CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN DIEGO REGION
9771 CLAIREMONT MESA BOULEVARD, SUITE A
SAN DIEGO, CA 92124-1331
TELEPHONE: (619) 467-2952
FAX: (619) 571-6972
BBS: (619) 467-2958

CERTIFIED MAIL - RETURN RECEIPT REQUESTED
P 260 996 932

July 23,1996

Commanding General
Building 1106, Marine Corps Base
Camp Pendleton, CA 92055-5010

Dear Sir:

RE: ISSUANCE OF REGIONAL WATER QUALITY CONTROL BOARD (RWQCB) CLEANUP AND ABATEMENT ORDER NO. 96-49 FOR THE DISCHARGE OF PETROLEUM FUELS TO SOILS AND GROUND WATER AT THE MARINE CORPS BASE (MCB) CAMP PENDLETON.

Enclosed is a copy of Cleanup and Abatement (C&A) Order No. 96-49 concerning environmental contamination at leaking petroleum underground storage tank (UST) sites located in the 12 and 13 Area of U.S. Marine Corps Base, Camp Pendleton, California. This cleanup and abatement order is issued to the U.S. Marine Corps under the authority of the California Water Code, Section 13304 in response to the presence of fuel hydrocarbon contamination in the soil and ground water beneath the sites included in the C&A Order. This C&A Order supersedes and replaces the orginal C&A Order No. 88-51 issued on March 31, 1988 and Addendum No. 1 to that Order issued on June 4, 1992.

The enclosed C&A Order directs the U.S. Marine Corps to clean up the soil and ground water contamination in compliance with all relevant state regulations, policies and procedures of the State Water Resources Control Board (SWRCB). The C&A Order directs the U.S. Marine Corps to provide the RWQCB Executive Officer with regularly scheduled ground water monitoring reports and a corrective action plan (CAP).

I strongly urge a prompt and complete response to each directive of C&A Order 96-49. Since this C&A Order has been revised with consideration of the federal budget cycle, we anticipate an aggressive attempt by the U.S. Marine Corps to comply with the directives and the schedule required by the C&A Order. My staff will be happy to work with you in your efforts toward achieving compliance with the directives of the enclosed C&A Order.

Attached, please find Tables 1 and 2 which set out in tabular form the schedule of compliance for directives and deliverables found in C&A Order No. 96-49. If you have any questions, please contact John Odermatt of my staff at (619) 637-5595.

Sincerely,

JOHN H. ROBERTUS
Executive Officer

JHR:jpa:jro \cpenust\cao8851\mcb8851.bac

cc: Mr. Lupe Armas, Office of the Assistant Chief of Staff Environmental Security, Building 22-165, Marine Corps Base, P.O. Box 555008, Camp Pendleton, CA 92055-55008

Ms. Tracy Sahagun, Office of the Assistant Chief of Staff, Environmental Security, Marine Corps Base Building 22-165, P.O. Box 555008, Camp Pendleton, CA 92055-5008

Ms. Sheryl Lauth, U.S. Environmental Protection Agency (Code H-9-2), 75 Hawthorne Street, San Francisco, CA 94105

Mr. Isaac Hirbawi, Department of Toxic Substances Control Region 4, 245 West Broadway, Suite 350, Long Beach, CA 90802-4444

FILE: 166-75 (USMC Camp Pendleton - 12/13 Area USTs, Cleanup and Abatement Order No. 96-49)

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN DIEGO REGION

CLEANUP AND ABATEMENT ORDER NO. 96-49

U.S. MARINE CORPS BASE,
12 AND 13 AREA LEAKING UNDERGROUND STORAGE TANK SITES
CAMP PENDLETON, CALIFORNIA
SAN DIEGO COUNTY

The California Regional Water Quality Control Board, San Diego Region (hereinafter RWQCB) finds that:

1. The U.S. Marine Corps (USMC) owns and operates MCB Camp Pendleton which is located between the cities of San Diego and Los Angeles, bordered by the Pacific Ocean on the west, and the communities of San Clemente to the north, Oceanside to the south, and Fallbrook to the east.

2. MCB Camp Pendleton is a ground water dependent community. The base derives all of its public water supplies from on base ground water production wells. In 1992, MCB Camp Pendleton produced approximately 10,000 acre-feet of water from a total of 26 base water supply wells located in the four ground water basins at the base.

3. The 12 Area and 13 Area at MCB Camp Pendleton are located topographically upgradient from the Santa Margarita River Basin. The Santa Margarita watershed contains 13 of the existing base water supply wells. The nearest base water supply wells are approximately 10,000 feet (1.8 miles) from the sites located in the 12 and 13 Areas. These base water supply wells are: #2603, #2671 and #2673.

4. On November 13, 1986, the RWQCB was notified in writing by MCB Camp Pendleton of the presence of high levels of total petroleum hydrocarbon (TPH) contamination in the soil adjacent to underground storage tanks (USTs) located at the following buildings:

Building No.	Concentration of Total Petroleum Hydrocarbons in Soil (mg/kg)
13175	1,200
13176	2,200
13161	1,200
13163	1,000
1272	1,200
1283	2,000

Building No.	Concentration of Total Petroleum Hydrocarbons in Soil (mg/kg)
1282	20
1281	1,000

5. On December 3, 1987, the RWQCB received a Subsurface Storage Tank Investigation Report dated December 22, 1986 prepared by Westec Services. The report included results of a preliminary investigation of subsurface contamination associated with 16 USTs, one sump and a product transfer pipeline. The tanks contained diesel fuel, gasoline, waste oil and unspecified solvents. The location of the USTs were identified in the Westec Report by using the number of the nearest building:

Source No.	Building No.	Contents
1-13171	13171	gasoline
2-13175	13175	waste oil
3-13176	13176	solvents
4-13176	13176	solvents
5-13161	13161	diesel fuel
6-13163	13163	oil
7-13163	13163	oil
8-13162	13162	diesel fuel
9-13161	13161	oil
10-1224	1224	diesel fuel
11-1272	1272	diesel fuel
12-1281	1281	diesel fuel
13-1283	1283	diesel fuel
14-1282	1282	solvents, oil
15-1282	1282	waste oil
16-1275	1275	diesel fuel
17-PIPE	13161 and 13162	diesel fuel product pipe

6. The Westec Report dated December 22, 1986 also contains the following information:

a) Soil samples collected from boreholes located near source 1-13171 contained concentrations of total petroleum hydrocarbons (TPH) up to 3,900 mg/kg. A ground water sample collected from a well installed near this source was analyzed and found to contain petroleum hydrocarbon and chlorinated hydrocarbon concentrations as follows:

Constituent	Concentration (mg/L)
Benzene	27
Toluene	28
Total Xylenes	11.8
Ethylbenzene	3.3
1,2-Dichloroethane	3.1

b) Soil samples collected from borings drilled near source 2-13175 were analyzed and found to contain concentrations of TPH up to 10,300 mg/kg.

c) Soil samples collected from borings drilled near source 3-13176 were analyzed and found to contain concentrations of TPH up to 27 mg/kg.

d) Soil samples collected from borings drilled near source 4-13176 were analyzed and found to contain concentrations of TPH up to 25 mg/kg.

e) Soil samples collected from borings drilled near source 5-13161 were analyzed and found to contain concentrations of TPH up to 220 mg/kg.

f) Soil samples collected from borings drilled near source 6-13163 were analyzed and found to contain concentrations of TPH up to 1,300 mg/kg.

g) Soil samples collected from borings drilled near source 7-13163 were analyzed and found to contain concentrations of TPH up to 73 mg/kg.

h) Soil samples collected from borings drilled near source 8-13162 were analyzed and found to contain concentrations of TPH up to 320 mg/kg.

i) Soil samples collected from borings drilled near source 9-13161 were analyzed and found to contain concentrations of TPH up to 36 mg/kg.

j) Soil samples collected from borings drilled near source 10-1224 were analyzed and found to contain concentrations of TPH up to 10,000 mg/kg.

k) A ground water sample collected from monitoring well no. CPW-4 located near source 10-1224 was analyzed and found to contain a concentration of 900 ug/L TPH.

l) Soil samples collected from borings drilled near source 11-1272 were analyzed and found to contain concentrations of TPH up to 2,500 mg/kg.

m) Soil samples collected from borings drilled near source 12-1281 were analyzed and found to contain concentrations of TPH up to 4,600 mg/kg.

n) Soil samples collected from borings drilled near source 13-1223 were analyzed and found to contain concentrations of TPH up to 16,000 mg/kg.

o) Soil samples collected from borings drilled near source 14-1282 were analyzed and found to contain concentrations of TPH up to 24 mg/kg. A ground water sample collected from monitoring well no. CPW-5 was analyzed and found to contain 300 ug/L TPH.

p) Soil samples collected from borings drilled near source 15-1282 were analyzed and found to contain concentrations of TPH up to 3,300 mg/kg.

q) Soil samples collected from borings drilled near source 16-1275 were analyzed and found to contain concentrations of TPH up to 6,400 mg/kg.

r) Soil samples collected from borings drilled near a subsurface pipeline connective sources 5-13161 and 8-13162, collectively referred to as source 17-PIPE, were analyzed and found to contain concentrations of TPH up to 23,700 mg/kg.

7. On March 31, 1988, the RWQCB Executive Officer issued Cleanup and Abatement Order (CAO) No. 88-51 to the USMC in response to soil and ground water contamination associated with 15 underground storage tanks (USTs), 1 sump, and 1 underground storage tank pipeline located in the Areas 12 and 13. See attachment no. 1 to this Order for a general location map for Areas 12 and 13 at MCB Camp Pendleton.

8. On June 4, 1992, Addendum No. 1 to CAO No. 88-51 was adopted to modify the compliance dates required under the Directives of CAO No. 88-51: a) Directive No. 3- a technical report of results of a complete and comprehensive site assessment for the sites listed in CAO No. 88-51 by January 31, 1993; b) Directive No. 4 - a technical report identifying and developing a range of

remedial action alternatives for the final phase of the cleanup program for the sites identified in CAO 88-51, by June 15, 1993, and c) Directive No. 8- a demonstration that final cleanup levels have been achieved throughout the soil and groundwater contamination zones at each individual sites listed in Finding No. 3 of CAO No. 88-51 by May 15, 1995, and d) submit quarterly ground water monitoring reports in accordance with Directive Nos. 3 and 4 of CAO No. 88-51.

9. On April 3, 1995, the RWQCB sent a letter requesting the USMC to comply with the reporting and cleanup requirements of CAO No. 88-51 and Addendum No. 1 to that Order.

10. On June 28, 1995, the RWQCB received a letter dated June 26, 1995 from the USMC explaining the inability of the MCB to meet the deadlines for cleanup of the UST sites listed in CAO No. 88-51. The letter also proposed an extension of the final site remediation deadline, specified in Directive No. 8 of Addendum No. 1 to CAO No. 88-51, to September 30, 2002.

11. On August 17, 1995, the RWQCB sent a letter to MCB Camp Pendleton asking for assurances that the USMC will comply with any revisions to the schedule of compliance dates for Directives of CAO No. 88-51 Addendum No. 1.

12. On September 20, 1995, the RWQCB received a letter from the USMC assuring the agency of the intent of the MCB to comply with the written requirements of the regulatory agencies to effect the timely completion of all corrective action requirements at leaking UST sites. The letter also described recent efforts made at MCB Camp Pendleton which have resulted in the removal of 315 USTs, the initiation of 45 site investigations and over 50 site remediations projects at the base. The MCB also cited its intended use of the geographical information system (GIS) database to prioritize corrective action work at leaking UST sites located near existing base water supply wells. The MCB stated that all sites located within 1,500 feet of base water supply wells are currently under investigation.

13. On October 31, 1995, the RWQCB received a Baseline Ground Water Monitoring Report, prepared by IT Corporation, for the UST sites identified in CAO No. 88-51. According to the data tabulated in the report, the following contaminants were measured at the sites listed in CAO No. 88-51:

    a) Building 13171 (Site 1)- soil contaminated with TPH up to 1,300 mg/kg. Observed 0.09 feet of free phase petroleum product MW13171-2.

    b) Buildings 13161, 13162, and 17-PIPE (Sites: 5/8/9/17) - soil contaminated with TPH quantified as diesel fuel up to 15,000 mg/kg.

Observed 14.7 and 0.28 feet of free phase petroleum product in S/5/8/9/17-MW40 and S/5/8/9/17-MW48, respectively. Observed concentrations of the following chlorinated hydrocarbons in a ground water sample collected from well S5-MW41: 1.7 ug/L 1,2-dichloroethane, 1.71 trichloroethene, 5.29 ug/L benzene, 15.9 ug/L toluene, total xylenes 63.19 ug/L and 7.54 ug/L acetone.

c) Building 13163 and 13176 (Sites: 6/7) - soil contaminated with TPH as diesel fuel up to 490 mg/kg and TPH. Observed 0.12 foot of free phase petroleum product in S6/7-MW-15.

d) Buildings 1224 (Site 10) - soil contaminated with TPH quantified as diesel fuel up to 1,200 mg/kg. Observed 0.38 foot of free phase petroleum product in S10-MW2.

e) Building 1283 (Site 13) - soil contaminated with TPH quantified as diesel fuel up to 16,000 mg/kg. Observed 1.81 feet of free phase petroleum product in S13-MW1.

f) Building 1275 (Site 16) - soil contaminated with TPH quantified as diesel fuel up to 6,100 mg/kg. Observed 0.12 foot of free phase petroleum product in S16-MW8.

14. Unauthorized release sites at Buildings 13175, 13176, 1272, 1281 and 1282 were formerly included in CAO No. 88-51. Based upon new data provided in the IT Report dated October 31, 1995, the RWQCB staff have determined that these sites should be deleted from the revised cleanup and abatement order. RWQCB staff have determined that any further mitigation at these sites will be adequately addressed within the framework of the long-term objectives of the UST management program at MCB Camp Pendleton.

15. On December 13, 1995, the RWQCB received a Final Sampling and Analysis Plan for 12 and 13 Area Quarterly Groundwater Monitoring, prepared by IT Corporation and dated November 17,1995. This work plan proposed specific wells and analytical protocols to be included in the ground water monitoring at the sites listed in CAO No. 88-51 and Addendum No. 1.

16. On June 17, 1996, RWQCB staff were informed by the military that recent data indicated the extent of ground water contaminated by trichloroethene (TCE) was more extensive than initially thought at the 13 Area Motorpool facility. On July 9, 1996, the USMC provided the RWQCB with laboratory data sheets which indicate the presence of additional organic compounds in ground water samples collected from sites included in CAO 88-51. The chemicals included: TCE (13

ug/L), 1,2,4-Trimethylbenzene (32 ug/L), 1,3,5-Trimethylbenzene (6.7 ug/L), Naphthalene (82 ug/L), Isopropylbenzene (2.2 ug/L), Methylene Chloride (1.8 ug/L), n-Propylbenzene (3.4 ug/L) and p-Isopropyltoluene (1.2 ug/L).

17. The *Water Quality Control Plan Report, San Diego Region (9)* (the Basin Plan) was adopted by the RWQCB on September 8, 1994; approved by the State Water Resources Control Board (SWRCB) on December 13, 1994, and reviewed by the Office of Administrative Law (OAL) on April 26, 1995.

18. Areas 12 and 13 are located within the Santa Margarita River Hydrologic Area (Basin 2.13) of the Santa Margarita Hydrologic Unit and the Lower San Luis Hydrologic Area (Basin No. 3.11) of the San Luis Rey Hydrologic Unit, respectively. The following designated beneficial uses have been established for surface water resources of the Santa Margarita River (2.11) and the Lower San Luis Hydrologic Area (3.11) by the Basin Plan (1994):

    a) Municipal and domestic supply (MUN) for the Santa Margarita River HA only.
    b) Agricultural Supply (AGR).
    c) Industrial Service Supply (IND).
    d) Industrial Process Supply (PROC) for the Santa Margarita River HA only.
    e) Water contact recreation (REC1).
    f) Non-contact water recreation (REC2).
    g) Warm freshwater habitat (WARM).
    h) Cold freshwater habitat (COLD) for the Santa Margarita River HA only.
    i) Wildlife habitat (WILD).
    j) Preservation of rare and endangered species (RARE) for the Lower San Luis HA only.

19. The following designated beneficial uses have been established by the Basin Plan (1994) for ground water resources of the Ysidora Hydrologic Area (2.10) and the Lower San Luis Hydrologic Area (3.11):

    a) Municipal and domestic supply (MUN).
    b) Agricultural Supply (AGR).
    c) Industrial Service Supply (IND).
    d) Industrial Process Supply (PROC) for the Ysidora HA only.

20. The RWQCB Basin Plan contains the following objectives which applies to all ground waters in the San Diego Region:

"Ground water shall not contain taste or odor producing substances in concentrations that cause nuisance or adversely affect beneficial uses."

21. The discharge of petroleum fuel hydrocarbons has created a condition of pollution, as defined in the California Water Code Section 13050, in the ground water based upon the following standards:

The following maximum contaminant levels (MCLs) for benzene, ethylbenzene, xylene, and total lead are established for primary drinking water constituents in California Code of Regulations (CCR), Title 22, Division 4, Chapter 15, Article 5.5, Section 64444:

Constituent	Maximum Contaminant Level	
Benzene	1	ug/L
Total Lead	50	ug/L
Toluene	150	ug/L
Ethylbenzene	680	ug/L
Xylene	1,750	ug/L
1,2-Dichloroethane (DCA)	0.5	ug/L
Trichloroethene (TCE)	5	ug/L

22. Non-aqueous phase liquid (NAPL) petroleum product has been detected on the water table at Buildings 13161/13162, 13163, 13171, 13176, 1224, 1275 and 1283. The presence of petroleum product containing benzene, toluene, ethylbenzene and xylene has caused the applicable MCLs in the underlying ground water to be exceeded.

23. Pursuant to State Water Resources Control Resolution No. 68-16 the RWQCB is required to ensure that dischargers are required to clean up and abate the effects of discharges in a manner that promotes the attainment of background water quality, or the highest water quality which is reasonable if background levels can not be restored, considering all demands being made and to be made on those waters and the total values involved, beneficial and detrimental, economic and social tangible and intangible; any alternative levels less stringent than background shall:

a) be consistent with the maximum benefit to the people of the state;

b) not unreasonably affect the present and anticipated beneficial use of such water; and

c) not result in water quality less than that prescribed in the Water Quality Control Plans and Policies adopted by the State and Regional Water Boards.

24. State Water Resources Control Board (SWRCB) regulations governing waste discharges to land (CCR, Title 23, Division 3, Chapter 15) require that cleanup and abatement actions intended to contain waste at the place of release shall implement the applicable provisions of that chapter, to the extent feasible (CCR,Title 23, Division 3, Chapter 15, Section 2511(d)). Article 5 of that chapter will be considered in establishing cleanup levels (CCR Title 23, Chapter 15, Section 2550.4) and undertaking corrective actions where discharges of waste are subject to Water Code Section 13304.

25. SWRCB regulations governing the site investigation and corrective action at underground storage tank unauthorized release sites are contained in CCR, Title 23, Division 3, Chapter 16. In particular, Article 11 (ARTICLE 11), commencing with Section 2720 is applicable to this cleanup and abatement order.

26. This enforcement action is exempt from the provisions of the California Environmental Quality Act (Public Resources Code, Section 21000 et seq.) in accordance with Section 15321, Chapter 3, Title 14, California Code of Regulations.

27. MCB Camp Pendleton is currently pursuing remedial actions at other contaminated sites under the Department of Defense Installation Restoration (I.R.) Program. The I.R. program commonly uses the provisions and requirements of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA or "*Superfund*"). On June 17, 1996, the remedial project managers (RPMs) from the U.S. Environmental Protection Agency, the Department of Toxic Substances Control, U.S. Navy, and Marine Corps Base Camp Pendleton indicated they did not expect the the unauthorized release cases at any sites listed in CAO No. 88-51, and Addendum No. 1 to that Order, to be included in the CERCLA program at MCB Camp Pendleton.

IT IS HEREBY ORDERED, that pursuant to Section 13304 of the California Water Code, the U.S. Marine Corps (hereinafter the "*discharger*") shall comply with the following:

INTERIM REMEDIAL ACTION

1. The discharger shall implement interim remedial measures as necessary to:

   a.) remove free petroleum product from the water table as necessary as required by the California Code of Regulations (CCR), Title 23, Division 3, Chapter 16, Article 5 (Section 2655) and ARTICLE 11 (Section 2722(b)); and/or

   b.) abate or correct the actual or potential effects of an unauthorized release.

CORRECTIVE ACTION PLAN

2. Pursuant to the requirements of the CCR Title 23, Division 3, Chapter 16, ARTICLE 11; the discharger shall prepare and submit Corrective Action Plans (CAPs) to the RWQCB. The CAPs must contain all the elements specified in ARTICLE 11 (Section 2725) including:

   a.) an assessment of impacts in accordance with Article 11, Section 2725(e),

   b.) a feasibility study to evaluate site remediation and mitigation alternatives in accordance with ARTICLE 11, Section 2725(f),

   c.) cleanup levels in accordance with the requirements of ARTICLE 11, Section 2725(g) and which comply with the requirements listed in ARTICLE 11, Section 2721(b), SWRCB Resolution No. 92-49, and Directive No. 8 (see below) of this Order,

   d.) proposed method(s) and schedule for the monitoring and reporting the progress of remediation at the site. These results should be used by the discharger to evaluate the effectiveness of the approved corrective action alternative implemented by the discharger to remediate the soil and ground water contamination from the unauthorized release at this site. The results and the technical evaluation must be reported to the RWQCB Executive Officer for review and comment.

   Alternatively, the sites may be grouped according to site characteristics and one or more CAP(s) may be submitted to cover the cleanup of all the sites listed in this Order. The CAP(s) must be submitted to the RWQCB Executive Officer on or before **August 30, 1997.**

3. The feasibility study described in Directive 2b of this order shall contain an evaluation of alternatives for cleanup of soil and ground water. The evaluation shall be consistent with the requirements of CCR Title 23, Division 3, Chapter 16, ARTICLE 11 Section 2725(f) and include the following elements:

a.) An evaluation of the effectiveness, feasibility and cost of at least two alternatives to attain background ground water quality for the following constituents:

Constituents

Total Petroleum Hydrocarbons
Benzene
Toluene
Total Xylenes (*m- + p- + o-xylenes)*
Ethylbenzene
Total Lead
1,2-Dichloroethane (DCA)
Trichloroethene (TCE)

b.) An evaluation of the effectiveness, feasibility and cost of at least two alternatives to attain the following primary MCL water quality levels:

Constituents	Primary MCL (ug/L)
Benzene	1
Ethylbenzene	680
Toluene	150
Total Xylenes	1,750
Total Lead	50
1,2-Dichloroethane	0.5
Trichloroethene	5

c.) An evaluation of methods to control the spread of the dissolved contaminant plume off the facility/building site where the former/current UST was/is located.

d.) A comprehensive description of the cleanup and abatement activities associated with each recommended alternative.

e.) A proposed time schedule, including interim milestone dates, for completion of each recommended alternative.

f.) A recommended alternative for each cleanup level and a commitment to implement the recommended alternative.

g.) The discharger shall remove and/or treat all fuel contaminated soils to a level which will not cause site related contaminants to leach into the ground water at concentrations which exceed the water quality objectives.

4. The discharger shall modify the CAP(s) as directed by the RWQCB Executive Officer. Implementation of the CAP(s) may begin within 60 calendar days after submittal, unless the discharger is otherwise directed in writing by the RWQCB Executive Officer. Before implementing the proposed corrective action alternative, the discharger shall:

a.) notify the RWQCB Executive Officer of its intention to begin cleanup; and

b.) comply with any conditions set by the RWQCB Executive Officer, including the mitigation of adverse consequences from cleanup activities.

c.) The discharger shall modify or suspend cleanup activities when directed to do so by the RWQCB Executive Officer.

VERIFICATION SAMPLING AND MONITORING

5. Upon completion of corrective action, the discharger shall perform soil sampling and ground water monitoring which is necessary to verify: a) the effectiveness of the selected remedial alternative(s) identified in the Corrective Action Plan(s) and/or b) other interim remedial action(s) implemented at the site. The discharger shall prepare a proposed work plan for verification sampling and monitoring in compliance with Section 2727 of ARTICLE 11.

The work plan for verification sampling and monitoring of the completed corrective action plan (Directive Number 2) must be submitted to the RWQCB for review and approval within **120 days** of full implementation of the CAP. The discharger shall modify the proposed work plan as required by the RWQCB Executive Officer.

The results from the verification and monitoring work plan must be submitted to the RWQCB Executive Officer within **90 days** of approval of the verification and monitoring work plan by the RWQCB. An alternative deadline may be proposed to the RWQCB Executive Officer in the event that long-term monitoring is required at the site(s) included in the CAP(s).

A report documenting the completion of site cleanup must be submitted to the RWQCB Executive Officer by **September 30, 2002.**

6. The discharger shall manage all petroleum hydrocarbon contaminated ground water and/or soil, generated as a result of any corrective action work at this site, in accordance with all applicable local, state and federal regulations and requirements.

7. Based upon review of the Corrective Action Plan, interim remediation action work plan and/or verification sampling and monitoring results, the RWQCB Executive Officer may amend this cleanup and abatement order to identify the target ground water and soil cleanup levels to be attained at the site. If this Order is not amended by the RWQCB Executive Officer, then:

   a.) The water quality protection standards (maximum contaminant levels) identified in Finding 21 of this Order will be the maximum ground water contaminant concentration levels allowed for the site.

   b.) Residual fuel contaminant concentrations in soils at the site must be low enough so that leachable contaminants will not degrade water quality at the site. The discharger shall propose to the RWQCB Executive Officer a range of site specific soil cleanup levels based upon a technical evaluation of results from contaminant leachability tests for an adequate number of significantly contaminated soils samples collected from each site. The proposed soil cleanup levels must comply with the water quality protection requirements of CCR Title 23, Chapter16, ARTICLE 11; SWRCB Resolution No. 92-49; and the RWQCB Basin Plan (1994).

The discharger shall implement the Corrective Action Plan in accordance with a time schedule proposed by the discharger and approved by the RWQCB Executive Officer. The discharger shall modify the proposed Corrective Action Plan as required by the RWQCB Executive Officer.

GROUND WATER MONITORING

8. The discharger shall continue monitoring ground water at the sites identified in Finding No. 13 (above). The discharger has proposed a detailed ground water monitoring plan, including the number of wells to be monitored and the frequency of monitoring in the *"Final Sampling and Analysis Plan"* prepared by IT Corporation and dated November 17, 1995. RWQCB staff conditionally concurred with the proposed ground water monitoring plan in a letter dated

December 27, 1995. The RWQCB Executive Officer may require or approve further modifications of the corrective action requirements, number of wells and/or the frequency of ground water monitoring and reporting as necessary.

9. All ground water wells shall be constructed in a manner that maintains the integrity of the borehole and prevents cross-contamination of the saturated zones. The wells shall be constructed and maintained in accordance with the requirements of CCR Title 23, Chapter 16, Article 4; Department of Water Resources (DWR) Bulletins 74-81 and 74-90; and other requirements from the local permitting agency (San Diego County Department of Environmental Health- SDDEH). All well logs shall be reported to the appropriate State (DWR) and local (SDDEH) agencies. In case of a conflict between the well construction or maintenance requirements, the discharger shall adopt the most stringent of the requirements as its well construction standard.

10. New ground water monitoring wells shall be designed and certified as adequate pursuant to CCR Title 23, Chapter 15, Section 2555 by a registered geologist or a registered civil engineer in the State of California.

11. After purging, a representative water sample should be collected when the water level reaches 80% of the static water level. If 80% recovery of the initial water level exceeds two hours, a sample should be collected as soon as the water level is sufficient to recover a representative sample.

12. Alternative ground water sampling methods may be proposed by the discharger by providing a clear and concise written rationale and proposal for consideration by the RWQCB Executive Officer.

13. For each indicator compound or waste constituent specified in this order, the discharger shall use appropriate statistical and/or graphical techniques to evaluate trends in concentrations from the ground water samples. An evaluation of trends in contaminant concentrations from ground water samples shall be conducted by the discharger on an annual schedule (see Directive No. 16 below). The results of this analysis shall be reported to the RWQCB Executive Officer as an appendix to the final ground water monitoring report for each calendar year. Monitoring reports shall be signed by the preparer of the report and an appropriately registered professional (registered geologist or registered civil engineer) under Sections 6735, 7835 and 7835.1 of the California Business and Professions Code.

14. A letter of transmittal shall accompany each submitted ground water monitoring report. The letter should discuss the essential points in each monitoring report. Such a letter shall discuss any significant findings, violation(s) of requirements

found during the monitoring period and actions taken or planned for correcting the violation(s). If the discharger has previously submitted a detailed time schedule for correcting violation(s), a reference to the correspondence transmitting such schedule will suffice. If no violations have occurred in the last monitoring period, it shall be stated in the letter of transmittal. The letter of transmittal must be signed by the Commanding General at MCB Camp Pendleton or his duly authorized representative.

REPORTING GROUND WATER MONITORING RESULTS

15. The Ground Water Monitoring Report(s) prepared to satisfy requirements of Ground Water Monitoring Requirements of Directive No. 8 of this order must include the following minimum information:

a.) Report of the historical observations of the measured depths to free petroleum product (NAPL) and ground water in each well associated with Area 12 and 13 sites at MCB Camp Pendleton. Provide a narrative description of the method(s) used to make the required measurements. For each well, tabulate data on depth to free petroleum product (NAPL), NAPL thickness, depth to ground water, top of casing elevations, depths to the top of well screens and total depth for each well included in the monitoring program.

b.) Provide ground water elevation contour maps for the site with the ground water flow direction and calculated hydrologic gradient(s) clearly indicated on the figure(s).

c.) Provide a site plot plan which clearly illustrates the locations of monitoring wells, above ground tanks, former/current underground storage tank systems (and product piping) and buildings located on site and immediately adjacent to the property lines of the site.

d.) A detailed description of sample collection protocol (e.g., well purging, sample collection equipment, sample preservation and shipment procedures and decontamination procedures). Provide a narrative description of how investigation derived wastes (IDW) are managed at the site. Provide documentation (e.g., manifests/receipts) of proper disposal of contaminated well purge water and/or soil cuttings removed from the site.

e.) Analyze ground water samples from all ground water monitoring wells approved by the RWQCB Executive Officer in Directive No. 8 of this order for the following contaminants using the specified U.S. EPA test methods:

Constituent	EPA Test Method
Total Petroleum Hydrocarbons	TPH-DHS or EPA Method 8015
Volatile Aromatic Hydrocarbons	EPA Method 8020

Constituent	EPA Test Method
Total Lead	EPA Method 6010 *only for the first round sample for each new well.*
Methyl-tertiary-butyl ether (MTBE)	EPA Method 8020, 8240 or 8260 *only for the first round samples collected from the 13 Area Motor Pool sites (13-161, 13-162, 13-163, 13-176, and 17-PIPE). The need for further MTBE data will be determined by the Executive Officer after reviewing the preliminary data.*
Chlorinated Hydrocarbons	EPA Method 8010 or 8240 for wells where previous data indicate the presence of these contaminants.

TPH analyses shall include the full range of petroleum hydrocarbons from C_6 to C_{24} in each analysis. For sites contaminated with lubricating oil or waste oil, ground water samples must be analyzed for total recoverable hydrocarbons (TRPH) using EPA Method 418.1 in place of the TPH analysis required above. Ground water samples need not be collected for analysis from wells which contain measurable levels of free petroleum products.

g.) Provide copies of laboratory data sheets, laboratory QA/QC information and chain-of-custody documents for the most recent round of ground water samples collected for each report.

h.) Provide a site plot plan (as in Directive 15(c) above) with most recent concentrations of total petroleum hydrocarbons and volatile aromatic hydrocarbons (e.g. benzene, toluene, ethylbenzene and total xylenes) with each ground water monitoring report.

i.) Provide a narrative description of the current site conditions and a brief summary of known site hydrogeologic conditions.

j.) Provide technical interpretations of the ground water data, conclusions and recommendations for future action with each report.

k.) Provide a tabulation of historical ground water analytical data collected from the site.

16. Unless modified by the RWQCB Executive Officer (see Directive No. 8, above), the discharger shall submit the ground water monitoring reports to the RWQCB in accordance with the following schedule:

a.) For the first year ground water data shall be collected an reported on a quarterly schedule as specified below:

REPORT	REPORT PERIOD	DUE DATE
Quarterly	January, February, March April, May June July, August, September October, November, December	April 30 July 31 October 30 January 30
Annual	January - December	January 30

The first quarterly ground water monitoring report is due by **October 31, 1996.**

b.) Beyond the first year, ground water data shall be collected and reported on a semi-annual and annual schedule as specified below:

REPORT	REPORT PERIOD	DUE DATE
Semi-Annually	October through March April through September	April 30 October 30
Annual	October - September	October 30

The reporting of ground water monitoring results is to be implemented according to the schedules listed above until modified in writing by the RWQCB Executive Officer.

NOTIFICATIONS

17. Before implementation of the remediation alternative begins, the discharger shall:

    a) notify the RWQCB Executive Officer and in writing, by registered mail, of its intention to begin cleanup in accordance with the approved Corrective Action Plan alternative;

    b) Comply with any conditions set by the RWQCB Executive Officer, including mitigation of any adverse consequences from site remediation activities; and

18. The dischargers must notify the RWQCB Executive Officer by telephone or facsimile within 24-hours of any emergency conditions created by the discharge of wastes to land or water resources as a result of corrective actions taken at this site. The initial notification must be followed by a detailed written description of the discharge, an explanation of the conditions which lead to the discharge of wastes and the emergency remedial actions taken to mitigate the effects of the discharge. The written notification shall be sent to the RWQCB Executive Officer by registered mail.

PROHIBITIONS

19. The discharger shall properly manage, treat and/or dispose of contaminated soils and ground water in accordance with applicable federal, state and local regulations.

20. Neither the treatment nor the discharge of wastes shall create a pollution or a nuisance as defined in Section 13050, Division 7 of the California Water Code.

21. The discharge of any low volume non-hazardous wastes or waste constituents which are generated as a result of corrective action at this site is prohibited unless the discharge is permitted under the National Pollutant Discharge Elimination System (NPDES) or by issuance of Waste Discharge Requirements by the RWQCB under Section 13260 of the California Water Code.

PROVISIONS

22. The Cleanup and Abatement Order No. 88-51 and Addendum No. 1 to that Order are hereby rescinded with the adoption of Cleanup and Abatement Order No. 96-49.

23. During the corrective action process, if the discharger is able to demonstrate to the satisfaction of the RWQCB Executive Officer that conditions at all sites listed in this Order are in compliance with the ground water and soil cleanup levels (see Directive 7), the RWQCB Executive Officer may recommend to the RWQCB a rescission of the remaining Directives of this Cleanup and Abatement Order.

24. Failure to comply with the time schedule established in this Cleanup and Abatement Order may result in the imposition of civil liabilities, under California Water Code Section 13308, in an amount not to exceed ten thousand dollars ($10,000) for each day the violation occurs.

25. Failure to submit technical reports required under this Cleanup and Abatement Order may result in the imposition of civil liabilities, under the California Water Code Section 13350(d), in an amount not to exceed fifteen thousand dollars ($15,000) for each day in which the violation occurs.

JOHN H. ROBERTUS
Executive Officer

Date issued: July 19, 1996

CLEANUP AND ABATEMENT ORDER NO. 96-49
U.S. MARINE CORPS BASE, CAMP PENDLETON
AREAS 12 AND 13 UNDERGROUND STORAGE TANK SITES
SAN DIEGO COUNTY

TABLE 1: SCHEDULE OF COMPLIANCE FOR DIRECTIVES IN RWQCB CLEANUP AND ABATEMENT ORDER No. 96-49

C&A DIRECTIVE	SUBMITTAL	DUE DATE
2	Submit a Corrective Action Plan (CAP) to RWQCB.	August 30, 1997
5	Submit a work plan for verification sampling and monitoring to the RWQCB.	Within 120 days after full implementation of an approved CAP.
5	Submit the results from the verification and monitoring phase of corrective action.	Within 90 days after approval of a verification and monitoring sampling work plan.
5	Submit a report to the RWQCB to document the completion of corrective action at the site.	September 30, 2002

TABLE 2: GROUND WATER MONITORING/REPORTING SCHEDULES

For the first year, beginning October 31, 1996:

REPORT	REPORT PERIOD	DUE DATE
Quarterly	January, February, March April, May June July, August, September October, November, December	April 30 July 31 October 30 January 30
Annual	January - December	January 30

TABLE 2 (continued)

For subsequent years until cleanup is completed to the satisfaction of the RWQCB Executive Officer in accordance with the Directives of CAO 96-49:

REPORT	REPORT PERIOD	DUE DATE
Semi-Annually	October through March	April 30
	April through September	October 30
Annual	October - September	October 30

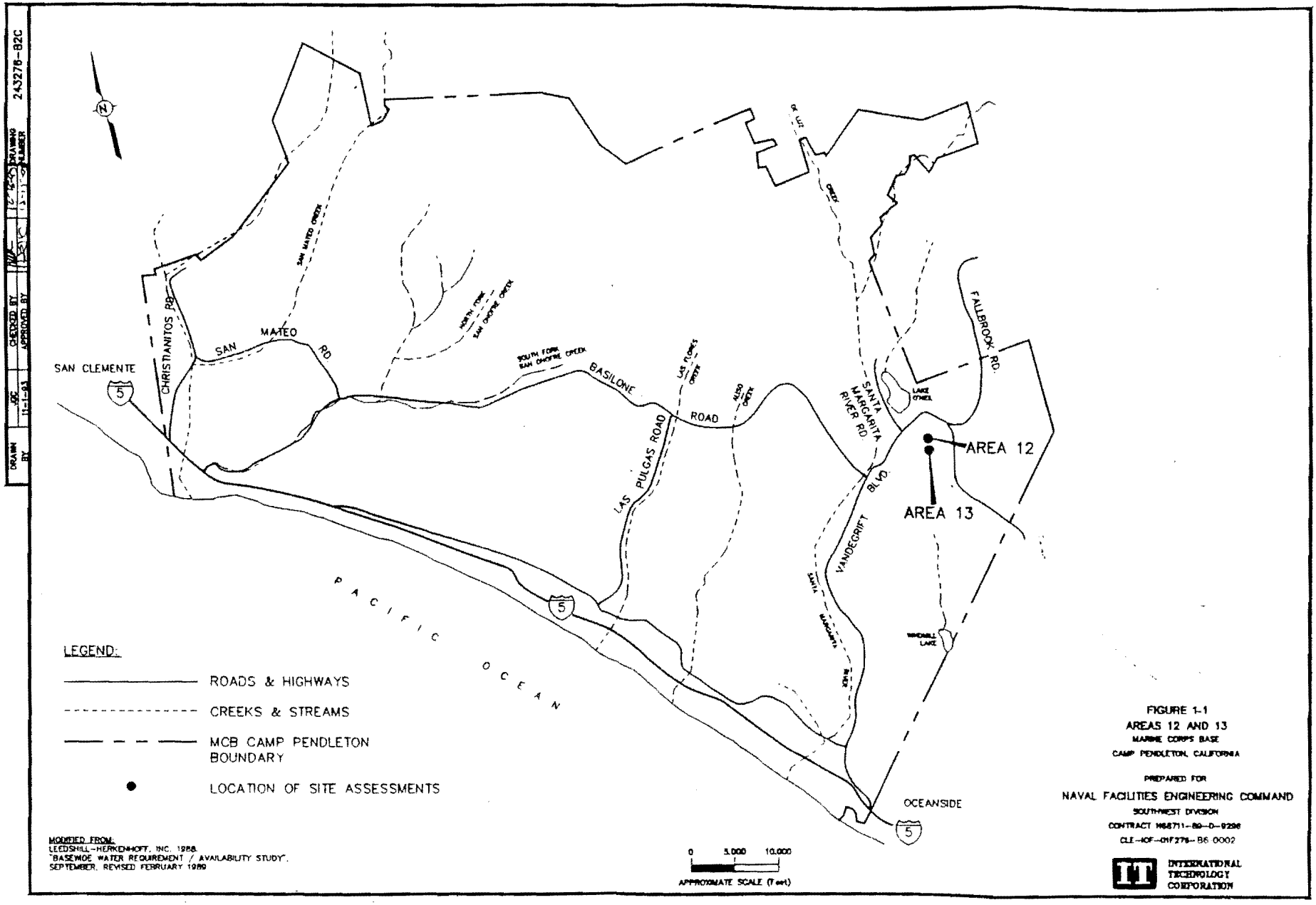

FIGURE 1-1
AREAS 12 AND 13
MARINE CORPS BASE
CAMP PENDLETON, CALIFORNIA

PREPARED FOR
NAVAL FACILITIES ENGINEERING COMMAND
SOUTHWEST DIVISION
CONTRACT N68711-89-D-9298
CLE-40F-01F276-B6 0002

INTERNATIONAL TECHNOLOGY CORPORATION