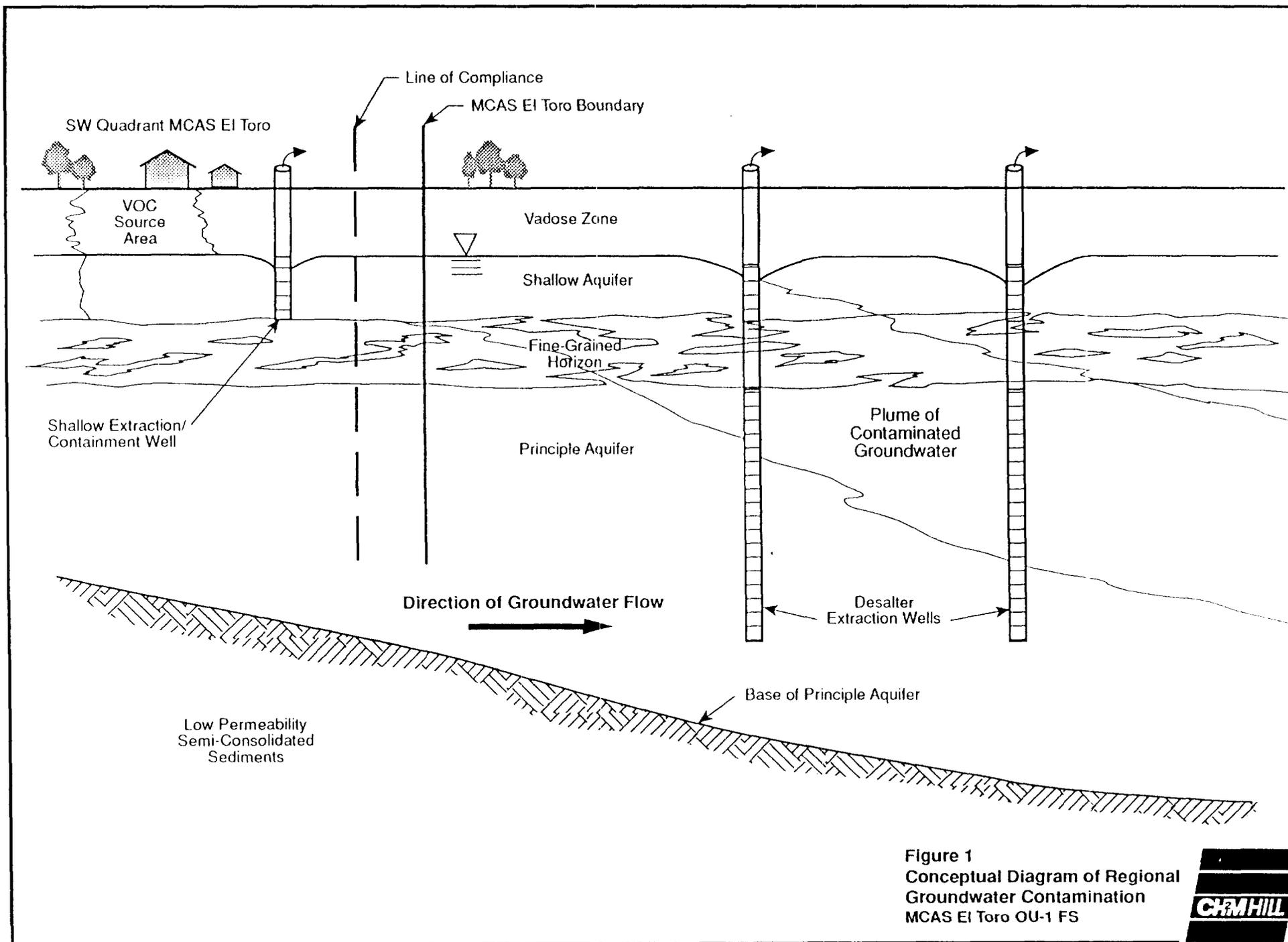
(1) No action; (2) Desalter only; (3) Desalter and upgradient, shallow extraction wells to contain groundwater in southwest quadrant; and (4) Desalter and additional configurations of shallow extraction wells if needed.

**TECHNICAL RATIONALE**

1. Enable Desalter to reduce VOC concentrations in most of the aquifer
2. Reduce migration of VOCs into deeper zones
3. Increase cost-effectiveness by removing VOCs at higher concentrations
4. Remove contaminant mass from the aquifer

**FEASIBILITY STUDY LIMITATIONS AND ASSUMPTIONS**

Will base cost estimates of Desalter on OCWD's December 1992 report; will not address cost allocation between Navy and OCWD; will evaluate wellhead treatment for VOCs only; will identify ARARs, including for the Desalter Project, but will not verify whether OCWD has fulfilled them.



**Attachment 1**

**DRAFT OUTLINE  
STREAMLINED FEASIBILITY STUDY (FS)  
MCAS EL TORO RI/FS OU-1  
20 December 1993**

**1.0 INTRODUCTION**

- 1.1 Project Background
- 1.2 Purpose of Feasibility Study
- 1.3 Presumptive Remedy Approach
- 1.4 Fulfillment of National Contingency Plan (NCP) Requirements
- 1.5 Organization of the FS and RI/FS

**2.0 REMEDIAL ACTION OBJECTIVES**

**3.0 ORANGE COUNTY WATER DISTRICT (OCWD) DESALTER**

**4.0 ADDITIONAL GROUNDWATER EXTRACTION OPTIONS**

**5.0 TREATMENT PROCESS OPTIONS**

**6.0 TREATED GROUNDWATER DISPOSAL/USE AND CONVEYANCE OPTIONS**

**7.0 REMEDIAL ALTERNATIVE DEVELOPMENT AND DESCRIPTIONS**

**8.0 DETAILED ANALYSIS OF ALTERNATIVES**

**APPENDICES**

- A Groundwater Flow Modeling**
- B Solute Transport Modeling**
- C Sensitivity Analysis for Evaluation of Treatment Options**
- D Analysis of Applicable or Relevant and Appropriate Regulations (ARARs)**
- E Cost Estimates**

concentrated. There are 13 physical treatment processes applicable for use with aqueous streams:

- Coagulation/Flocculation
- Oil-Water Separation
- Flotation
- Media Filtration
- Adsorption
- Stripping
- Reverse Osmosis (RO)
- Dialysis
- Electrodialysis (ED)
- Ultrafiltration
- Freeze Crystallization
- Distillation
- Solvent Extraction

EXAMPLE  
BRIEF  
TEXT

#### *6.3.4.1 Physical Treatment for VOC Removal*

Seven of these technology options (i.e., coagulation/flocculation, oil-water separation, flotation, media filtration, ED, ultrafiltration, and freeze crystallization) are not considered efficient treatment technologies for the treatment of VOCs. In addition, three other technologies (dialysis, distillation, and solvent extraction) are not efficient for the concentrations of VOCs in the groundwater in the OU area.

Therefore, only three physical treatment process options (i.e., adsorption, stripping, and RO) are potentially applicable for reducing organic chemical concentrations in a dilute water stream.

**Adsorption.** Granular activated carbon (GAC) and powder activated carbon (PAC) are the most common adsorbent materials used for treatment of water contaminated with VOCs. The material most commonly used for dilute organic streams, such as the groundwater in the OU area, is liquid-phase granular activated carbon (LGAC). The process of LGAC adsorption involves two basic steps. First, the waste stream contacts the LGAC in a packed bed or a basin. The carbon adsorbs most organic and some inorganic solutes and allows the purified stream to pass through. Second, when the effluent concentrations approach discharge

# JACOBS ENGINEERING GROUP INC.

## MEMORANDUM

**TO:** Andy Piszkin - Code 1831.AP  
Rex Calloway - Code 09C.RC

**DATE:** 23 December 1993

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**SUBJECT:** **Marine Corps Air Station (MCAS) El Toro  
Streamlined Approach for Operable Unit 1 (OU-1)  
Feasibility Study (FS)  
CLE-C01-01F145-G1-0299**

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### Purpose of Memorandum

The purpose of this memorandum is to explain why and how we propose to depart from the Feasibility Study (FS) format presented in the *Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA* (EPA, October 1988) in order to take a more streamlined approach while fulfilling the requirements of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP).

If you have any questions or comments about our approach or any of the specific steps mentioned below, we would like to meet with you to discuss these issues.

### Incentives To Streamline

Several developments indicate that a partial departure from the FS guidance while adhering to the NCP would be the best course for Operable Unit 1 (OU-1.) These developments include:

- o Continuing certainty that the Orange County Water District (OCWD) Desalter Project will be developed and implemented
- o Strong direction from the California Environmental Protection Agency, Department of Toxic Substances Control (DTSC), the Santa Ana Regional Water Quality Control Board (RWQCB), the U.S. Environmental Protection Agency (EPA), and the Marine Corps to streamline the FS process
- o New emphasis from EPA on innovative and streamlined approaches, (e.g., presumptive remedies and SACM [Superfund Accelerated Cleanup Model])
- o Recent innovative FS approaches in EPA Region IX that have led to Records of Decision (RODs) and serve as precedents for innovative approaches (e.g., South Indian Bend Wash, which used a presumptive remedy and "plug-in" approach; Baldwin Park, which streamlined screening of treatment technologies)

## **Means of Streamlining**

We propose to limit the scope and volume of the FS by the following means:

- o Selection of groundwater extraction/treatment as a presumptive remedy
- o Clear focus on groundwater extraction as the crucial component of the remedial alternatives
- o Secondary focus on treatment and discharge/use of extracted groundwater to evaluate cost and eliminate fatal flaws
- o Minimal effort and report space spent on identification and screening of technologies for removal of volatile organic compounds (VOCs), and minimal effort to educate the nontechnical reader
- o Assumption of discharge from wellhead treatment to the Desalter Project
- o Combination of the Remedial Investigation (RI) report, risk assessment, and FS into one 4-volume report to avoid the need to summarize previously presented data, analysis, and conclusions
- o Minimal text to summarize information presented at length in the appendices, (e.g., applicable or relevant and appropriate requirements (ARARs), groundwater flow, and solute transport modeling)
- o Explicit correlation between the subsections of Section 300.430(e) of the NCP, which regulates feasibility studies, and the section(s) of the report that address them

A preliminary draft outline of the FS is presented in Attachment 1.

## **Presumptive Remedy**

The environmental problem to be addressed by OU-1 is the contamination of groundwater beneath and downgradient of MCAS El Toro by dilute ( $\leq 50$  micrograms per liter [ $\mu\text{g/L}$ ]) volatile organic compounds (VOCs).

This groundwater contamination is a common environmental problem for which the nearly universal response is groundwater extraction and treatment to levels that will allow discharge or use ("pump and treat"). In fact, guidance due to be issued by EPA in January will recommend pump and treat as the presumptive remedy for groundwater. Pump and treat will be the presumptive remedy for OU-1, and text will be presented to justify this approach.

## **Focus**

The alternatives to be evaluated will have three components: (1) groundwater extraction, (2) treatment, and (3) discharge/use.

The purpose of the OU-1 FS is to evaluate a range of remedial actions in response to the regional VOC contamination in the groundwater. The crucial focus of the FS, therefore, will be on the groundwater extraction component of the alternatives to be evaluated, and this component will be varied to satisfy the directive in the NCP that a range of actions be evaluated. ("For groundwater response actions, the lead agency shall develop a limited number of remedial alternatives that attain site-specific remediation levels within different restoration time periods utilizing one or more different technologies." [55 FR 8849])

The preliminary expectations are that the alternatives to be evaluated will be (1) no action, (2) the Desalter Project only, and (3/4/5) the Desalter Project plus additional extraction wells in the southeast quadrant of MCAS El Toro.

### **Treatment**

The purpose of the technology screening will be to identify a technology (or technology train) that will meet the treatment requirements at a reasonable cost without fatal flaws. No attempt will be made to optimize the selection of treatment technologies. In the past, pilot studies have on occasion been performed for this purpose during the FS; however, in this case we believe that this course is more properly left to the Remedial Design (RD) stage, so we are not proposing it for the FS.

The treatment options for removal of VOCs from extracted groundwater are well established and effective. Screening will be performed similarly to the Baldwin Park FS (see Attachment 2); that is, minimal effort will be made to educate the nontechnical reader with regard to the "universe" of technologies, and why some are applicable in this instance and others are not. Language will be included to justify this approach (i.e., that these technologies are well established, well understood, dependable, effective, and cost-effective).

The consensus of the Federal Facilities Agreement (FFA) Remedial Project Managers (RPMs) has been that we should rely as much as possible on previous work performed by OCWD. However, in its December 1992 report, OCWD considered only trichloroethylene (TCE) in evaluating technologies for removal of VOCs from groundwater. Several other VOCs, including some that are less easily removed than TCE, have also been detected in the contaminated groundwater and will be addressed by OU-1.

Based on the results of the groundwater modeling, a preliminary sensitivity analysis will be performed to determine which treatment option appears to be the best choice, given anticipated flows, concentrations, and effluent quality requirements. This technology (or combination of technologies) will be assumed for all the alternatives evaluated.

A separate wellhead treatment system to remove VOCs from the extracted groundwater is expected to be cost-effective, because it is always cheaper to remove high concentrations of VOCs from a smaller flow than to remove low concentrations from a larger flow. Other contaminants, however, (such as metals, nitrates, and total dissolved solids [TDS]) will be at approximately the same concentrations in the Desalter wells as in the on-Station wells. Therefore, removal of these contaminants at the wellhead would not be more cost-effective.

**Discharge/Use**

At present, total flow from the additional wells (i.e., additional to the Desalter Project) is expected to be on the order of from 20 to 200 gallons per minute (gpm). Unless further groundwater modeling results indicate that the flows will be much larger than this, the only option for discharge/use of groundwater treated on-Station that we propose to evaluate is discharge to the Desalter Project for further treatment and distribution. Preliminary plans for the Desalter Project call for a flow of 7.2 million gallons per day (mgd), of which 200 gpm is only about 4 percent. We are assuming that it will be more cost-effective to accommodate a slightly larger flow at the Desalter Project than to build a complete parallel treatment system (to remove not only VOCs but also nitrates, metals and TDS), which would be required for separate sale or discharge of the treated groundwater.

**Report Format**

The RI, Risk Assessment, and FS will be combined into one report, avoiding the need to summarize previous information in either the risk assessment or the FS. Our current plans are for four volumes:

- o Volume 1, Remedial Investigation
- o Volume 2, Risk Assessment
- o Volume 3, Feasibility Study
- o Volume 4, Appendices, including the groundwater modeling report

On subjects which are presented at length in appendices, the FS text will be kept to a minimum.

**NCP**

The essential elements of the NCP will be addressed. The introduction will contain a table (or graphic illustration) showing where each NCP requirement is met in the FS.

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