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MCAS EL TORO
SSIC # 5090.3

TITLE: CLEANUP & ABATEMENT ORDER NO.
87 - 97; MCAS EL TORO TCE IN-
INVESTIGATION

AUTHOR: JAMES R. BENNETT/CALIFORNIA REGIONAL
WATER QUALITY CONTROL BOARD

DATE: 07/08/87
CATEGORY: 1.2

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SANTA ANA REGION
6809 INDIANA AVENUE, SUITE 200
RIVERSIDE, CALIFORNIA 92506
PHONE: (714) 782-4130

CLE-001-01F018-A-0078



July 8, 1987

Captain S. R. Holm, Jr., CEC, USN
Director, Facilities Management
Marine Corps Air Station El Toro (JA)
Santa Ana, CA 92709-5001

CLEANUP AND ABATEMENT ORDER NO. 87-97; MCAS EL TORO TCE INVESTIGATION

Dear Captain Holm:

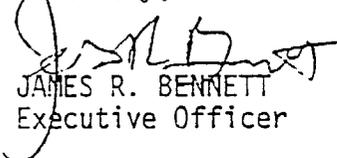
This transmits a copy of Cleanup and Abatement Order No. 87-97 for the trichloroethylene (TCE) investigation at the Marine Corps Air Station, El Toro.

This order requires the submission of a supplement (by September 15, 1987) to the proposed Perimeter Investigation Plan of Action that adequately addresses the existence of off-site ground water contamination with TCE near the El Toro Facility. In addition, this order requires the initiation of these investigation activities by January 15, 1988, and the submittal of a draft report by June 15, 1988.

Based on our discussions with LTJG Cheryl Churchman of your staff on June 30, 1987, we believe the required time schedule for these activities is achievable.

If you have any questions, please call me or Kurt Berchtold or Steven Overman of our Pollutant Investigation Section.

Sincerely,


JAMES R. BENNETT
Executive Officer

Enclosure: Cleanup and Abatement Order No. 87-97

cc: w/enclosure
Orange County Health Care Agency - John Hills
Orange County Water District - Jim Reilly
State Department of Health Services - Frank T. Hamamura
State Water Resources Control Board, Office of Chief Counsel,
Ted Cobb
Irvine Ranch Water District - Keith Lewinger
The Irvine Company - Sat Tamaribuchi
Regional Board Members

SDO:kyb

#2

California Regional Water Quality Control Board
Santa Ana Region

Cleanup and Abatement Order No. 87-97
for
United States Marine Corps
Marine Corps Air Station, El Toro
Orange County

The California Regional Water Quality Control Board, Santa Ana Region (hereinafter Board), finds that:

1. The United States Marine Corps (hereinafter USMC) currently operates the Marine Corps Air Station (MCAS), El Toro. This approximately 5000 acre facility is located in the El Toro area of central Orange County, and is shown on the attached map which is made a part of this order.
2. The USMC operates and maintains approximately 175 aircraft at this facility. The aircraft support functions and the aircraft, vehicle, and facility maintenance operations require the storage and use of large volumes of fuels (jet, gasoline and diesel), solvents, oils, pesticides, and other hazardous materials. The hazardous wastes from these operations are currently accumulated on-site prior to collection for off-site disposal. However, past waste management practices, although acceptable at the time, included on-site disposal.
3. In 1980, the Department of Defense developed the Installation Restoration Program (IRP) to address past hazardous substance storage, use, and disposal practices on Department of Defense property. As a part of this program, the Navy developed the Navy Assessment and Control of Installation Pollutants (NACIP) program. The Navy is currently investigating the MCAS El Toro facility under the NACIP program.
4. In June, 1985, the Orange County Water District sampled several agricultural supply wells located in the El Toro area of Orange County. This sampling program detected trichloroethylene (TCE) in The Irvine Company (TIC) Wells No. 35, 47 and 55. TIC Well No. 55 is located in the western corner of the MCAS El Toro while TIC Wells No. 35 and 47 are located downgradient of the facility. The samples from TIC Well No. 47 indicated up to 48.7 parts per billion (ppb) of TCE as well as trace amounts of tetrachloroethylene (PCE) and chloroform. The State Department of Health Services recommended Drinking Water Action Level for TCE is 5.0 ppb.

5. The Orange County Water District subsequently initiated a study to investigate possible sources and determine the areal extent of this contamination. This study included the use of a soil gas vapor sensing technique to detect the presence of volatile organic compounds in the vadose zone. This investigation identified several localized areas of PCE contamination, including an area near TIC Well No. 47; however, no detectable levels of TCE were encountered. The final report identified the USMC El Toro facility as the probable source of this contamination and recommended further field investigations.
6. Orange County Water District continued to monitor the TCE levels in TIC Wells No. 35, 47 and 55. The sampling results for June, 1985 through April, 1987 are summarized below:

| <u>TIC Well No.</u> | <u>Range of TCE Contamination (ppb)</u> |
|---------------------|---|
| 35 | 11.4 to 48.7 |
| 47 | 3.0 to 10.5 |
| 55 | 0.4 to 0.7 |

7. In response to the local TCE and PCE contamination, the Western Division of the Naval Facilities Engineering Command initiated a Perimeter Investigation to determine whether the TCE contamination observed at The Irvine Company wells on and near MCAS El Toro is a result of past waste generation and/or disposal activities at the air station. This investigation is being conducted under the NACIP program as part of the Verification Phase of the Confirmation Study.
8. In April, 1987, the Navy submitted a draft Perimeter Investigation Plan of Action. This proposed investigation includes the identification of potential localized and non-localized sources of contamination, an evaluation of the local contaminant transport mechanisms, an examination of the local hydrogeology and the development of a model, and the installation of verification monitoring wells. However, the proposed investigation is limited to the MCAS El Toro facility and does not address the verification or extent of any off-site contamination.
9. According to the time schedule proposed in the draft Perimeter Investigation Plan of Action, the investigation activities and the development of a draft report will take approximately nine months.

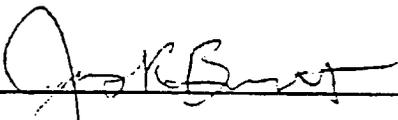
10. Surface runoff and discharges from MCAS El Toro are tributary to one of four main drainage channels: Marshburn Channel, Bee Canyon Wash, Aqua Chino Wash, and Borrego Canyon Wash. These channels traverse the El Toro facility in a generally southwest direction as tributaries of San Diego Creek. These drainage systems create a potential pathway for off-site migration of contaminants from the MCAS El Toro facility, and a mechanism for percolation of these contaminants at downstream locations. Therefore, restricting ground water assessment work to the MCAS El Toro site will not conclusively establish the extent of ground water contamination attributable to the facility.
11. On May 12, 1987, Board staff provided comments to the USMC on their proposed plan of action. Board staff commented that, based on existing evidence of off-site contamination, that it was inappropriate to limit the verification study to the MCAS El Toro property. The USMC did not propose additional off-site investigations in response to these comments.
12. On June 30, 1987, Board staff met with MCAS El Toro staff to discuss the need for additional off-site investigations. The time schedule in this order for the inclusion of these additional investigations in the proposed Perimeter Investigation Plan of Action and for initiating the project was established to be consistent with Department of Defense procurement regulations and procedures.
13. The MCAS El Toro facility overlies the Irvine Forebay Ground Water Subbasin, the beneficial uses of which include:
 - a. Municipal and domestic supply,
 - b. Agricultural supply,
 - c. Industrial service supply, and
 - d. Industrial process supply.
14. The geohydrology of the MCAS El Toro area is generally characterized by alluvial soils with alternating layers of water-bearing zones and less permeable layers of silt and clay. Local discontinuous zones of perched ground water occur at shallower depths, but the water-bearing zones generally occur at depths greater than several hundred feet. The main aquifer beneath the MCAS El Toro facility is unconfined and exhibits a locally northwest gradient and a regionally westward gradient.
15. The United States Marine Corps has caused or permitted wastes to be discharged into waters of the State and is creating, or is threatening to create, a condition of nuisance or pollution.

16. This action is being taken by a regulatory agency to enforce a water quality law and is, therefore, 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 Administrative Code.

IT IS HEREBY ORDERED that, pursuant to Section 13304, Division 7, of the California Water Code, the United States Marine Corps shall:

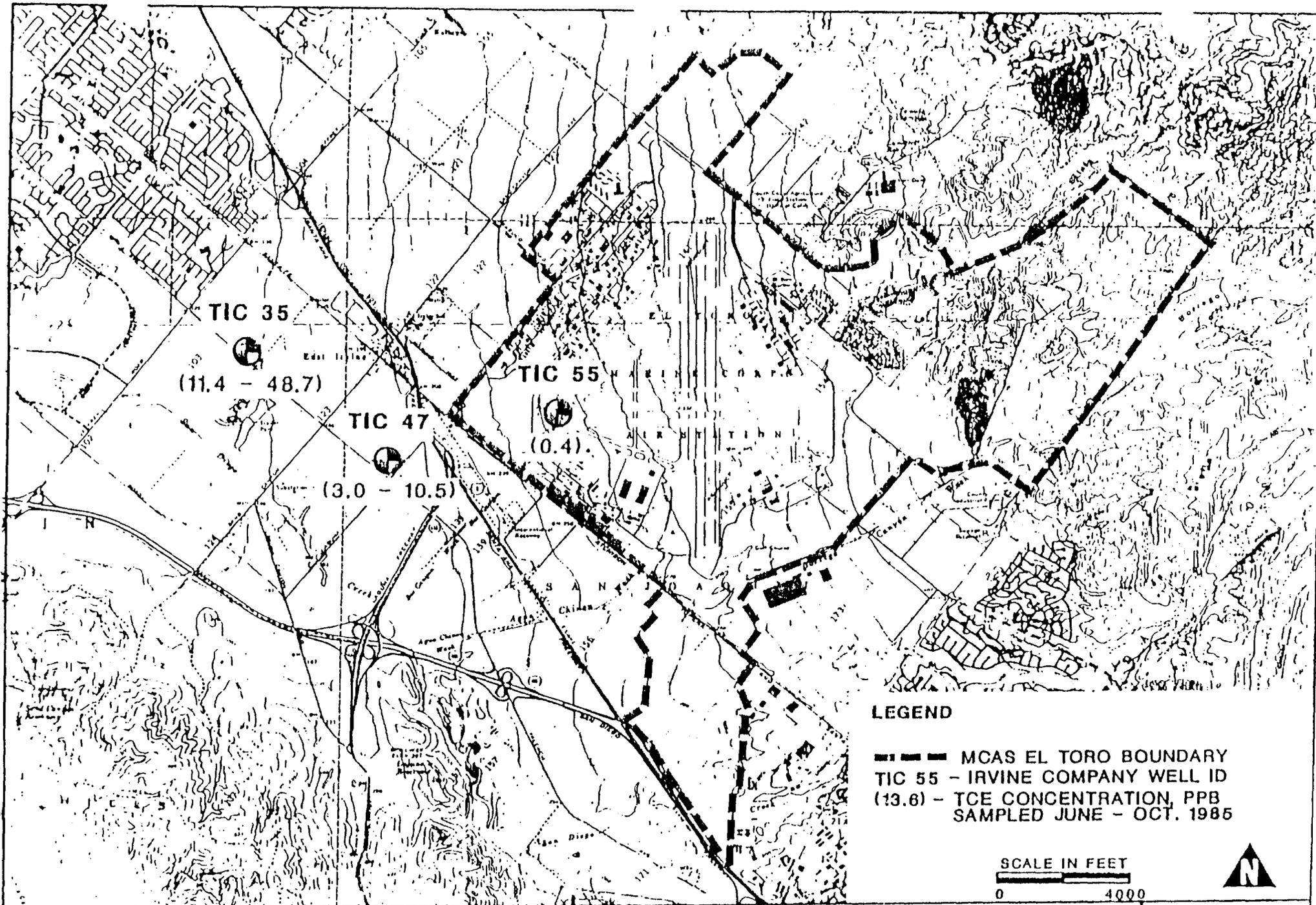
1. By September 15, 1987, submit a draft supplement to the proposed Perimeter Investigation Plan of Action that includes necessary off-site investigations to determine the extent of any ground water contamination attributable to the MCAS El Toro facility.
2. By January 15, 1988, initiate the proposed Perimeter Investigation Plan of Action and the supplementary off-site investigation as approved by the Executive Officer.
3. By the 10th day of each month, submit a progress report summarizing the investigation activities for the previous month.
4. By June 15, 1988, submit an interim report containing the findings of the field investigations performed to date and any available analytical results.
5. By September 15, 1988, submit a draft report on the perimeter investigation and the supplementary off-site investigation.

If, in the opinion of the Executive Officer, this order is not complied with in a reasonable and timely manner, the Board will consider referral of this matter to the Attorney General for judicial enforcement.



JAMES R. BENNETT
Executive Officer

July 8, 1987



PERIMETER INVESTIGATION MARINE CORPS
AIR STATION EL TORO, CALIFORNIA

LOCALE OF SUPPLY WELLS WITH
REPORTED TCE LEVELS (ppb)

FIGURE 1-1

California Regional Water Quality Control Board
Santa Ana Region

September 11, 1987

ITEM: 18

SUBJECT: Status of Compliance with Cleanup and Abatement Order No. 87-97 for the United States Marine Corps, Marine Corps Air Station, El Toro.

DISCUSSION:

Summary

The purpose of this item is to inform the Board of the status of compliance with Cleanup and Abatement Order No. 87-97 issued to the United States Marine Corps, Marine Corps Air Station, El Toro. This order was issued by the Executive Officer on July 8, 1987, and requires the U. S. Marine Corps to expedite and expand the investigation of trichloroethylene (TCE) contamination in several nearby ground water supply wells, and to include appropriate off-site investigation and characterization work. However, a recent response by the U. S. Marine Corps indicates that they may violate this order.

This report discusses possible Board and staff actions in response to the threatened noncompliance with Cleanup and Abatement Order No. 87-97. In addition, this item presents background information and discusses the current status of the investigation.

Background

The United States Marine Corps (USMC) currently operates the Marine Corps Air Station (MCAS) El Toro located in the El Toro area of central Orange County. In operation since 1943, this facility has grown to its current size of approximately 5000 acres. MCAS El Toro is the center for Marine aviation on the Pacific Coast, and the USMC currently operates and maintains approximately 175 jet aircraft at this facility. These aircraft are either deployed at MCAS El Toro or at bases along the Pacific Perimeter.

The MCAS El Toro facility is located on the Tustin Plain, an area bounded by the Santa Ana Mountains to the east and by the San Joaquin Hills to the south. The hydrogeology of the Tustin Plain is generally characterized by alluvial soils with alternating layers of water-bearing zones and less permeable layers of silt and clay. Local discontinuous zones of perched

ground water occur at shallower depths, but the major water-bearing zones generally occur at depths greater than several hundred feet.

The MCAS El Toro facility overlies the Irvine Forebay Ground Water Subbasin, the beneficial uses of which include municipal and domestic supply, agricultural supply, industrial service supply, and industrial process supply. The main aquifer beneath the MCAS El Toro facility is unconfined and exhibits a locally northwest gradient and a regionally westward gradient. Historically, the most predominant land use in the area surrounding the base has been agriculture. As a result, several agricultural supply wells are located on and near the MCAS El Toro facility.

In June 1985, the Orange County Water District (OCWD) conducted a ground water sampling program for the agricultural supply wells in the El Toro area. This sampling program detected trichoroethylene (TCE) in three agricultural supply wells owned by The Irvine Company (TIC). These wells are designated TIC 35, 47, and 55 and are shown on an attached map (Figure 1). TIC Well No. 55 is located in the western corner of MCAS El Toro while TIC Wells No. 35 and 47 are located downgradient of the facility. The samples from TIC Well No. 47 contained up to 48.7 parts per billion (ppb) of TCE and trace amounts of tetrachloroethylene (PCE) and chloroform. The State Department of Health Services recommended Drinking Water Action Level for TCE is 5.0 ppb. The OCWD continued to monitor the level of TCE in TIC Wells No. 35, 47 and 55. The sampling results for June 1985 through April 1987 are summarized below:

| <u>TIC Well No.</u> | <u>Range of TCE Contamination (ppb)</u> |
|---------------------|---|
| 35 | 11.4 to 48.7 |
| 47 | 3.0 to 10.5 |
| 55 | 0.4 to 0.7 |

Following the initial finding of TCE in the TIC wells, the OCWD initiated a study to investigate possible sources and determine the areal extent of the contamination. This study was conducted by William R. Mills and Associates. This study included the use of a soil vapor sensing technique to detect the presence of volatile organic compounds (VOC's) in the unsaturated zone above the ground water. A positive identification of VOC's (including TCE and PCE) in the soil vapor can be an indication of contamination in the soil or ground water. A total of 55 soil vapor collectors were placed on a grid in the areas surrounding the southwest, west and northwest portions of the base.

This investigation identified several localized areas of PCE contamination, including an area near TIC Well No. 47; however, no detectable levels of TCE were encountered. The locations of these PCE plumes are shown on an attached map (Figure 2). The report identified the MCAS El Toro facility as one of the possible sources of the PCE and TCE contamination and recommended additional field investigations to confirm the source or sources.

MCAS El Toro Investigations

In response to the local TCE and PCE contamination, the Western Division of the Naval Facilities Engineering Command initiated a Perimeter Investigation to determine whether the TCE contamination observed at The Irvine Company wells on and near MCAS El Toro is a result of past waste generation and/or disposal activities at the air station. This proposed investigation is being conducted under the Installation Restoration Program (IRP) as part of the Verification Phase of the Confirmation Study. This proposed Perimeter Investigation includes the identification of potential localized and non-localized sources of contamination, an evaluation of the local hydrogeology, the development of a hydrogeologic model, and the installation of verification monitoring wells. However, the proposed investigation is limited to the MCAS El Toro facility and does not address the verification or extent of any off-site contamination.

Although the USMC believes that it has not been verified that the MCAS El Toro facility is the source of the ground water contamination identified at the TIC wells, several potential source areas and contaminant transport mechanisms exist at the facility. The source areas include localized and nonlocalized sources defined by both past waste disposal practices and past and current solvent use operations. Contaminants from the localized sources may have infiltrated vertically into the soil and ground water and then migrated downgradient in the aquifers to the TIC wells. Alternatively, contaminants from the nonlocalized sources may have been mobilized and transported through surface drainage systems for subsequent percolation at downstream locations and migration in the aquifers to the TIC wells.

In general, the base operations require the storage and use of large volumes of fuels (jet, gasoline and diesel), solvents, oils, pesticides, and other hazardous materials. Currently, the hazardous wastes generated by base operations are accumulated on-site prior to collection for off-site disposal. However, past waste management practices, although acceptable at the time, included disposal to on-site landfills. The solvent wastes disposed of on-site included both PCE and TCE. These on-site waste disposal areas are described on an attached table (Table 1) and are currently under investigation as part of the IRP program.

In addition to the waste disposal sites, the base includes several past and current solvent use locations where discharges, spills or chronic releases of PCE and TCE may have occurred. These solvent use locations are generally characterized by aircraft, vehicle or facility maintenance operations. These solvent use areas and operations are summarized on an attached table (Table 2) and their locations are indicated on an attached map (Figure 3).

Historically, these base operations routinely used TCE as a solvent material. However, its use by MCAS El Toro and many other aerospace and industrial facilities was gradually phased out by the late seventies due to its evolving status as a suspected carcinogen. In 1980, the Environmental Protection Agency listed TCE as a suspected carcinogen. Other solvents, primarily 1,1,1-trichloroethane (TCA) or tetrachloroethylene (PCE) were then substituted for TCE and became more widely used.

In addition to the localized sources, several nonlocalized potential sources for the TCE and PCE contamination exist on MCAS El Toro. These sources include the sanitary sewage system, the storm sewers and the various surface channels that traverse the base. TCE or PCE may have been transported to these facilities by surface spills, the washdown of cement pads or washracks with solvents, or discharges into the oil/water separators and floor drains. Once in these facilities, the TCE or PCE may exfiltrate or percolate into the soil and ground water at downstream locations.

Any surface runoff or discharges from MCAS El Toro are tributary to one of four main drainage channels: Marshburn Channel, Bee Canyon Wash, Aqua Chinon Wash, and Borrego Canyon Wash. These channels traverse the El Toro facility in a generally southwest direction as tributaries of San Diego Creek. As discussed above, these drainage channels create a pathway for the downstream or eventual off-site migration of contaminants from MCAS El Toro. These surface channels are shown on an attached map (Figure 4).

As indicated by Figures 4 and 2, most of the plumes of PCE found by the OCWD investigation are located near these surface channels. Based on these findings and the history of TCE and PCE use by MCAS El Toro, it is possible that the shallow PCE contamination represents more recent events of release, surface transport, and percolation, while the TCE contamination indicated by the TIC wells represents earlier or historic events. Because it was used earlier, the TCE may have had a sufficient amount of time to move from the shallow soils (precluding its detection in the vapor survey) and into the deeper ground water aquifers for eventual downgradient migration to the TIC wells.

Off-Site Investigations

In addition to MCAS El Toro, other potential sources of the TCE contamination and the shallow PCE contamination may exist off-site. Although the land surrounding MCAS El Toro is predominantly used for agriculture, this area includes the former Orange County International Raceway, a garage, and other potential sites where the use and release of solvents may have occurred. Board staff is currently working with The Irvine Company and the Orange County Water District to positively identify and investigate these potential sources and to determine whether they may have contributed to or caused the contamination at the TIC wells.

Cleanup and Abatement Order No. 87-97

On July 8, 1987, the Executive Officer issued Cleanup and Abatement Order No. 87-97 to the United States Marine Corps. In part, this order required the U. S. Marine Corps to:

- "1. By September 15, 1987, submit a draft supplement to the proposed Perimeter Investigation Plan of Action that includes necessary off-site investigations to determine the extent of any ground water contamination attributable to the MCAS El Toro facility."
- "2. By January 15, 1988, initiate the proposed Perimeter Investigation Plan of Action and the supplementary off-site investigation as approved by the Executive Officer."

On August 13, 1987, the Executive Officer received a letter from the U. S. Marine Corps in reply to Cleanup and Abatement Order No. 87-97. In effect, the USMC refused to conduct any necessary off-site investigations as part of its Perimeter Investigation. The letter included the following statement:

"...it is uncertain whether the Department of the Navy has authority to expend its funds on an investigation of contamination discovered on private property, absent some preliminary indication that the source of contamination is the federal facility. In short, the problem has not been sufficiently studied and should be studied further..."

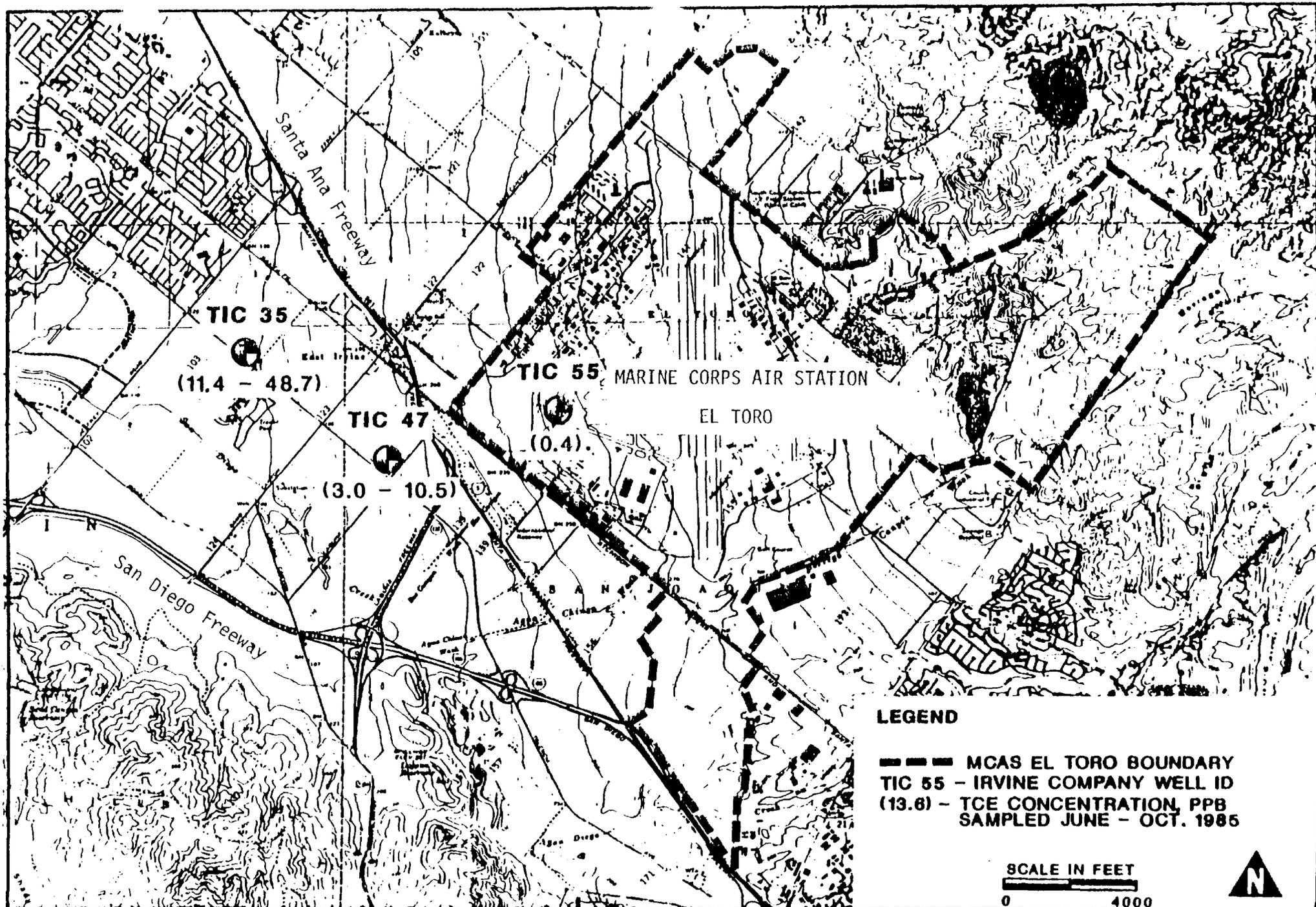
In light of this response from the U. S. Marine Corps, it appears that the requirements of Items No. 1 and 2 of Cleanup and Abatement Order No. 87-97 will not be met. This therefore constitutes a threatened violation of the cleanup and abatement order.

Conclusion

Based on past TCE and PCE use and disposal practices at MCAS El Toro, the available contaminant transport mechanisms, and the findings of previous investigations, Board staff believes MCAS El Toro is the major source of the TCE contamination of the TIC wells. Therefore, Board staff believes the United States Marine Corps should conduct an appropriate off-site investigation in addition to the source confirmation study to fully address the level and extent of the resulting off-site contamination.

RECOMMENDATION:

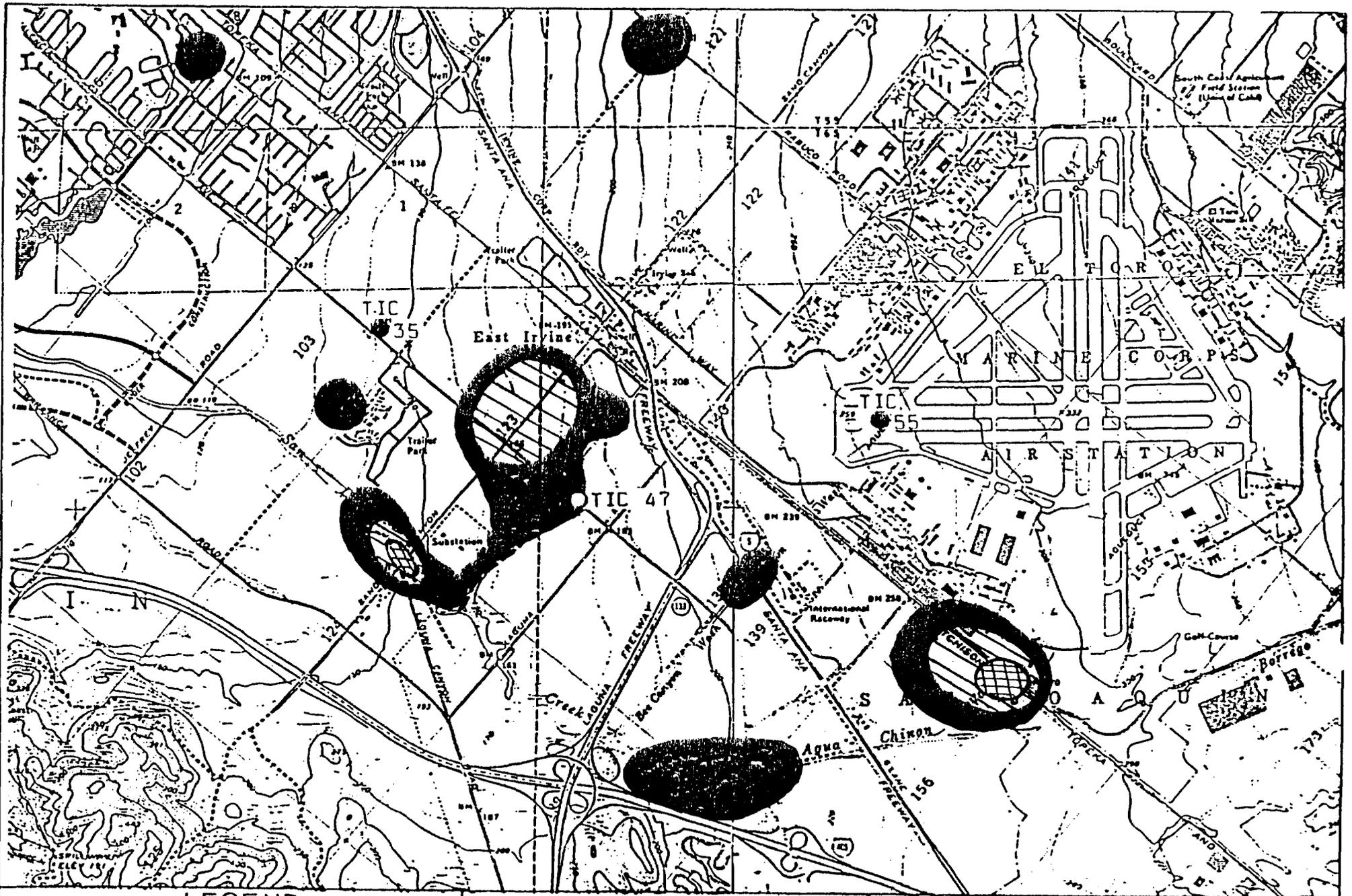
Staff recommends that, unless the United States Marine Corps can provide sufficient evidence contrary to the findings of previous investigations and the conclusion that MCAS El Toro is the major source of the TCE contamination of the TIC wells, the Executive Officer be directed to refer significant violations of Cleanup and Abatement Order No. 87-97 to the Attorney General for injunctive relief.



PERIMETER INVESTIGATION MARINE CORPS AIR STATION EL TORO, CALIFORNIA

LOCALE OF SUPPLY WELLS WITH REPORTED TCE LEVELS

FIGURE 1



LEGEND
PCE CONCENTRATIONS (No. of molecules)

| | |
|---|-----------|
|  | 200-999 |
|  | 1000-9999 |
|  | >10,000 |

FIGURE 2
PCE FLUX MAP

William R. Mills & Associates
 Water Resources Management Consultants
 895 E. Yorba Linda Blvd., Suite J, Placentia, CA 92670
 Telephone: (714) 579-1455

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SANTA ANA REGION
6809 INDIANA AVENUE, SUITE 200
RIVERSIDE, CALIFORNIA 92506
PHONE: (714) 782-4130



July 8, 1987

Captain S. R. Holm, Jr., CEC, USN
Director, Facilities Management
Marine Corps Air Station El Toro (JA)
Santa Ana, CA 92709-5001

CLEANUP AND ABATEMENT ORDER NO. 87-97; MCAS EL TORO TCE INVESTIGATION

Dear Captain Holm:

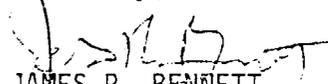
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If you have any questions, please call me or Kurt Berchtold or Steven Overman of our Pollutant Investigation Section.

Sincerely,


JAMES R. BENNETT
Executive Officer

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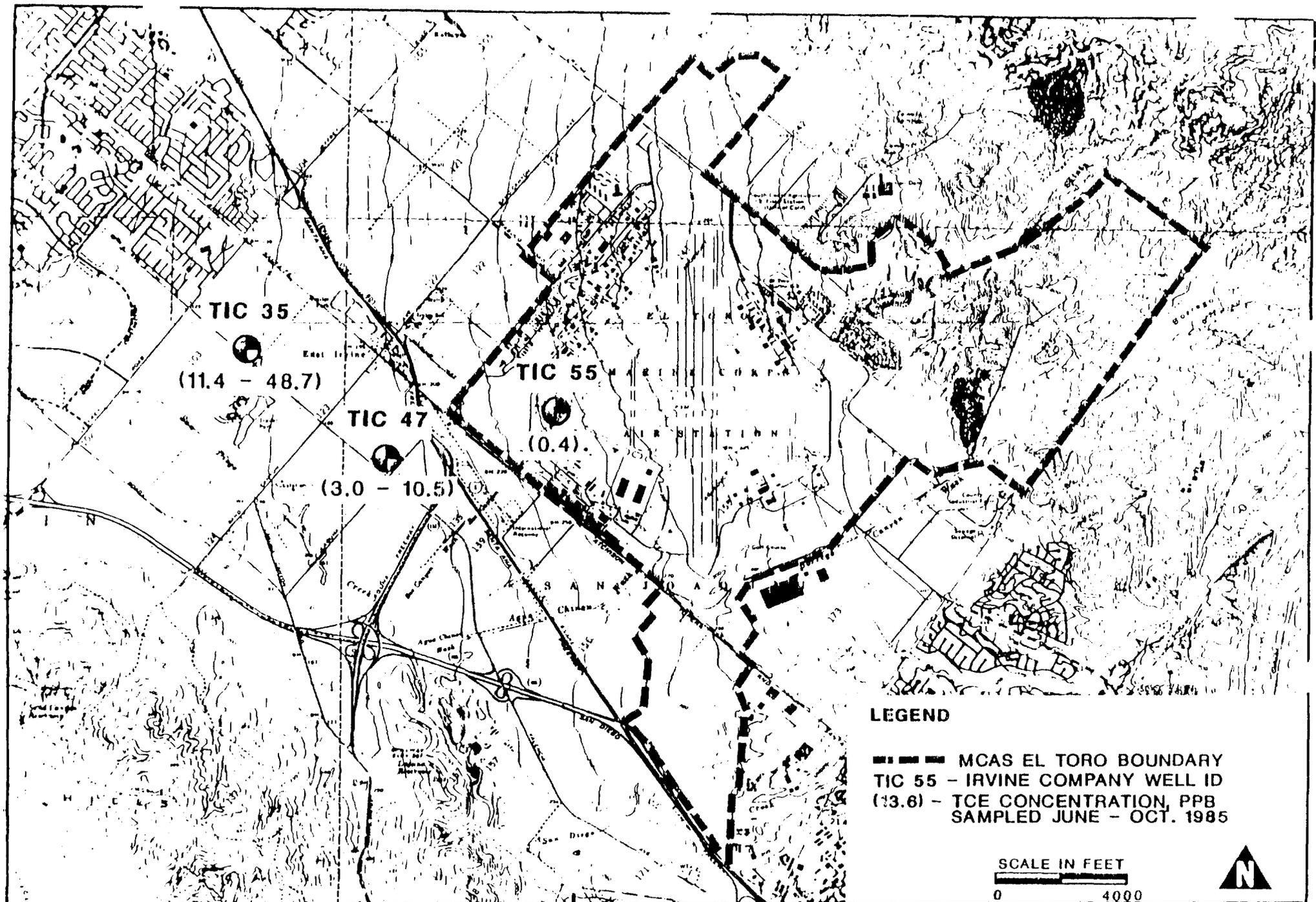
California Regional Water Quality Control Board
Santa Ana Region

Cleanup and Abatement Order No. 87-97
for
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Marine Corps Air Station, El Toro
Orange County

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1. The United States Marine Corps (hereinafter USMC) currently operates the Marine Corps Air Station (MCAS), El Toro. This approximately 5000 acre facility is located in the El Toro area of central Orange County, and is shown on the attached map which is made a part of this order.
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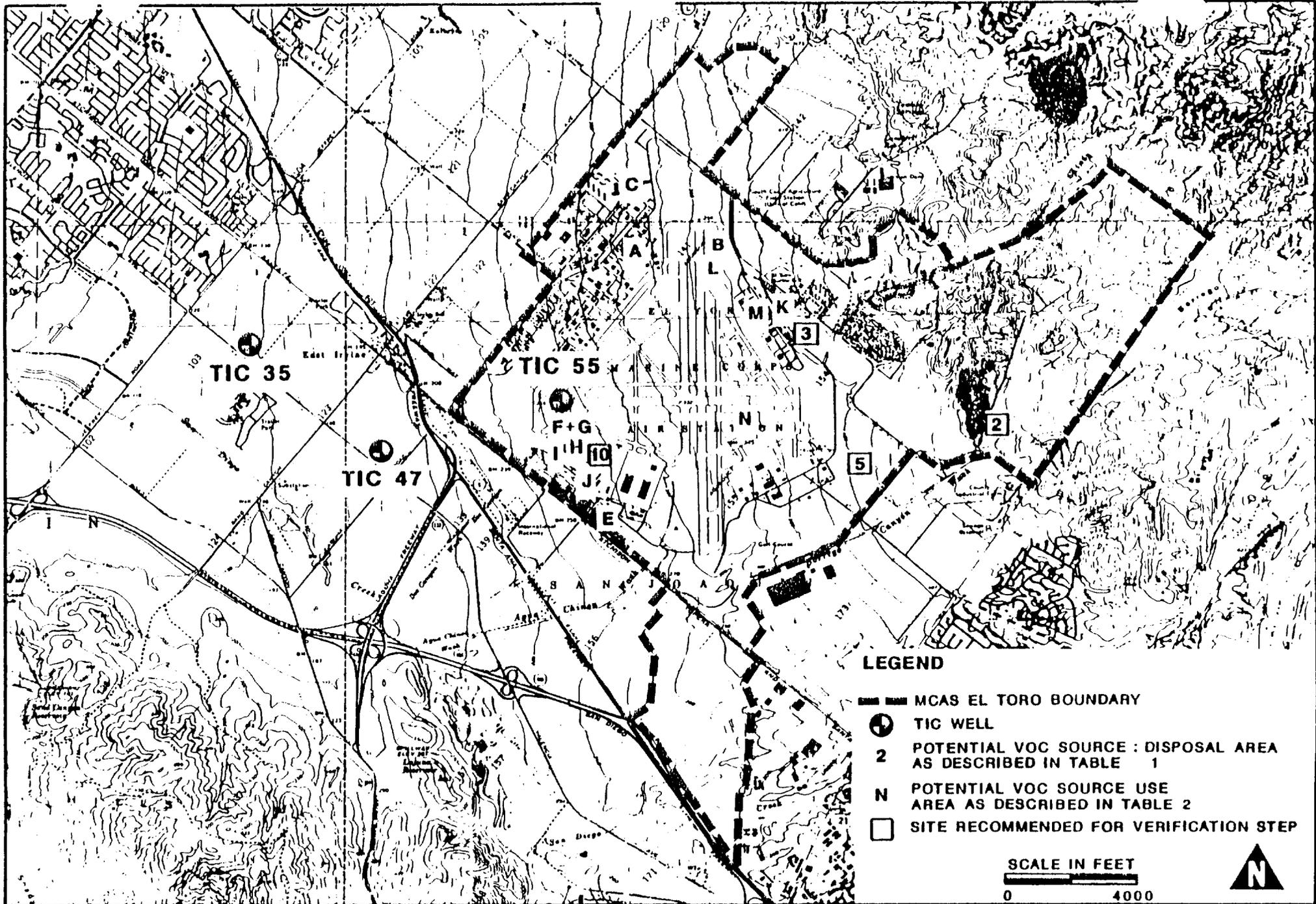
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11. On May 12, 1987, Board staff provided comments to the USMC on their proposed plan of action. Board staff commented that, based on existing evidence of off-site contamination, that it was inappropriate to limit the verification study to the MCAS El Toro property. The USMC did not propose additional off-site investigations in response to these comments.
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15. The United States Marine Corps has caused or permitted wastes to be discharged into waters of the State and is creating, or is threatening to create, a condition of nuisance or pollution.



PERIMETER INVESTIGATION MARINE CORPS
AIR STATION EL TORO, CALIFORNIA

LOCALE OF SUPPLY WELLS WITH
REPORTED TCE LEVELS (ppb)

FIGURE 1-1



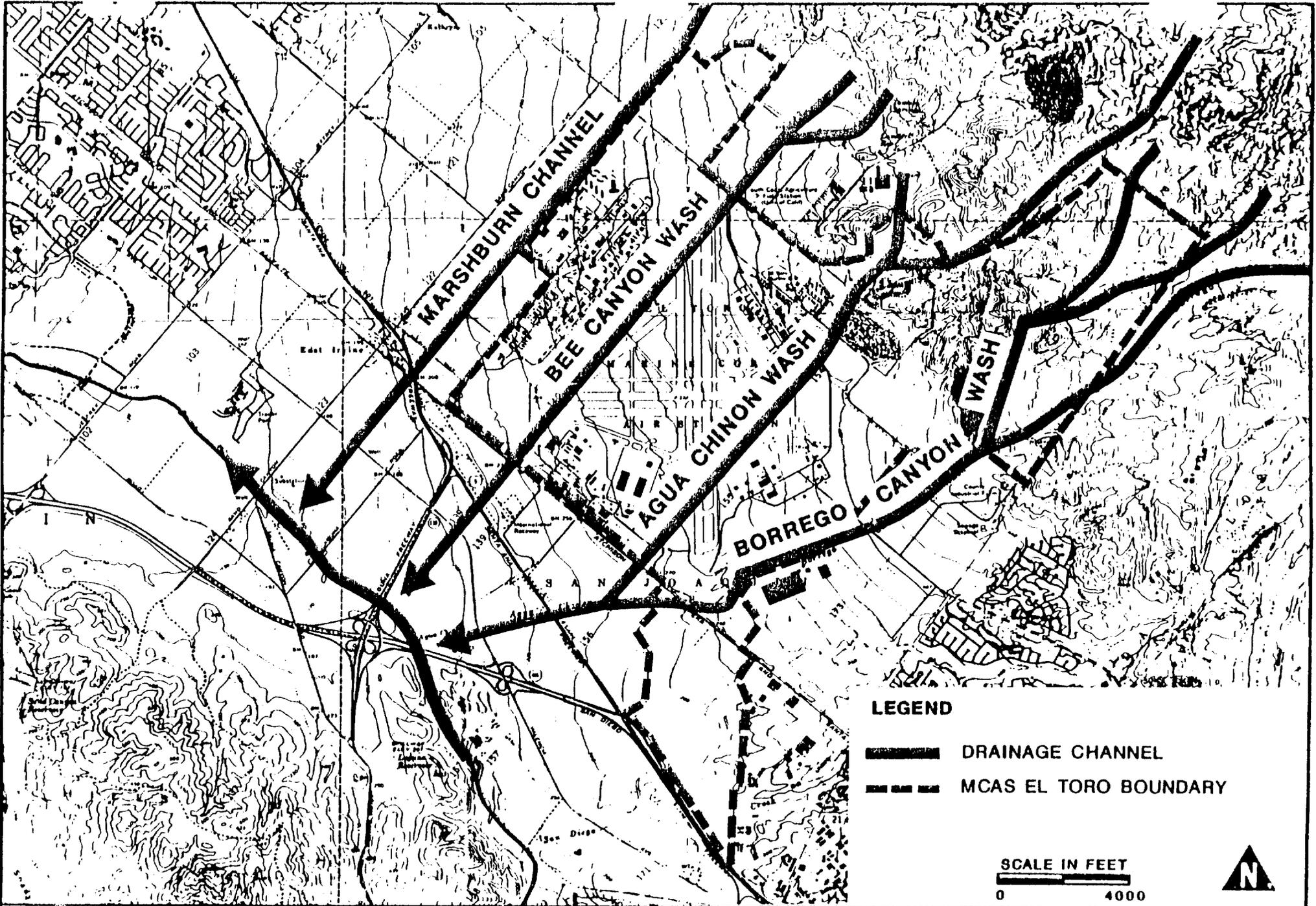


TABLE 1

Summary of Potential Source Areas - Initial Assessment Study Disposal Sites, Perimeter Study at MCAS El Toro, California

| <u>Site Number</u> | <u>Site Name</u> | <u>Map Identification</u> | <u>Period of Operation</u> | <u>Types of Materials Disposed</u> | <u>Comments</u> |
|--------------------|-------------------------|---------------------------|----------------------------|---|--|
| 74-2 | Magazine Road Landfill | 2 | Late 1960s to 1980 | Inert solid waste, municipal solid waste, transformers, lead batteries, household refuse, hydraulic fluid, waste fuel, waste crankcase oil, lead-based paint residue, solvents, and scrap metal | Up to 1,000,000 cubic yards total material. PCBs potentially present, and lead elevated. Lies in recharge area on sand and gravel deposit with approximately 30 feet to bedrock. |
| 74-3 | Original Landfill | 3 | 1943-1955 | Municipal solid wastes, scrap metal, incinerator ash, construction debris, paint residues, unspecified oily wastes, industrial solvents, hydraulic fluid and engine coolants | Trenches exposed during construction in area. In a high-density population area of station. Unknown solvents and solid wastes. |
| 74-5 | Perimeter Road Landfill | 5 | 1955 to late 1960s | Municipal solid waste, scrap metal, unspecified fuels, solvents, paint residues, unspecified oily wastes | Located in sandy soil. Unknown oily wastes and paint residues. Near farm fields and major surface drainage wash. |
| 74-10 | Petroleum Disposal Area | 10 | 1952 to mid- 1960s | Lubricating Oil (90%), hydraulic, transmission, antifreeze, fluids, motor fuel, solvents | 52,000 gallons of petroleum waste applied to 960,000 square feet for dust control. Solvents reportedly volatilized during spray application. |

TABLE 2

**Summary of Solvent Use Areas - Initial Assessment Study Solvent Use Areas, Perimeter Study at MCAS
El Toro, California**

| <u>Building Number(s)</u> | <u>Operations Name</u> | <u>Map Identification</u> | <u>Period of Practice</u> | <u>Types of Materials Used</u> | <u>Comments</u> |
|---------------------------|---|---------------------------|---------------------------|---|---|
| 288,289 | Station Operations and Maintenance - Aircraft Maintenance Dept. | A | 1943 to present | POL, PD-680, other solvents | 50 gallons per year stored in drums and bowlers, (till mid-1970s) 450 gallons per year (1970s to present). Disposal by Facility Maintenance. |
| 138 | - Station Electronics and Maintenance Div. | B | ? up to 1980 | Carbon Tetrachloride TCE, Trichloroethane (TCA) | Two to Three 55 gallon Barrels used per year. Most solvents volatilized, residual solvents drummed and stored near Bldg. 730 |
| 626 | - Auto Hobby Shop | C | 1967 to present | Solvents | Operations include three 50 gallon solvent parts tanks. Yearly usage unknown. Mud/solvent sludge to separators. Very dirty solvent to two drums per year disposed by Facilities Management. |
| 347 past | - Exchange Gasoline Station | D | ? to 1971 | Solvents | 110 gallons per month to wash parts. Solvent had also been used to wash the decks. Quantity unknown. |
| 360 | - Defense Property Disposal Office | E | 1940s to 1980 | Solvents | Surplus solvent materials held prior to resale/reuse. Undocumented spills may have occurred. |
| 370 | - Facilities Management Dept. (FMD) - Pipe Shop | F | 1940s? to present | metal cleaners/degreasers | Portion of up to 24 gals./year. Disposed in shop trash sent to then current sanitary landfill. |
| 370 | - FMD - Machine Shop | G | 1940s? to present | metal cleaners/degreasers | Portion of up to 24 gals./year. Disposed in shop trash sent to |

TABL (Continued)

Summary of Solvent Use Areas - Initial Assessment Study Solvent Use Areas, Perimeter Study at MCAS El Toro, California

| Building Number(s) | Operations Name | Map Identification | Period of Practice | Types of Materials Used | Comments |
|--------------------|---|--------------------|----------------------------------|--|---|
| 1589 | - PHD - Motor Transport Div. (MTD) - Heavy Duty Maintenance Shop | H | prior to 1952 to mid 1960's | dry cleaning solvents | Use in parts dip tank about 75 gallons per year. This solvent used to wash decks once per week (144 gallons/year) and lube racks daily (240 gallons/year). Solvents in waste oil disposed to Oil Disposal Area (Site 10). |
| 298 | - PHD - MTD - Light Duty Maintenance Shop | I | up through mid 1960s | solvent | Solvent dip tank, thirty gallon capacity, changed once every six weeks (used to present). Solvent used to clean the cement decks (720 gallons per year). |
| 388 | The Third Marine Air Wing (3d MAW) - Third Force Field Support Group Detachment B | J | ? to present | Solvents, predominantly methylene chloride | Three 55-gallon drums of solvent used for parts cleaning each year. Waste solvents stored in drums. |
| 634 | - Marine Air Group 11 (MAG-11) - Headquarters and Maintenance Squadron 11 (H&MS-11) | K | late 1960s present | Solvents/paint strippers | 2-1/2 gallons per month generated during paint stripping. Waste is drummed for storage, hauled off site for disposal by private contractor. |
| 605 current | - MAG-11 - VFMA-314 | L | 1952 to present (unit operation) | POL and solvents | Currently disposed off site by private contractor. Otherwise past waste disposal unknown. |
| 115 current | - MAG-11 - VFMA-323 | M | 1946 to present (unit operation) | POL and solvents | Spills on Tarmac, otherwise disposal off site by private contractor |



UNITED STATES MARINE CORPS

NAVAL AIR STATION
MARINE CORPS AIR BASES, WESTERN AREA
EL TORO (SANTA ANA), CALIFORNIA 92709-8001

IN REPLY REFER TO:

5800
JA/0034k

11 AUG 1987

| SANTA ANA REGION | |
|------------------|-------------|
| REQD | DATE |
| | AUG 13 1987 |
| ENT | 8/13 |
| KIL | 8/17 |
| URE | 8/13 |
| SDO | 8/17 |
| | |
| | |

James R. Bennett
Executive Officer
California Regional Water Quality Control Board
Santa Ana Region
6809 Indiana Avenue, Suite 200
Riverside, CA 92506

Dear Mr. Bennett:

In reply to your letter of July 8, 1987 regarding Cleanup and Abatement Order No. 87-97 (MCAS El Toro TCE Investigation), it is our position that the order does not have a sufficient basis in fact and does not reflect adequate geohydrological investigation.

Our primary concern is with the conclusion stated in paragraph number 15 of the order, to the effect that the United States Marine Corps is the perceived cause of the TCE contamination. It is clear that virtually all of the contamination has been found outside the base perimeter, on land owned by the Irvine Company. There are numerous other potential sources of such contamination, including the old International Raceway facility, and there does not seem to be any substantiation for the conclusion that the contamination does in fact come from this Air Station.

Rather than attempting to resolve this problem by means of a cleanup and abatement order without sufficient technical basis, we would far prefer to work with the Board in determining the actual source and extent of any contamination. A principal concern is the lack of proper drilling and testing off base. As you are well aware, and as the order itself reflects, our Installation Restoration Program (formerly known as the Navy Assessment and Control of Installation Pollutants program) is under way, and will, when completed, give us a far better picture of the extent of any such pollution aboard, or emanating from, the Station. The Installation Restoration Program (IRP) study will include an historical record search for all possible contributing sources, but will not include physical investigation off base. Indeed, it is uncertain whether the Department of the Navy has authority to expend its funds on an investigation of contamination discovered on private property, absent some preliminary indication that the source of contamination is the federal facility. In short, the problem has not been sufficiently studied and should be studied further.

It is our strong recommendation that, in addition to the monitoring wells being installed on board MCAS El Toro, such wells also be installed on Irvine Company property, and that The Irvine Company be required, as the landowner, to bear the cost of such investigation. Other landowners, if any, in the surrounding areas should be similarly required to participate in a comprehensive study of the problem.

By this approach, we will then be able to determine the full extent of any contamination and properly allocate responsibility to the various landowners, including the federal government, for the cost of any necessary cleanup and abatement.

It is, of course, our intention to proceed with our investigation and plan of action, on a timetable comparable to that set forth in your Order, but only insofar as it refers to investigation on board the Air Station itself.

We wish to assure you that it is our intent to assist and cooperate with the Board, in all appropriate ways, to identify, isolate and clean up any contamination which is satisfactorily determined to be the responsibility of the federal government. We solicit and encourage your support and assistance in properly identifying the extent of that responsibility and fairly allocating to other responsible sources of such pollution their fair participation in cleanup and abatement efforts.

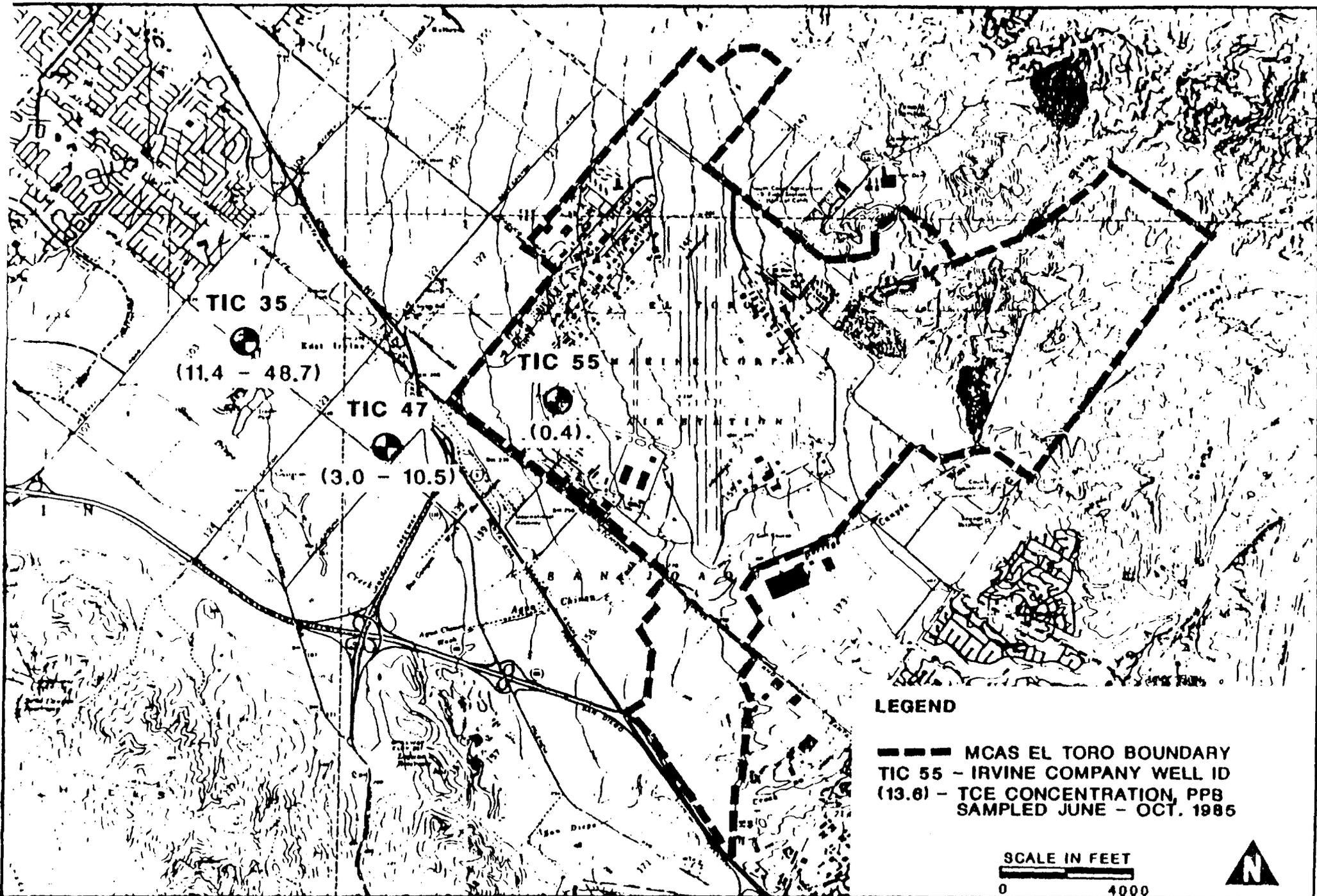
We look forward to discussing this matter further with you.

Sincerely,



S. R. HOLM, JR., CAPT, CEC, USA
Director, Facilities Mgmt. Dept.
By direction of Commanding General

Copy to:
The Irvine Company, Attn: Sat Tamarabuchi



PL WATER INVESTIGATION MARINE CORPS
AIR STATION EL TORO, CALIFORNIA

GROUP OF SUPPLY WELLS WITH
REPORTED TCE LEVELS (ppb)

F U : 1-1

16. This action is being taken by a regulatory agency to enforce a water quality law and is, therefore, 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 Administrative Code.

IT IS HEREBY ORDERED that, pursuant to Section 13304, Division 7, of the California Water Code, the United States Marine Corps shall:

1. By September 15, 1987, submit a draft supplement to the proposed Perimeter Investigation Plan of Action that includes necessary off-site investigations to determine the extent of any ground water contamination attributable to the MCAS El Toro facility.
2. By January 15, 1988, initiate the proposed Perimeter Investigation Plan of Action and the supplementary off-site investigation as approved by the Executive Officer.
3. By the 10th day of each month, submit a progress report summarizing the investigation activities for the previous month.
4. By June 15, 1988, submit an interim report containing the findings of the field investigations performed to date and any available analytical results.
5. By September 15, 1988, submit a draft report on the perimeter investigation and the supplementary off-site investigation.

If, in the opinion of the Executive Officer, this order is not complied with in a reasonable and timely manner, the Board will consider referral of this matter to the Attorney General for judicial enforcement.

JAMES R. BENNETT
Executive Officer

July 6, 1987