Summary Report

Aerial Photograph Anomaly APHO 9

Liquids Flowing near the Aircraft Expeditionary Refueling (ACER) Site

Aerial Photograph Anomaly Program

Marine Corps Air Station, El Toro, California

31 August 1999

Prepared by
Southwest Division, Naval Facilities Engineering Command
BRAC Program Office
1420 Kettner Boulevard, Suite 501
San Diego, CA 92101-2404

Summary Report

Aerial Photograph Anomaly APHO 9

Liquids Flowing near the Aircraft Expeditionary Refueling (ACER) Site
Aerial Photograph Anomaly Program
Marine Corps Air Station, El Toro, California

31 August 1999

Prepared by:

Lynn Marie Hornecker
Civil Engineer

Southwest Division, Naval Facilities Engineering Command
BRAC Program Office
1420 Kettner Boulevard, Suite 501
San Diego, CA 92101-2404

SOUTHWESTNAVFACENGCOM
Code 5BME.LMH
1220 Pacific Highway
San Diego, CA 92132
Telephone: (619) 532-4162/Fax: (619) 532-4160

File: areltoro

TRANSMITTAL

Date: 27 December 1999

From: Lynn Marie Hornecker
MCAS El Toro

To: **Diane Silva**
Code 01LS.DS

Subj: Administrative Record Materials
Marine Corps Air Station, El Toro

Installation: Marine Corps Air Station, El Toro

UIC Number: M60050

Document Title (or subject): Summary Report, Aerial Photograph Anomaly APHO 9, Liquids Flowing near the Aircraft Expeditionary Refueling (ACER) Site, Aerial Photograph Anomaly Program, Marine Corps Air Station, El Toro, California

Author: Southwest Division, Naval Facilities Engineering Command

Recipient: Tayseer Mahmoud, California Department of Toxic Substances Control

Record Date: 31 August 1999

Approximate Number of Pages: 120

EPA Category: 01.1

Sites: APHO 9

Key Words: APHO

Contract: N/A

CTO Number: N/A

NOTE TO RECORDS MANAGER FOR ADMINISTRATIVE RECORD: APHO 9 is located within part of IRP Site 19 and adjacent to IRP Site 25.

SOUTHWESTNAVFACENGCOM
Code 5BME.LMH
San Diego, CA 92101

TABLE OF CONTENTS

SOUTHWESTNAVFACENGCOM
CODE 5BME.LMH
SAN DIEGO, CA 92101

Section 1
Introduction

The purpose of this Summary Report is to present information pertaining to the aerial photograph anomaly, designated as APHO 9 in the Base Realignment and Closure Cleanup Plan (BCP), located near Agua Chinon Wash at the Marine Corps Air Station (MCAS), El Toro. APHO 9 was identified by Science Applications International Corporation (SAIC) as SAIC 53 during a review of historical aerial photographs, and the anomaly is described as liquid flowing from a former hangar building near the north side of the present Aircraft Expeditionary Refueling (ACER) Site (Installation Restoration Program (IRP) Site 19). APHO 9 (SAIC 53) was identified on an aerial photograph dated 29 December 1946.

The Marine Corps Air Station, El Toro, also known as the Station, comprises approximately 4,700 acres and is located in eastern Orange County approximately 45 miles southeast of Los Angeles, California. APHO 9, the IRP Site 19 vicinity, and selected nearby Environmental Locations of Concern are shown on Figure 1. APHO 9 is located in the southeast section of the Station adjacent to Agua Chinon Wash, and the anomaly encompasses an area approximately 500 feet long by 350 feet wide.

The Station was closed on 2 July 1999 in accordance with the Base Realignment and Closure Act of 1993 (BRAC III). APHO 9 is located within a parcel tentatively identified for future cargo storage and airline maintenance activities according to *The Airport and Open Space Plan, Year 2020, Concept C* (County of Orange, August 1998).

This Summary Report includes an evaluation of historical records, a description of information collected during the investigation of nearby Environmental Locations of Concern, and the results of the visual inspection of the site. No flowing liquids, stains, or wet soils were observed during the visual inspection of August 1999. It is possible that routine operations on the aircraft apron or taxiways caused the appearance of liquids flowing on the 1946 photograph.

Based upon the review of the historical information and the results of the visual inspection, it is recommended that *no further action status* be designated for APHO 9 (SAIC 53) in the next Base Realignment and Closure Cleanup Plan (BCP) Update.

Section 2
Field Inspections and Historical Records

APHO 9 (SAIC 53), identified on a photograph dated 29 December 1946, was described by SAIC as follows: *Liquid (LQ) can be seen flowing from a former hangar (?) near the northeast end of the aircraft parking apron on the northerly side of the present ACER site (Site 19). The liquid (LQ) discharges into a drainage ditch from a small building behind the former hangar. The flow appears to be significant and additional investigation is recommended.*

2.1 Field Inspection

APHO 9 Vicinity

The vicinity of APHO 9, including IRP Site 19, was visually inspected by the Navy on 15 August 1999. APHO 9 includes the unpaved area located between Agua Chinon Wash (an open channel) and the aircraft parking apron, and much of APHO 9 coincides with the location of the former IRP Site 19, Unit 1 (the northeastern section of IRP Site 19 known as the Northeast Stained Area). The BRAC Cleanup Team agreed to transfer IRP Site 19, Unit 1 from the Installation Restoration Program to the Petroleum Corrective Action Program with oversight by the Regional Water Quality Control Board, Santa Ana Region (RWQCB).

The unpaved areas of APHO 9 are relatively flat and surface runoff flows toward Agua Chinon Wash along the northwest side of the site. No liquids or stains or wet soils were observed on the unpaved area of APHO 9 during the inspection. The nearest structures are utility buildings (Building 404-transmitter building and Building 414-standy generator building) located southwest of APHO 9, and a maintenance worker was inspecting one of the buildings at the time of the inspection. The nearest hangar, Building 371, is located approximately 250 feet south of APHO 9, and Building 371 was vacant at the time of the inspection.

The paved areas of APHO 9 consist of portland-cement concrete pavement (aircraft parking area and taxiway) that is in good condition. No liquids or stains were observed on the pavement during the inspection.

Photographs of the vicinity of APHO 9 and the check list form from the visual inspection of August 1999 are presented in the Appendix.

2.2 Environmental Program Records

Records of previously completed environmental restoration program investigations were acquired and reviewed, and one underground storage tank site (UST 294), one former Installation Restoration Program Site (Former IRP Site 19, Unit 1-the Northeast Stained Area), and one IRP Site (IRP Site 25) were identified in the vicinity of APHO 9. UST Site 294 was closed by the Orange County Health Care Agency in 1997, and Former IRP Site 19, Unit 1 (Former Location of Fuel Bladder Revetments) was closed by the Regional Water Quality Control Board in 1997. IRP Sites 19 and 25 achieved no further action status when the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Record of Decision was signed in 1997.

Table 1. Sampling Activities at or near APHO 9.

Location of Concern Identification Number	Status	NFA or other Decision Document(s)	Comments
APHO 9 Vicinity			
UST 294	NFA.	Orange County Health Care Agency (OCHCA) letter dated 4 April 1997.	Tank removal and sampling activities were conducted with oversight by OCHCA.
Former IRP Site 19, Unit 1 (the Northeast Stained Area)	NFA.	Regional Water Quality Control Board (RWQCB) letter dated 14 May 1997.	Site verification sampling included the collection of soil samples from shallow borings.
IRP Site 25 – Major Drainages (Agua Chinon Wash and other channels)	NFA.	CERCLA Record of Decision for Operable Unit 2A and Operable Unit 3A No Action Sites of September 1997.	Sediment and surface water samples were collected from Agua Chinon Wash and other drainage channels during the remedial investigation of IRP Site 25.
Southwest of APHO 9			
UST 404	NFA.	OCHCA letter of 20 April 1999.	Tank removal and sampling activities were conducted with oversight by OCHCA.
Ground Water Data – Southwest of APHO 9			
Monitoring wells were constructed and monitored at IRP Site 19	NFA.	-	Monitoring of selected wells continues.

Underground Storage Tank and Petroleum Corrective Action Program
UST 294, a former fuel oil storage tank, was removed and confirmation sampling was conducted in 1997 with oversight by the Orange County Health Care Agency. Extracts from the closure documentation are presented in the Appendix.

The Former IRP Site 19, Unit 1 was investigated under the petroleum corrective action program with oversight by the Regional Water Quality Control Board, Santa Ana Region. Extracts from the closure documentation are presented in the Appendix.

Resource Conservation and Recovery Act Facility Assessment (RFA)
No Solid Waste Management Units (SWMUs) were identified at APHO 9 during the Resource Conservation and Recovery Act Facility Assessment (RFA). No further action was recommended for SWMU 242, located southwest of APHO 9. Results of the RFA are published in the *Installation Restoration Program, Final Resource Conservation and Recovery Act Facility Assessment Report for Marine Corps Air Station, El Toro, California* (Jacobs Engineering Group, 1993).

BRAC Cleanup Plan (BCP) Information
The BCP (Tables 3-1a, 3-1b, and 3-2) describe the aerial photograph anomaly sites. Extracts from the BCP are presented in the Appendix. Table 3-2 includes a description of APHO 9 that is not consistent with the SAIC description: "The liquid could be surface runoff flowing into Agua Chinon Wash." It is recommended that the description of APHO 9 in the BCP be revised in the next update as follows: *APHO 9 is located adjacent to Agua Chinon Wash and includes part of Former IRP Site 19, Unit 1 (the Northeast Stained Area).*

Hazardous Waste/Hazardous Materials Management Plan
The Station's Hazardous Waste/Hazardous Materials Management Plan (HW/HMMP) was reviewed and extracts pertaining to the vicinity of APHO 9 are presented in the Appendix. The HW/HMMP identifies a temporary accumulation area (TAA 371B) for VMFAT 101 (occupant of hangar building 371) approximately 100 feet southwest of APHO 9.

Storm Water Pollution Prevention Plan
The Station's Storm Water Pollution Prevention Plan (SWPPP) was reviewed and extracts from the SWPPP for the vicinity of APHO 9 are presented in the Appendix of this report. The SWPPP does not identify the storage of hazardous materials or hazardous wastes at APHO 9.

Surface water from the APHO 9 vicinity discharges to Agua Chinon Wash located within 100 feet of APHO 9. Agua Chinon Wash and other surface drainage channels were investigated during the Remedial Investigation of Installation Restoration Program Site 25 – the Major Drainages. A Comprehensive Environmental Response, Compensation, and Liability Act Record of Decision identifying no action for IRP Site 25 was signed in 1997.

Surface water quality in Agua Chinon Wash and the other surface drainage channels is monitored under the Station's National Pollutant Discharge Elimination System (NPDES) Permit for Storm Water. The permit was issued by the California Regional Water Quality Control Board, Santa Ana Region.

2.3 Historical Property Records

Property records including the Station's plant account data base were acquired and reviewed, and information pertaining to structures located near APHO 9 is summarized in Table 2.

Table 2. MCAS El Toro Property Records.
APHO 9 Vicinity Buildings.

Building Identification Number	Approximate year of acquisition or construction	Type of Use	Comments
APHO 9 Vicinity			
404	1957	Transmitter Building	Building dimensions are approximately 50 feet long by 18 feet wide.
414	1957	Standby Generator Building	Building dimensions are approximately 24 feet long by 16 feet wide.
371	1954	Hangar	Building dimensions are approximately 272 feet long by 261 feet wide. Utilized by the VMFAT-101 squadron until early 1999.

2.4 Ground Water Conditions

Ground water conditions have been investigated in the vicinity of APHO 9 during the remedial investigation of IRP Site 19. Four wells were constructed near IRP Site 19 in the area several hundred feet southwest of APHO 9. Ground water is located approximately 140 feet below ground surface at IRP Site 19 based upon measurements from these wells. A conceptual site model is shown on Figure 2.

Section 3
Findings and Recommendations

The following findings are based upon information collected during the record search activities and from observations during the visual inspection of the APHO 9 vicinity:

- SAIC identified APHO 9 (also known as SAIC 53) as liquids flowing from a former building. Most of the APHO 9 area is unpaved except for the southeast side of APHO 9. No liquids, wet soils, or stains were observed at APHO 9 during visual inspection of August 1999.

- No hazardous waste accumulation areas or hazardous materials storage areas were identified in the immediate vicinity of APHO 9 in the HW/HMMP or the SWPPP.
- The remedial investigation and subsequent site verification activities at the Northeast Stained Area of the ACER Site (Former IRP Site 19, Unit 1) have been completed, and no further action status has been designated for the Northeast Stained Area. The Northeast Stained Area coincides with part of APHO 9.
- It is recommended that the description of APHO 9 in the BCP be revised in the next update as follows: *APHO 9 is located adjacent to Agua Chinon Wash and includes part of the Former IRP Site 19, Unit 1.*

Based upon the results of the evaluation of historical records, the results of the sampling conducted during the remedial investigation and subsequent site verification activities at or near IRP Site 19, and the results of the visual inspection of APHO 9, it is recommended that *no further action status* be designated for APHO 9 (also known as SAIC 53) and that *no further action status* be documented in the next BCP Update.

Section 4
References and/or Sources of Information

Bechtel National, Incorporated. 1995. Final Work Plan, Phase II Remedial Investigation/Feasibility Study, MCAS El Toro, California. [Navy Contract N68711-92-D-4670, CTO 59]

California Environmental Protection Agency, Department of Toxic Substances Control. 1999. Correspondence. Letter to Marine Corps Air Station, El Toro dated May 12, 1999 with Comments on Technical Memorandum, Aerial Photograph Anomalies, Marine Corps Air Station, El Toro.

California Regional Water Quality Control Board, Santa Ana Region. 1998. Statement of Basis, Renewal of Waste Discharge Requirements for Marine Corps Air Station, El Toro, Order Number 98-42 (NPDES Number CAS 618006). March.

CDM Federal Programs Corporation. 1998. Final Groundwater Monitoring Report, October 1997 Sampling Round, Groundwater Monitoring Program for Marine Corps Air Station, El Toro. [Navy Contract N68711-96-D-2029, Delivery Order 5]

County of Orange. 1997. Alternative A, El Toro Community Reuse Plan, 1997 Working Map, Land Uses/Conveyances, Gross Acres. [Prepared by P&D Consultants for the County of Orange, March 1997.]

County of Orange. 1998. The Airport and Open Space Plan, Year 2020, Concept C. August. [prepared by the MCAS El Toro Local Redevelopment Authority]

Geofon, Incorporated. 1997. Underground Storage Tank Removal Report, Tank Number 294, Marine Corps Air Station (MCAS), El Toro, California. February. [Navy Contract N68711-92-R-4675, Delivery Order 7]

Integrated Environmental Management (IEM). 1997. Storm Water Pollution Prevention Plan (SWPPP) for Marine Corps Air Station, El Toro, El Toro, California. July. [Contract No. N68711-96-D-2059, Delivery Order Number 0002] {*Annotation: The IEM planning document included the acquisition and review of historical and current plans of facilities and utilities. Extracts from the IEM report are presented in the Appendix.*}

Jacobs Engineering Group (JEG). 1993. Installation Restoration Program, Final Resource Conservation and Recovery Act Facility Assessment Report for Marine Corps Air Station, El Toro, California. [Navy Contract N68711-89-D-9296, Contract Task Order 193]

Jacobs Engineering Group (JEG). 1993. Marine Corps Air Station, El Toro: Installation Restoration Program, Phase I Remedial Investigation Technical Memorandum.

Jacobs Engineering Group (JEG). 1995. Marine Corps Air Station, El Toro, El Toro, California, Final Environmental Baseline Survey Report. April. [Navy Contract N68711-89-D-9296, Contract Task Order 284]

OHM Remediation Services Corporation. 1997. Site Assessment Report, Aircraft Expeditionary Refueling (ACER) Site (Former IRP Site 19, Unit 1), Marine Corps Air Station, El Toro, California. [Navy Contract N68711-93-D-1459, Delivery Order 24]

Science Applications International Corporation (SAIC). 1993. Final Report, Aerial Photograph Assessment, MCAS El Toro, Contract N68711-91-D-4658, Delivery Order 0002, SAIC Project No. 01-0892-0817.

Southwest Division, Naval Facilities Engineering Command. 1999. Technical Memorandum, Aerial Photograph Anomalies, Marine Corps Air Station, El Toro, California. April.

United States Environmental Protection Agency. 1991. Site Analysis, El Toro MCAS, Orange County, California.

United States Marine Corps Air Station, El Toro. 1999. Base Realignment and Closure (BRAC) Cleanup Plan.

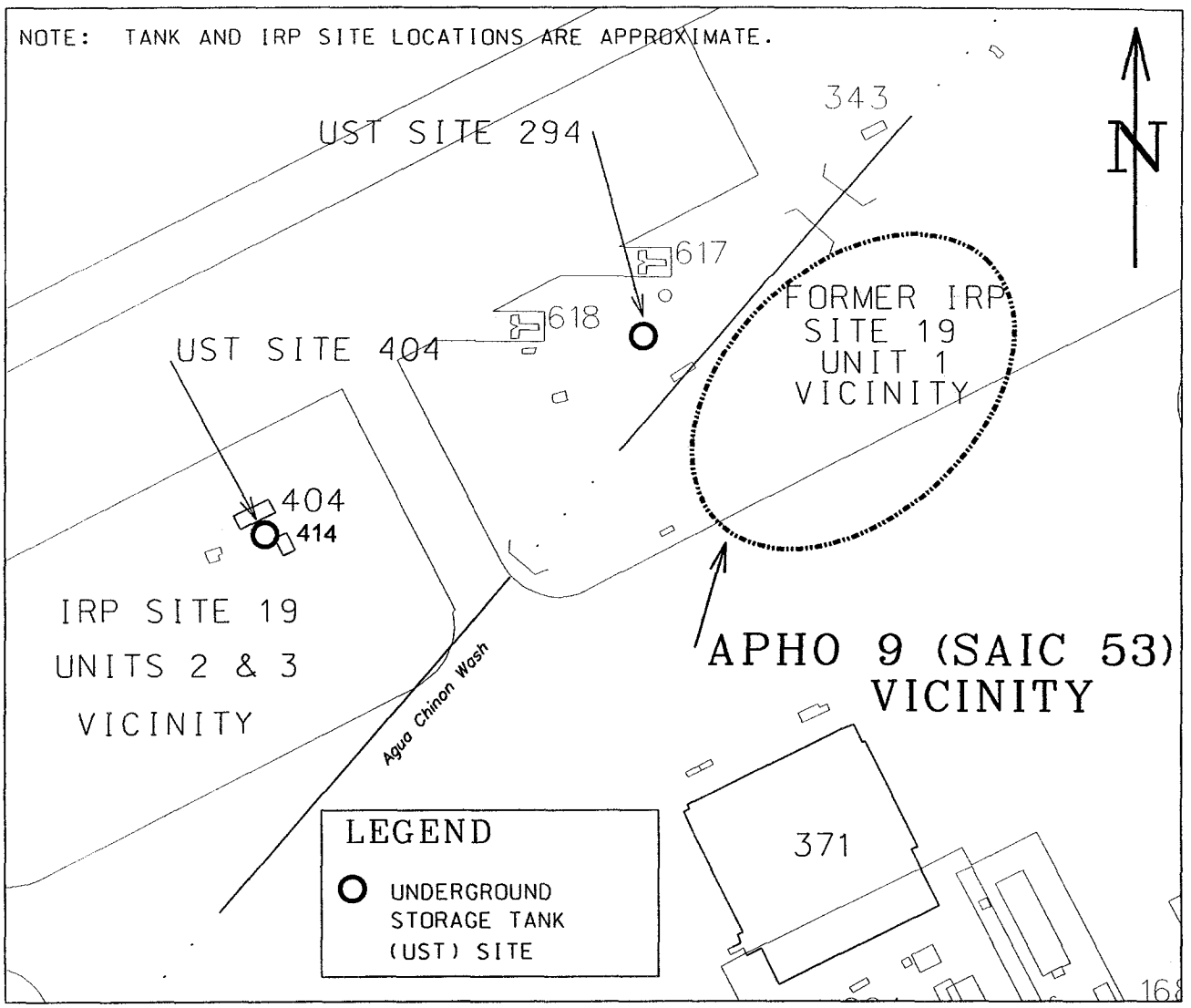
U.S. Marine Corps Air Station, El Toro. 1997. Draft Final Record of Decision, Operable Units 2A and 3A, No Action Sites, Marine Corps Air Station, El Toro, California. September.

United States Marine Corps Air Station, El Toro. 1997. Building Guide.

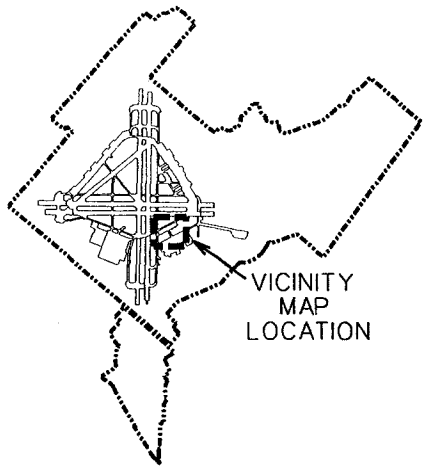
United States Marine Corps Air Station, El Toro. Circa 1946-1999. Station Property Records.

SOUTHWESTNAVFACENGCOM
CODE 5BME.LMH
SAN DIEGO, CA 92101

Figures



APPROXIMATE SCALE:
1 INCH = 240 FEET



MARINE CORPS AIR STATION
EL TORO

Figure 1.

AERIAL PHOTOGRAPH ANOMALY PROGRAM

APHO 9 VICINITY MAP

MARINE CORPS AIR STATION, EL TORO

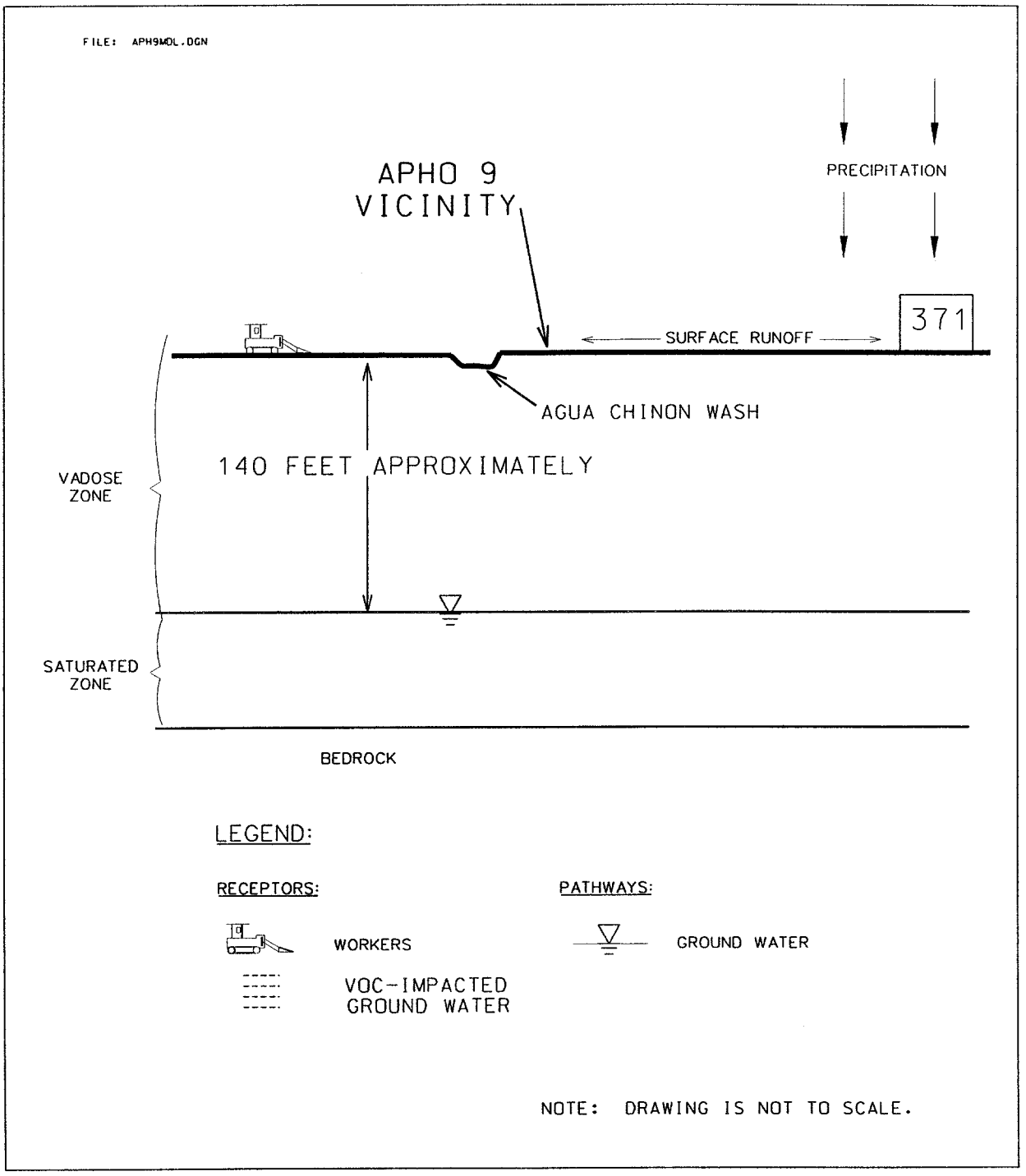


Figure 2.

AERIAL PHOTOGRAPH ANOMALY PROGRAM

APHO 9 CONCEPTUAL SITE MODEL

MARINE CORPS AIR STATION, EL TORO

SOUTHWESTNAVFACENGCOM
CODE 5BME.LMH
SAN DIEGO, CA 92101

Appendix

Site Photographs and Other Documentation

Site Photographs

Check List Form

Exhibits

Extracts from Base Realignment and Closure Cleanup Plan (BCP)

Extracts from SAIC Study

Extracts from SWPPP

Extracts from HW/HMMP

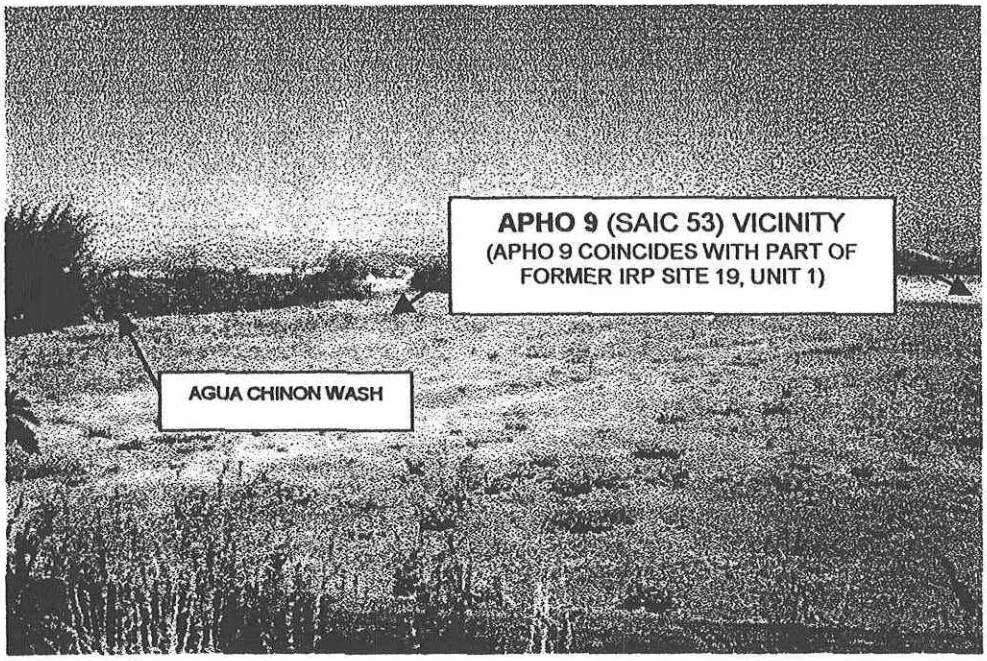
No Further Action Documents (Closure Letters) for Nearby Tank Sites and Petroleum Exclusion Site and Extracts from Related Documents

SOUTHWESTNAVFACENGCOM
Code 5BME.LMH
(619) 532-4162/Fax (619) 532-4160

File: aph9ph

Photograph 1. APHO 9 (SAIC 53) Vicinity

Aerial Photograph Anomaly Program
Marine Corps Air Station, El Toro
Date of Photograph: 15 August 1999

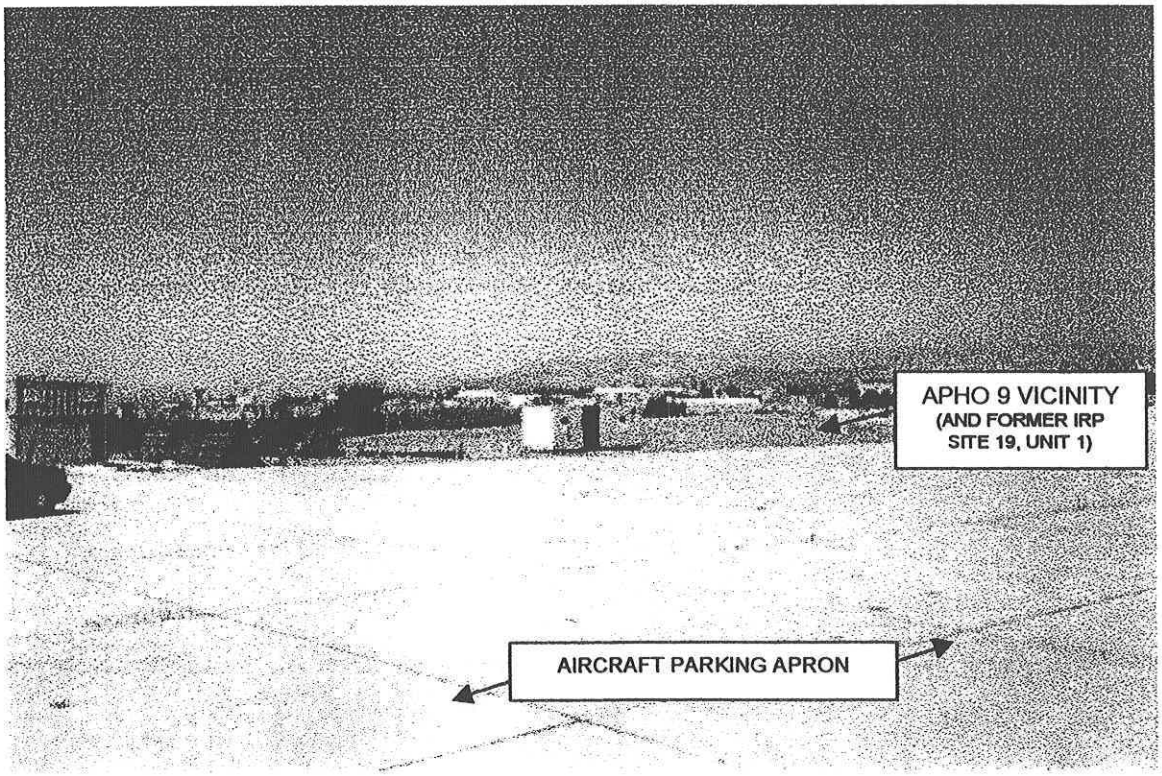


SOUTHWESTNAVFACENGCOM
Code 5BME.LMH
(619) 532-4162/Fax (619) 532-4160

File: aph9ph

Photograph 2. APHO 9 (SAIC 53) Vicinity

Aerial Photograph Anomaly Program
Marine Corps Air Station, El Toro
Date of Photograph: 15 August 1999

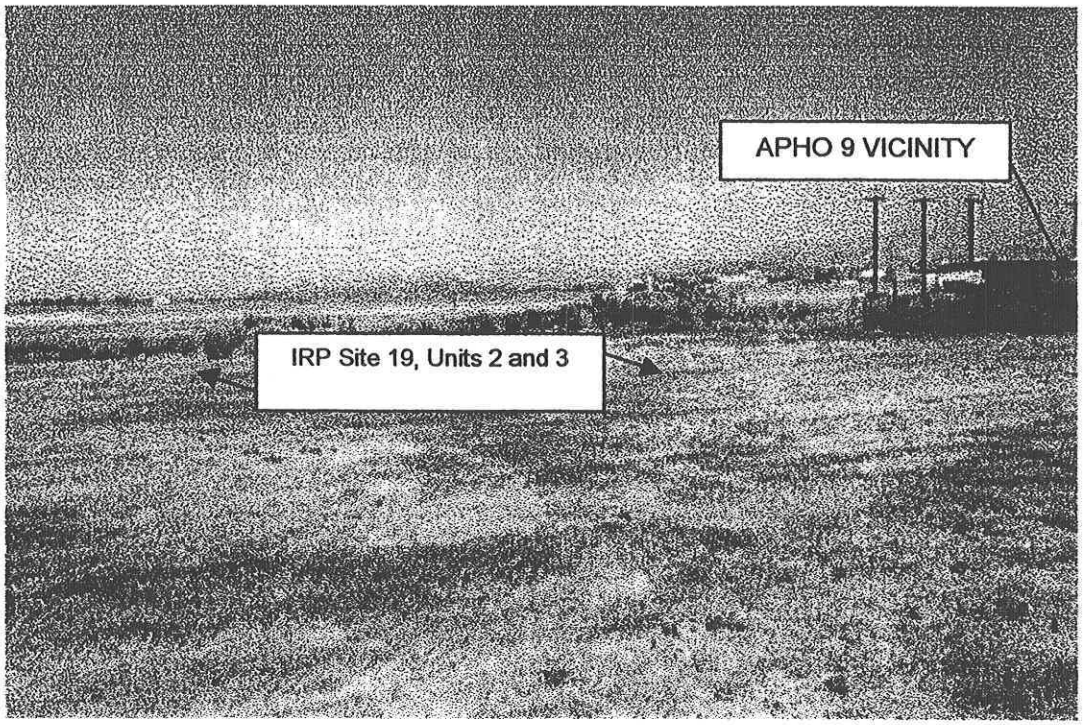


SOUTHWESTNAVFACENGCOM
Code 5BME.LMH
(619) 532-4162/Fax (619) 532-4160

File: aph9ph

Photograph 3. APHO 9 (SAIC 53) Vicinity

Aerial Photograph Anomaly Program
Marine Corps Air Station, El Toro
Date of Photograph: 15 August 1999



SOUTHWESTNAVFACENGCOM
Code 5BME.LMH
(619) 532-4162/Fax (619) 532-4160

File: aph28lst

CHECK LIST

Aerial Photograph Anomaly Program, Marine Corps Air Station, El Toro

Anomaly Identification Information:

Date of Photograph: 29 December 1946

APHO (from the BRAC Cleanup Plan)	SAIC	EPA
9	53	

Anomaly Description (from source document(s) Site Analysis, El Toro MCAS (EPA, 1991) or Final Report, Aerial Photograph Assessment (SAIC, 1993)):
SAIC 53: *Liquid (LQ) can be seen flowing from a former hangar (?) near the northeast end of the aircraft parking apron on the northerly side of the present ACER site (Site 19). The liquid (LQ) discharges into a drainage ditch from a small building behind the former hangar. The flow appears to be significant and additional investigation is recommended.*

Visual Inspection Date (s): **15 August 1999**

Inspection Participant(s) (with affiliation(s)): *Lynn Marie Hornecker*
US Navy, Project Manager

Current Site Conditions: *The ACER site (Site 19) consists of four unpaved areas adjacent to Agua Chinon Wash. The northern area (known as Former IRP Site 19, Unit 1 which was addressed under the petroleum corrective action program through the CERLCA Petroleum Exclusion) appeared to have been recently graded. The other areas of IRP Site 19 (Units 2, 3, and 4) are located southwest of APHO 9. No evidence of liquids flowing, stains, or wet soils were observed during the inspection. The southeast side of APHO 9 is a paved area, formerly used for aircraft parking and taxiways. No evidence of liquids flowing, wet areas, or stains were observed on the paved areas during the inspection. The nearest hangar, Building 371, was vacant at the time of the inspection. The aircraft parking apron between Building 371 and IRP Site 19 was inspected and no liquids were observed flowing from the Building 371 vicinity.*

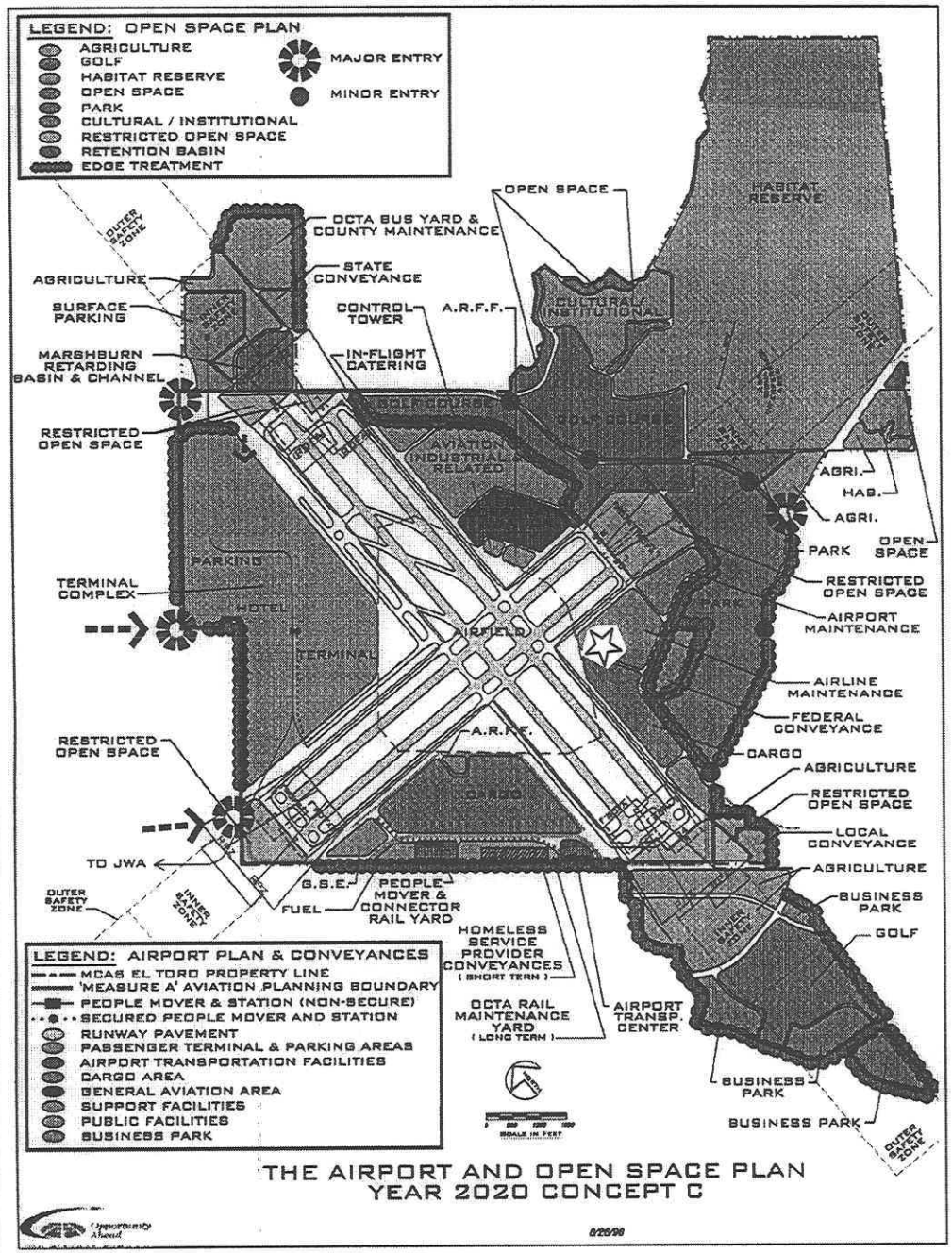
Is there visual evidence of the anomaly identified in the photograph present at the site? *No.*

Is there evidence of past releases? *No.*

Are there indications of potential or current releases? *No. No hazardous substances were observed in the vicinity of the ACER site or near Building 371 during the inspection.*

Description of photograph(s): *Photographs of APHO 9 including the northern section of the ACER Site (IRP Site 19), Agua Chinon Wash, and the adjacent aircraft parking apron.*

Date of preparation of check list: *15 August 1999.*



EXPLANATION:

☆ APPROXIMATE LOCATION OF APHO 9

Exhibit 1.

AERIAL PHOTOGRAPH ANOMALY PROGRAM

Tentative Reuse Plan

The Airport and Open Space Plan, Year 2020, Concept C

MARINE CORPS AIR STATION, EL TORO

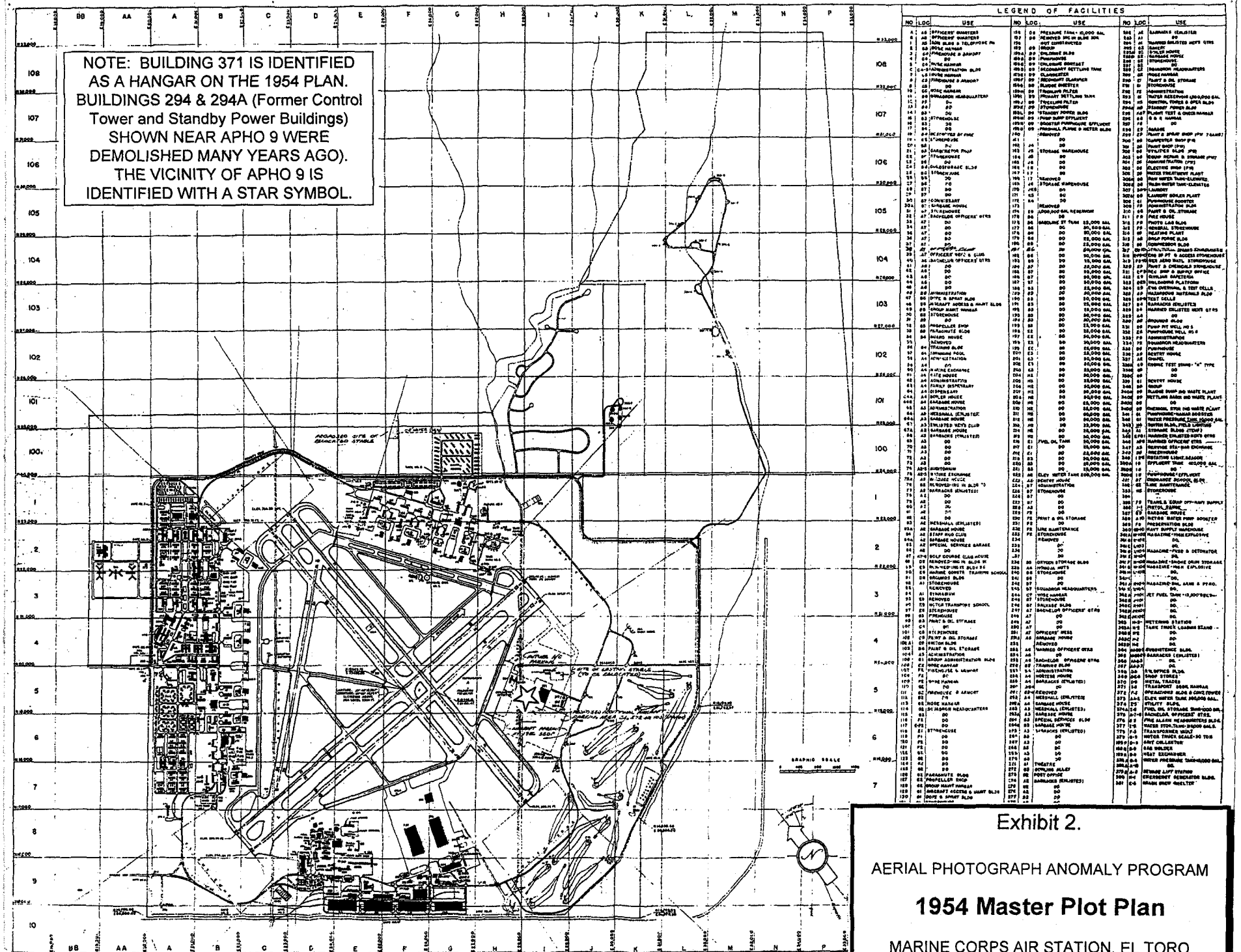


Exhibit 2.

AERIAL PHOTOGRAPH ANOMALY PROGRAM

1954 Master Plot Plan

MARINE CORPS AIR STATION, EL TORO

United States Marine Corps

EXTRACTS

Base Realignment and Closure Cleanup Plan (BCP)

For

Marine Corps Air Station
El Toro, CA

March 1999

Table 3-2
Aerial Photograph Features/Anomalies
(Sheet 1 of 7)

Database Tracking	SAIC Anomaly ID No.	LRA Reuse Parcel	Point of Reference	Year	SAIC Observations[1]	SAIC Comments[2]	Comments	ECP Area Type
APHO 1	7	32	Tank Farm 3	1946	ST	C	The stains appear adjacent to the southeastern side of Tank Farm 3 where a former fuel bladder may have been located. Also see anomalies 113, 173, 190, 227, 235, and 272.	7
APHO 2	14	42	B 136	1946	OS, D	C	Miscellaneous equipment is stored along the southeast side of B 135. The ground surface is paved with asphalt, and surface runoff flows in a southwest direction.	7
APHO 3	21	43	B 120	1946	OS, D	C	Miscellaneous equipment is stored along the southeast side of B 120. The ground surface is paved with asphalt, and surface runoff flows in a southwest direction.	7
APHO 4	22	23	Tank Farm 4	1946	ST	C	Miscellaneous equipment is stored along all sides of this building. Portions of the ground surface along the east and west sides of the building are unpaved. Surface runoff flows in a southwesterly direction.	7
APHO 5	25	32	B 50	1946	OS	C	This area is commonly used for open storage. The ground surface is unpaved.	7
APHO 6	39	29	B 306	1946	IM	C	Unknown impoundments. Additional investigation recommended.	7
APHO 7	46	29	B 1389	1946	WS, ST, OS	C	The liquid is probably surface runoff.	7
APHO 8	52	7	Golf Course Hole 12	1946	OS, R, EX, FA	C	Portions of this storage area has been covered by the extension of runways 34-L and 34-R.	7
APHO 9	53	23	Agua Chinon Wash	1946	LQ	C	The liquid could be surface runoff flowing into Agua Chinon Wash.	7

Table 3-1a
Site Summary
(Sheet 3 of 34)

Seq No.	Database Tracking	LRA Reuse Parcel	Description	Material Disposed	Date of Operation	Status	Risk to Human Health and the Environment†	Regulatory Mechanism	NFA	Comments	ECP Area Type*
24	IRP 25	NA	Major Drainages (OU-2A)	Four drainage channels that flow through or adjacent to the Station and receive storm water discharges from the Station.		ROD signed in September 1997.		FFA	X	Includes SWMUs/AOCs 3, 4, 5, and 11	3
25	APHO 1	32	Stain							See Table 3-2	7
26	APHO 2	42	Open storage, drum							See Table 3-2	7
27	APHO 3	43	Open storage, drum							See Table 3-2	7
28	APHO 4	23	Stain							See Table 3-2	7
29	APHO 5	32	Open storage							See Table 3-2	7
30	APHO 6	29	Impoundment							See Table 3-2	7
31	APHO 7	29	Wet soil, stain, open storage							See Table 3-2	7
32	APHO 8	7	Open storage, refuse, excavation, fill area							See Table 3-2	7
33	APHO 9	23	Liquid							See Table 3-2	7
34	APHO 10	23	Open storage							See Table 3-2	7
35	APHO 11	29	Trench, disturbed ground							See Table 3-2	7
36	APHO 12	8	Wet soil							See Table 3-2	7
37	APHO 13	40	Drum							See Table 3-2	7
38	APHO 14	40	Stain, wet soil							See Table 3-2	7
39	APHO 15	32	Stain							See Table 3-2	7
40	APHO 16	32	Wet soil, liquid							See Table 3-2	7
41	APHO 17	29	Stain							See Table 3-2	7
42	APHO 18	29	Stain							See Table 3-2	7
43	APHO 19	29	Stain, liquid							See Table 3-2	7
44	APHO 20	7	Excavation, liquid							See Table 3-2	7
45	APHO 21	7	Open storage, drum							See Table 3-2	7
46	APHO 22	32	Stain, Drum							See Table 3-2	7
47	APHO 23	32	Fuel bladder revetment, stain							See Table 3-2	7
48	APHO 24	23	Extraction							See Table 3-2	7
49	APHO 25	40	Mounded material, refuse							See Table 3-2	7
50	APHO 26	23	Excavation, liquid							See Table 3-2	7
51	APHO 27	32	Stain, wet soil							See Table 3-2	7
52	APHO 28	42	Liquid							See Table 3-2	7
53	APHO 29	32	Wet soil, liquid							See Table 3-2	7
54	APHO 30	35	Unidentified object							See Table 3-2	7

EXTRACTS

Final Report
Aerial Photograph Assessment
MCAS El Toro

Contract No. N68711-91-D-4658
Delivery Order 0002
SAIC Project No. 01-0892-02-0817

Submitted to:

Naval Facilities Engineering Command
Southwest Division
1220 Pacific Highway, Room 18
San Diego, CA 92132-5181

Submitted by:

Science Applications International Corporation
Engineering Sciences Division
10260 Campus Point Drive, MS F1
San Diego, CA 92121

October 25, 1993

c 53. Liquid (LQ) can be seen flowing from a former hangar (?) near the northeast end of the aircraft parking apron on the northerly side of the present ACER site (Site 19). The liquid (LQ) discharges into a drainage ditch from a small building behind the former hangar. The flow appears to be significant and additional investigation is recommended.

c 54. There are farm buildings (B) near Perimeter Road and Borrego Canyon Wash, near Gate No. 3 on Trabuco Road. The buildings may contain fuel, solvents, pesticides, fertilizers, and other potential contaminants. Additional investigation is recommended if contamination is detected near the site, or downgradient of the site, in areas of interest to the IR program.

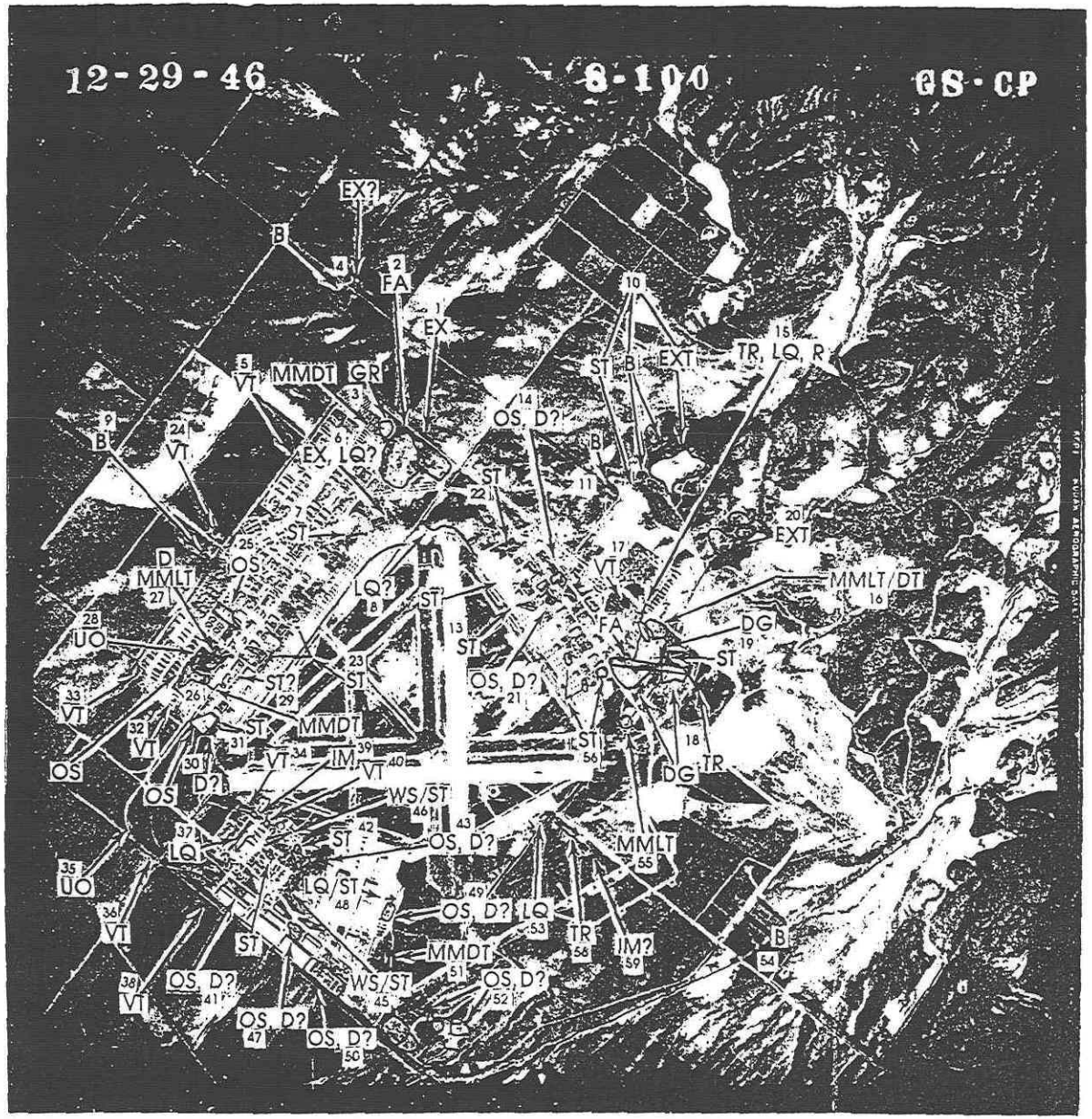
c 55. There is light-toned mounded material (MMLT) adjacent to the drainage ditch between North Marine Way and the approach end of Runway 25R. The material appears to be soil associated with construction or maintenance of the ditch. The ditch drains the Original Landfill (Site 3) area, and is intersected by one of the trenches. Investigation of the mounded soil and ditch is recommended.

c 56. Soil stains (ST) can be observed: on the southeast side of Building 125, near S Place and N 9th Street; at the edge of the aircraft parking apron about 200 feet northwest of Tank Farm No. 6; and near the present location of Buildings 697 and 642, near N 8th Street and S Street. Additional investigation is recommended.

b 57. No activity was noted at either the Magazine Road Landfill (Site 2), or the Communication Station Landfill (Site 17).

c 58. A trench (TR), possibly for drainage, can be seen northwest of the former building, located about 800 feet west of East Marine Way and El Toro Boulevard. Additional investigation is recommended.

c 59. There is a probable impoundment (IM) or storage tank of some sort southeast of the building indicated in the previous comment. The object appears to be a square-shaped, bermed area with impounded liquid or a square-shaped object on top of the mound. Additional investigation is recommended.



Aerial Photographic Interpretation
MCAS El Toro
Santa Ana, California
1946

Figure 2

Sheet 1 of 1
December 29, 1946
Photo Number GS-CP-8-100
Source:
U.S. Geological Survey

Prepared for

Southwest Division
Naval Facilities Engineering Command
Contract N68711-92-D-4658

LEGEND:

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
B	Building	IM	Impoundment
D	Drums	LQ	Liquid
EX	Pears	MT	Light Tower
GR	Disturbed Ground	M	Material
IM	Dark Tones	MM	Mounded Material
MT	Excavation	OS	Open Storage
MTS	Excavation	R	Refuse
SA	Area	ST	Stain
TBR	Tank Bladder Revetment	TR	Trench
GR	Graded Area	UO	Unidentified Object
OS	Disturbed Soil	VT	Vertical Tank
RT	Rectangular Tank	WS	Wet Soil

N

SAIC Science Applications International Corporation

STORM WATER POLLUTION PREVENTION PLAN

(SWPPP)

EXTRACTS

FOR

MARINE CORPS AIR STATION EL TORO

EL TORO, CALIFORNIA

NOTE: ANNOTATIONS MADE BY THE WRITER OF THE APHO 9 REPORT ARE IDENTIFIED WITH AN ARROW OR A STAR SYMBOL: ☆

CONTRACT NO. N68711-96-D-2059
DELIVERY ORDER NO. 0002

VOLUME 1

JULY, 1997

INTEGRATED ENVIRONMENTAL MANAGEMENT, INC.

TABLE 6-1

MCAS EL TORO

STATIONWIDE SUMMARY OF BMPs

BLDG #	BASIN	BUILDING DESCRIPTION	TENANT	Concern Level	BMP STATUS	BMP #	BMP Description
396	08	Aircraft Truck Refueling	Supply	Previous			No Additional BMPs Recommended
399	07	Vortac Facility	Station/G-6	Limited			No Additional BMPs Recommended
402	13	Stables Toilet	MWR	Limited			No Additional BMPs Recommended
→ 404	06	Receiver Building	Station/G-6	Limited			No Additional BMPs Recommended
404	37	Receiver Building	Station/G-6	Limited			No Additional BMPs Recommended
405	37	Applied Instruction Building	FREST/VMFA T-101	Limited			No Additional BMPs Recommended
406	37	Applied Instruction Building	FREST/VMFA T-101	Limited			No Additional BMPs Recommended
407	37	Squadron Headquarters	FREST/VMFA T-101	Limited			No Additional BMPs Recommended
408	37	Guard Tower	FREST/VMFA T-101	Limited			No Additional BMPs Recommended
409	37	Guard Tower	FREST/VMFA T-101	Limited			No Additional BMPs Recommended
410	14	Playing Fields, Softball	MWR-Rec	Limited			No Additional BMPs Recommended
→ 414	06	Standby Generator Building	Station/G-3	Previous			No Additional BMPs Recommended
415	30	Storage out of Stores	MAG-16	Limited			No Additional BMPs Recommended

TABLE 7-1
MCAS EL TORO MATERIALS INVENTORY

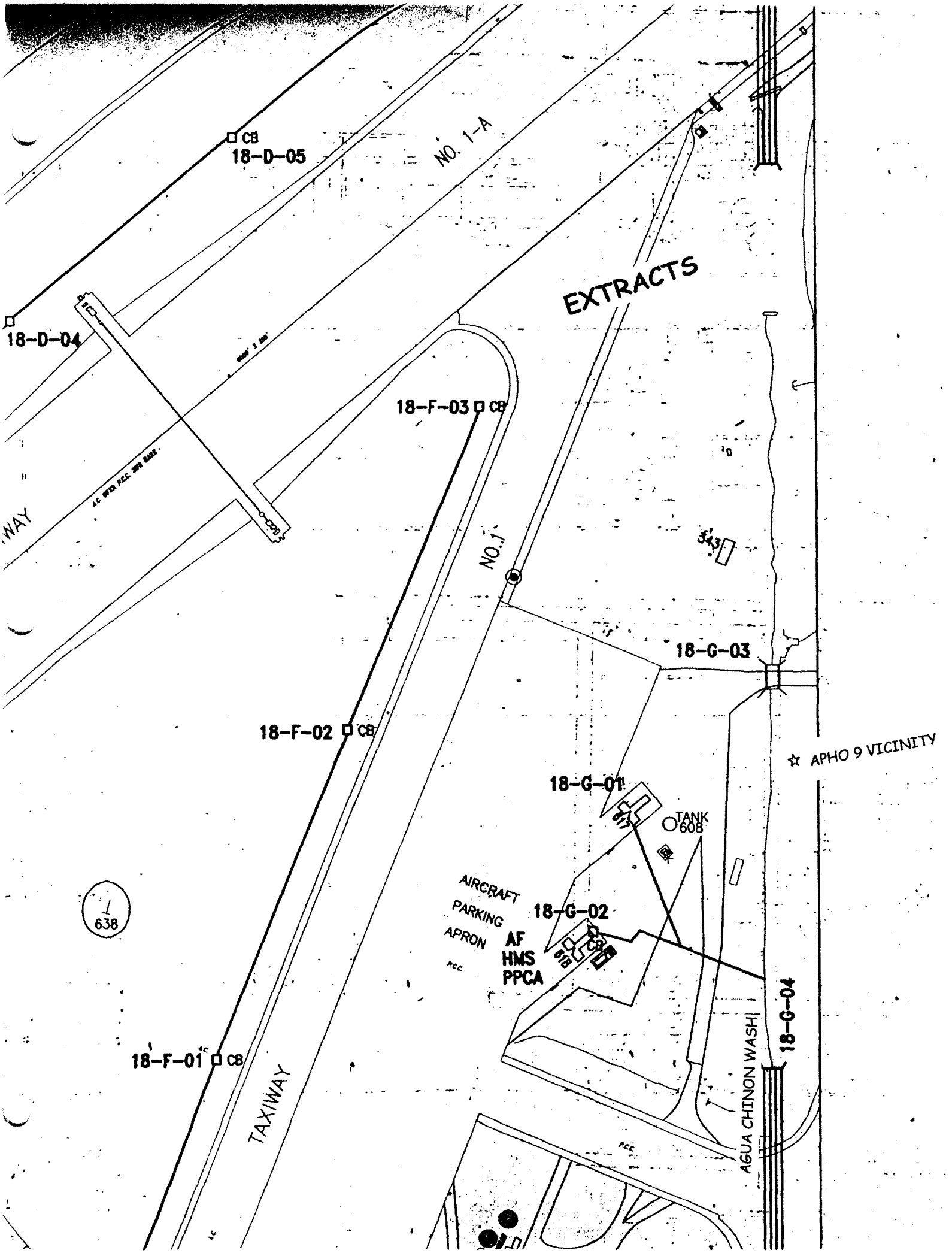
BLDG #	BASIN	BUILDING DESCRIPTION	TENANT	Concern Level	TRADE/COMMON NAME	MAX. DAY	AVE. Day	CONT.
360	01	Storage MC Air/Ground Organic Unit	Supply Flam/storage	Concern	Lubricating Oil, Eng 80/90W	55 gal	5 gal	5 gal
360	01	Storage MC Air/Ground Organic Unit	C POOL HM storage	Concern	Lubricating Oil, Eng 80/90W	165 gal	55 gal	55 gal
360	01	Storage MC Air/Ground Organic Unit	Supply Outside storage	Concern	Lubricating Oil, Helicopter	55 gal	5 gal	55 gal
360	01	Storage MC Air/Ground Organic Unit	C POOL HM storage	Concern	MOPAR Transmission fluid	385 gal	110 gal	55 gal
364	28	Mess Hall #2	Food Service	Concern	N/A			
369	01	Servmart	Supply	Concern	Bleaches	N/A	N/A	N/A
369	01	Servmart	Supply	Concern	Lacquers	N/A	N/A	N/A
369	01	Servmart	Supply	Concern	Paints	N/A	N/A	N/A
369	01	Servmart	Supply	Concern	Solvents	N/A	N/A	N/A
369	01	Servmart	Supply	Concern	Waste Oil	N/A	N/A	N/A
369	01	Servmart	Supply	Concern	Wax Remover	N/A	N/A	N/A
370	01	PW Paint/Carp/Metal Trades	Installation	Concern	Oil	N/A	N/A	55 gal
371	37	Maint Hngr Space	VMFAT-101	Concern	Jet Fuel JP-5	N/A	N/A	N/A
371	37	Maint Hngr Space	VMFAT-101	Concern	Solvents	N/A	N/A	N/A

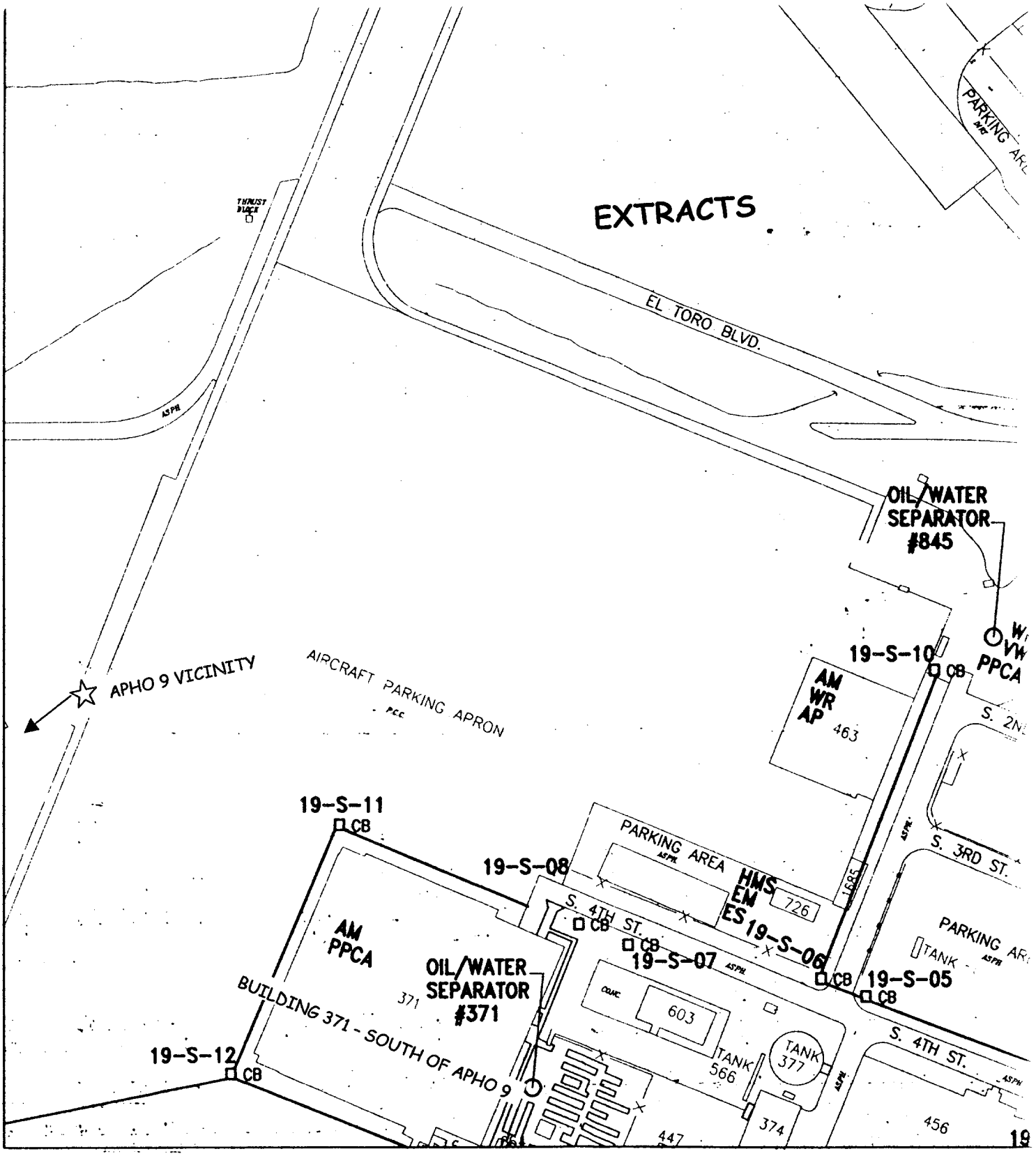
TABLE 7-1
MCAS EL TORO MATERIALS INVENTORY

BLDG #	BASIN	BUILDING DESCRIPTION	TENANT	Concern Level	TRADE/COMMON NAME	MAX. DAY	AVE. Day	CONT.
371	37	Maint Hngr Space	VMFAT-101	Concern	Waste Oil	N/A	N/A	N/A
374	37	Conversion Station	Installation	Concern	N/A			
386	01	Const. Equip Shop	Installation	Concern	Diesel Fuel	N/A	N/A	N/A
386	01	Const. Equip Shop	Installation	Concern	Gear Oil	N/A	N/A	N/A
386	01	Const. Equip Shop	Installation	Concern	Hydraulic Oil	N/A	N/A	N/A
386	01	Const. Equip Shop	Installation	Concern	Solvents	N/A	N/A	N/A
386	01	Const. Equip Shop	Installation	Concern	Waste Oil	N/A	N/A	N/A
388 B	01	UST - Field Maint Area	CSSD-14	Concern	Diesel Fuel No. 2	18000 gal	1000 gal	2000 gal
388	01	Field Maint Shop	CSSD-14	Concern	Jet Fuel JP-5	N/A	N/A	55 gal
388	01	Field Maint Shop	CSSD-14	Concern	Waste Oil	N/A	N/A	55 gal
389	10	Loading/Unloading Ramp	Station	Concern	Aerosol Paint	N/A	N/A	N/A
389	10	Loading/Unloading Ramp	Station	Concern	Antifreeze	N/A	N/A	N/A
389	10	Loading/Unloading Ramp	Station	Concern	Grease	N/A	N/A	N/A
389	10	Loading/Unloading Ramp	Station	Concern	Lubricating Oil	N/A	N/A	N/A
390 A	10	Tank - Golf course maint	MWR	Concern	Diesel Fuel No. 2	500 gal	250 gal	500 gal
390 B	10	Tank - Golf course maint	MWR	Concern	Gasoline, Regular Unleaded	500 gal	250 gal	500 gal
390	10	Golf Cart Shop	MWR	Concern	Waste Oil	N/A	N/A	N/A

TABLE 7-1
MCAS EL TORO MATERIALS INVENTORY

BLDG #	BASIN	BUILDING DESCRIPTION	TENANT	Concern Level	TRADE/COMMON NAME	MAX. DAY	AVE. Day	CONT.
392	08	ACFT Ground Support Equipment Shop	MALS-11	Concern	Antifreeze			
392 B	08	UST-Fuel Farm	MALS-11	Concern	Jet Fuel JP-5	2000 gal	1000 gal	2000 gal
392	08	ACFT Ground Support Equipment Shop	MALS-11	Concern	Lubricating Oil	N/A	N/A	N/A
392 A	08	UST-Fuel Farm	MALS-11	Concern	MOGAS Unleaded	2000gal	1000 gal	2000 gal
396	08	Aircraft Truck Refueling	C POOL HM Storage Supply	Previous	Antifreeze	220 gal	55 gal	55 gal
396	08	Aircraft Truck Refueling	C POOL HM Storage Supply	Previous	Lubricating oil, engine, 40 W	440 gal	110 gal	55 gal
439	17	Tank - Branch Dental Clinic	13th Dental	Limited	Liquefied Petroleum Gas	500 gal	250 gal	500 gal
441	37	Aviation Armament/ Station Ordnance	Sta/G-4	Concern	N/A			
447	37	Engine Test Cell	MALS-11	Concern	Grease	N/A	N/A	N/A
447	37	Engine Test Cell	MALS-11	Concern	Jet Fuel JP-5	N/A	N/A	N/A
447	37	Engine Test Cell	MALS-11	Concern	Lubricating oil	N/A	N/A	N/A
456	37	Organic Storage	MALS-11 HM Storage	Limited	Cleaning compound	55 gal	25 gal	1 gal


EXTRACTS
CB
18-D-05
NO. 1-A
18-D-04
18-F-03
CB
NO.1
18-G-03
18-F-02
CB
APHO 9 VICINITY
18-G-01
TANK
608
AIRCRAFT
PARKING
APRON
18-G-02
AF
HMS
PPCA
638
18-F-01
CB
TAXIWAY
18-G-04
AGUA CHINON WASH


EXTRACTS
EL TORO BLVD.
THRUST BLOCK
ASPH
PARKING AR
OIL/WATER SEPARATOR #845
APHO 9 VICINITY
AIRCRAFT PARKING APRON
PCC
19-S-10
CB
AM WR AP
463
19-S-11
CB
19-S-08
PARKING AREA
ASPH
HMS EM ES
726
1685
S. 4TH ST.
CB
19-S-07
ASPH
19-S-06
CB
19-S-05
CB
S. 3RD ST.
PARKING AR
TANK
AM PPCA
OIL/WATER SEPARATOR #371
371
BUILDING 371 - SOUTH OF APHO 9
603
CONC
TANK 566
TANK 377
19-S-12
CB
S. 4TH ST.
ASPH
447
374
456

Final

Marine Corps Air Station El Toro
Hazardous Material/Hazardous Waste
Management Plan

August 1994

EXTRACTS

NOTE: ANNOTATIONS MADE BY THE WRITER OF THE APHO 9 REPORT ARE IDENTIFIED WITH AN ARROW OR A STAR SYMBOL: ☆

Prepared for:

Southwest Division Naval Facilities Engineering Command
1220 Pacific Highway
San Diego, CA 92132-5190

Prepared by:

Science Applications International Corporation
Engineering Sciences Division
10260 Campus Point Drive
San Diego, CA 92121

Contract No. N68711-92-D-4658
Delivery Order No. 0004

▲ HAZARDOUS MATERIALS STORAGE

● HAZARDOUS WASTE ACCUMULATION POINT

■ ONE YEAR PERMITTED HAZARDOUS WASTE STORAGE AREA

MCAS El Toro
Santa Ana, California

HAZARDOUS WASTE ACCUMULATION POINTS AND HAZARDOUS MATERIAL STORAGE LOCATIONS

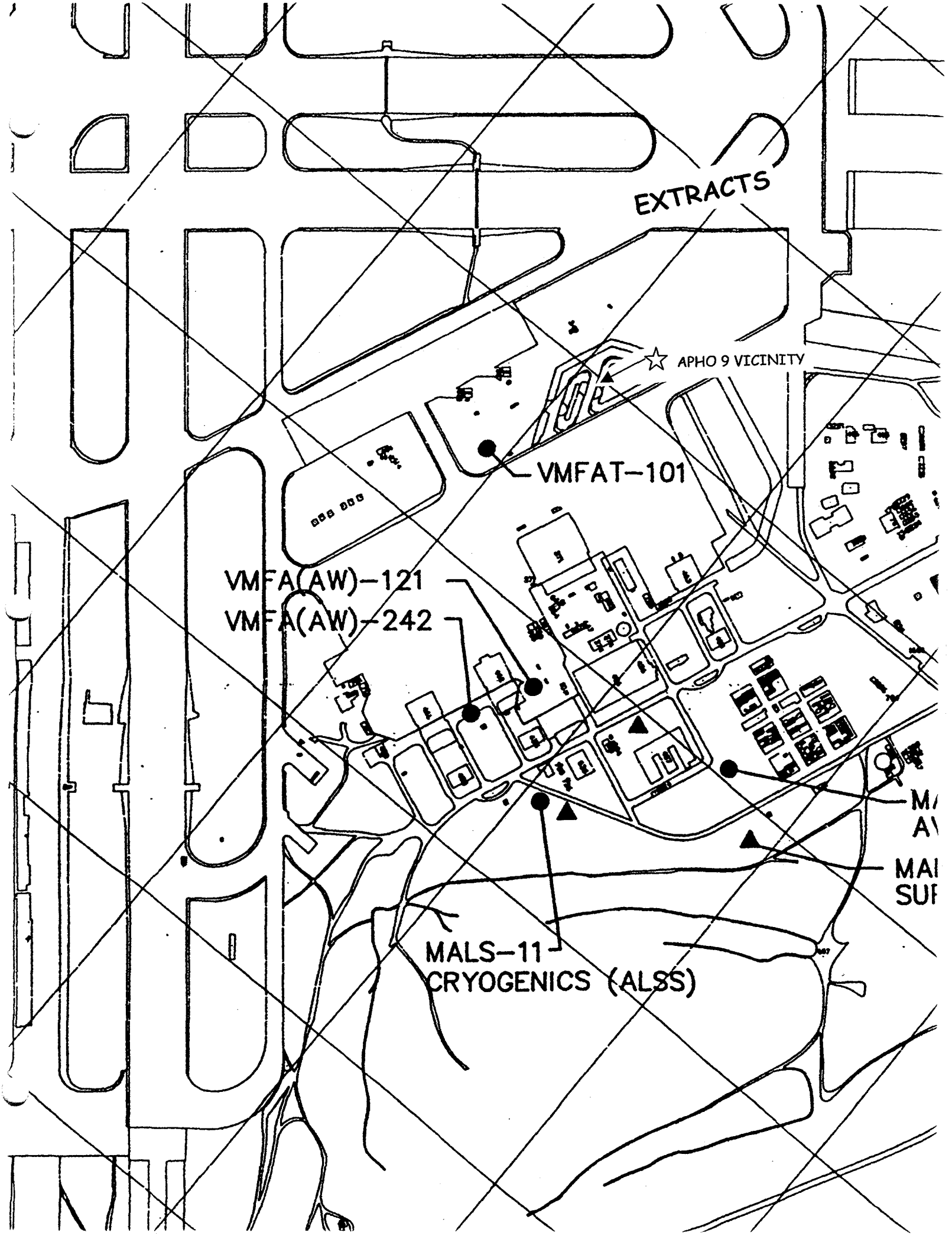
EXTRACTS

NOVEMBER 5, 1993

500' 250' 0 500' 1000'

1" = 500'

Science Applications International Corporation
An Employee-Owned Company


EXTRACTS
APHO 9 VICINITY
VMFAT-101
VMFA(AW)-121
VMFA(AW)-242
MALS-11
CRYOGENICS (ALSS)

Hazardous Waste Accumulation Point Summary		
Unit	Bldg #	Coordinates
Aero Club	10	R5
Armory	744	O2
Auto Hobby Shop	626	M3
CSSD-14	388	U8
Environmental Above Ground Storage Tank	n/a	U6
FMD Shops, Bldg 1601	370	T6
Fuels Division	314	U9
H&HS 38	22	R4
MACG-38 MWCS 38	HGR 5	R4
MAG-46	51	Q4
MAG-46 Fixed Wing	296	T9
MAG-46 Helo Mals-46	295	S8
MALS-11 Air Frames	130	M9
MALS-11 Avionics	656	Q12
MALS-11 Cryogenics (ALSS)	636	R12
MALS-11 GSE North	392	M9
MALS-11 Ordinance	673	P12
MALS-11 Power Plant	658	N10
MALS-11 Power Plant	634	N9
MALS-11 Supply	441	P12
Maytag Aircraft Corp	779	N10
MOD Team	115	N9
Motor Pool (G-4), Bldg 770	386	T7
MWHS-3	7	Q5
MWR Auto #1	651	O2
MWR Golf Course	390	P13
MWSS-Utilities	31	S4
MWSS-373 HQ	800	U10
MWSS-373 Refuelers	671	U9
SOMS HQ	289	N5
SOMS Maintenance	HGR 2	O4
SOMS Recovery		
Supply	320	U7
VMFA (AW)-121	462	R11
VMFA (AW) 225	698	N9
VMFA (AW)-242	461	R11
VMFAT-101	371	Q10
VMFA-323	606	N8
VMGR-352	297	T8
VFMA-314	605	N7

☆ *NOTE:*

NO HW STORAGE AREAS ARE IDENTIFIED IN THE APHO 9 VICINITY.

SOUTHWESTNAVFACENGCOM
CODE 5BME.LMH
SAN DIEGO, CA 92101

No Further Action Documents (Closure Letters) for Nearby Tank Sites and Petroleum Exclusion Site and Extracts from Related Documents

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SANTA ANA REGION
3737 MAIN STREET, SUITE 500
RIVERSIDE, CA 92501-3339
PHONE: (909) 782-4130
FAX: (909) 781-6288

May 14, 1997

Mr. Wayne D. Lee
Assistant Chief of Staff
Environment and Safety
Marine Corps Air Station El Toro
P.O. Box 95001
Santa Ana, CA 92709-5001

SUBJECT: **CASE CLOSURE AIRCRAFT EXPEDITIONARY REFUELING (ACER) SITE, NORTHWEST STAINED AREA (FORMER IRP SITE 19 UNIT 1), MARINE CORPS AIR STATION EL TORO**

Dear Mr. Lee:

This letter confirms the completion of site investigations and remedial actions for the subject site. Based on the information provided in the Site Assessment Report Aircraft Expeditionary Refueling (ACER) Site Northwest Stained Area (Former IRP Site 19 Unit 1) dated April 1, 1997 and with the provision that the information provided to this agency was accurate and representative of site conditions, no further action related to the site is required.

This notice is issued pursuant to a regulation contained in Title 23, Division 3, Chapter 16, Section 2721 (e) of the California Code of Regulations.

If you have any questions regarding this matter, please contact Lawrence Vitale at (909) 782-4998.

Sincerely,

Gerard J. Thibeault
Executive Officer

cc: LT. Hope Katcharian, Marine Corps Air station El Toro
Mr. Bill Diekman, Orange County Health Care Agency
Mr. John Adams Jr., State Water Resources Control Board, Division of Clean Water Programs

COUNTY OF ORANGE
HEALTH CARE AGENCY

PUBLIC HEALTH
DIVISION OF ENVIRONMENTAL HEALTH

TOM URAM
DIRECTOR

HUGH F. STALLWORTH, M.D.
HEALTH OFFICER

JACK MILLER, REHS
DEPUTY DIRECTOR

MAILING ADDRESS:
2009 EAST EDINGER AVENUE
SANTA ANA CA 92705-4720

TELEPHONE: (714) 667-3600
FAX: (714) 972-0749

April 4, 1997

LT. Hope Katcharian
Director, Environmental Engineering Division
Commanding General
AC/S Environmental 1AU
Marine Corps Air Station El Toro
P.O. Box 95001
Santa Ana, CA 92709-5001

Subject: **Completion of Tank Removal Project**

RE: Marine Corps Air Station El Toro
Tank #294
Santa Ana, CA 92709

Dear Lt. Katcharian:

This is in response to your request for a confirmation of the completion of the tank removal project. With the provision that the results for the soil samples obtained during the soil sampling activities on December 17, 1996, were accurate and representative of existing conditions, it is the position of this office that no significant soil contamination has occurred at the above noted tank location.

It should be pointed out that this letter does not relieve you of any responsibilities mandated under the California Health and Safety Code if additional or previously unidentified contamination is discovered at the subject site.

If you have any questions regarding this matter, please contact Arghavan Rashidi-Fard at (714) 667-3713.

Sincerely,

William J. Diekmann, M.S., REHS
Supervising Hazardous Waste Specialist
Hazardous Materials Management Section
Environmental Health Division

cc: Larry Vitale, Santa Ana Regional Water Quality Control Board

COUNTY OF ORANGE
HEALTH CARE AGENCY

PUBLIC HEALTH
DIVISION OF ENVIRONMENTAL HEALTH

RONALD R. DILUIGI
INTERIM DIRECTOR

HUGH F. STALLWORTH, M.D., MPH
HEALTH OFFICER

JACK MILLER, REHS
DEPUTY DIRECTOR

MAILING ADDRESS:
2009 EAST EDINGER AVENUE
SANTA ANA, CA 92705-4720

TELEPHONE: (714) 667-3600
FAX: (714) 586-5116

April 20, 1999

Maj. Jeff Matthews
Director, Environmental Engineering Division
Commanding General
AC/S Environmental 1AU
Marine Corps Air Station El Toro
P.O. Box 95001
Santa Ana, CA 92709-5001

Subject: **Completion of Tank Removal Project**

RE: Marine Corps Air Station El Toro
Tank #404
Santa Ana, CA 92709

Dear Major Matthews:

This is in response to your request for a confirmation of the completion of the tank removal project. With the provision that the results for the soil samples obtained during the tank removal on November 13, 1998, were accurate and representative of existing conditions, it is the position of this office that no significant soil contamination has occurred at the above noted facility location.

It should be pointed out that this letter does not relieve you of any responsibilities mandated under the California Health and Safety Code if additional or previously unidentified contamination is discovered at the subject site.

If you have any questions regarding this matter, please contact Arghavan Rashidi-Fard at (714) 667-3713.

Sincerely,

Deborah A. Greco, M.S.
Supervising Hazardous Waste Specialist
Hazardous Materials Management Section
Environmental Health Division

cc: Patricia Hannon, Santa Ana Regional Water Quality Control Board
Lynn Hornecker, SWDIV

UNDERGROUND STORAGE TANK REMOVAL REPORT

Tank Number 294
Marine Corps Air Station (MCAS)
El Toro, California

Environmental Remedial Action Contract for Removal and Disposal of Underground Storage Tanks (USTs) at Various Locations in Southern California, Arizona, Nevada and New Mexico.

Contract No. N68711-92-R-4675
Delivery Order No. 0007

EXTRACTS

Prepared for:

Department of the Navy,
Southwest Division
Naval Facilities Engineering Command
1220 Pacific Highway
San Diego, California 92132

Prepared by:

GEOFON, INC.
1081 Camino Del Rio South, Suite 202
San Diego, California 92108

GEOFON Project No. 95-333.70 February 14, 1997

TABLE 1 -SUMMARY OF SOIL SAMPLE ANALYSES									
Soil Sample I.D.	*Sample date	TPHg µg/kg	TPHd mg/kg	TRPH mg/kg	Benzene µg/kg	Toluene µg/kg	Ethyl-benzene µg/kg	Total Xylenes µg/kg	Comments
TANK CONTENTS									
T294-TC	12/17/96	NA	ND	13	ND	ND	ND	ND	
TANK EXCAVATION									
PL-1	1/30/97	NA	ND	ND	ND	ND	ND	ND	
STOCKPILE									
SP-2	1/30/97	NA	23	52	ND	ND	ND	ND	

* The locations of the tests are shown on the UST Removal Summary

Definitions:
TPHg = Total petroleum hydrocarbons as gasoline (DOHS Method)
TPHd = Total petroleum hydrocarbons as diesel (DOHS Method)
TRPH = Total recoverable petroleum hydrocarbons (Modified EPA Method 418.1)
BTEX = Benzene, Toluene, Ethylbenzene, and total Xylenes (EPA Method 8020)
NA = Not sampled/analyzed

Site Assessment Report

Aircraft Expeditionary Refueling (ACER) Site
Northwest Stained Area (Former IRP Site 19, Unit 1)
Marine Corps Air Station
El Toro, California

SWDIV Contract No. N68711-93-D-1459, Delivery Order No. 0024
OHM Project No. 17486
Document Control No. SW3420
Revision 0
April 1, 1997

EXTRACTS

OHM Remediation Services Corp.

1202 Kettner Boulevard
San Diego, California 92101

Prepared by:

Dhananjay Rawal
Project Engineer

Approved by:

William Sedlak, P.E.
Project Manager

SAMPLE ID	DEPTH (FEET)	TPH-D (PPM)	B/T/E/X (PPB)
96-IRP19-SB05-S-263	1.0	ND	ND/11/ND/ND

SAMPLE ID	DEPTH (FEET)	TPH-D (PPM)	B/T/E/X (PPB)
96-IRP19-SB02-S-260	1.5	ND	ND/13/ND/ND

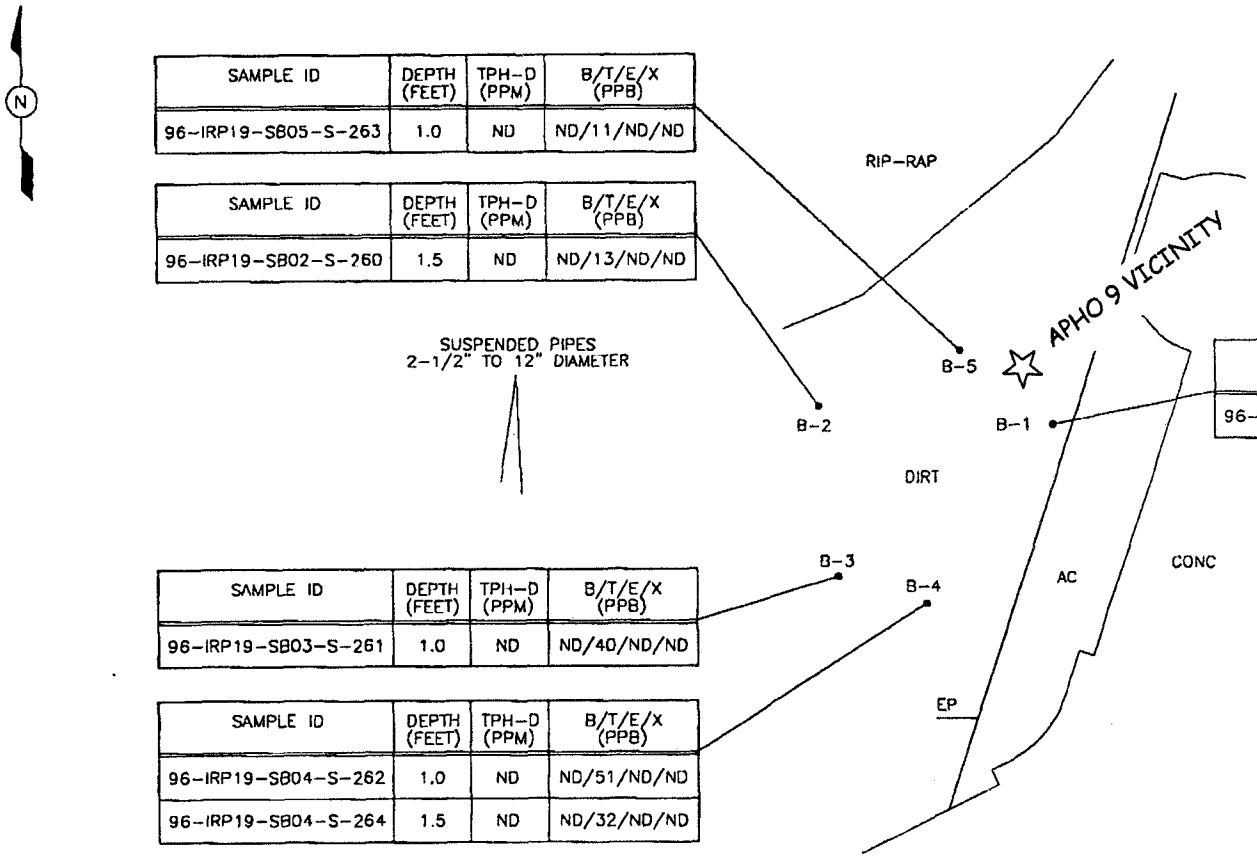
SAMPLE ID	DEPTH (FEET)	TPH-D (PPM)	B/T/E/X (PPB)
96-IRP19-SB03-S-261	1.0	ND	ND/40/ND/ND

SAMPLE ID	DEPTH (FEET)	TPH-D (PPM)	B/T/E/X (PPB)
96-IRP19-SB04-S-262	1.0	ND	ND/51/ND/ND
96-IRP19-SB04-S-264	1.5	ND	ND/32/ND/ND

SAMPLE ID	DEPTH (FEET)	TPH-D (PPM)	B/T/E/X (PPB)
96-IRP19-SB01-S-259	1.5	ND	ND/6.2/ND/ND

SAMPLE COORDINATE LISTING

DESCRIPTION	NORTHING	EASTING
B-1	2189789.643	6113729.936
B-2	2189775.261	6113654.215
B-3	2189717.633	6113690.354
B-4	2189710.771	6113688.995
B-5	2189793.899	6113700.038



EXPLANATION:

•	SOIL SAMPLE LOCATIONS
TPH-D	TOTAL PETROLEUM HYDROCARBON AS DIESEL
B/T/E/X	BENZENE/TOLUENE/ETHYLBENZENE/TOTAL XYLENES
ND	NOT DETECTED ABOVE LABORATORY REPORTING LIMITS
PPM	PARTS PER MILLION
PPB	PARTS PER BILLION
ID	IDENTIFICATION

GRAPHIC SCALE

0 20 40 80

(IN FEET)

NOTE: ANNOTATIONS MADE BY THE WRITER OF THE APHO 9 REPORT ARE IDENTIFIED WITH AN ARROW OR A STAR SYMBOL: ☆

REVISIONS

REV. No.	DESCRIPTION	DATE	APPROVED

CONTRACT NAME: SWDIV

OHM Remediation Services Corp. A Subsidiary of OHM Corporation IRVINE, CA

DRAWN BY: R. PIRMORADIAN DATE: 08/16/99

CHECKED BY: DATE:

APPROVED BY: DATE:

PROJECT MANAGER: DATE:

AUTOCAD FILE No.: 17486027.DWG

FORMER IRP 19, UNIT 1
SOIL SAMPLING LOCATIONS

MARINE CORPS AIR STATION
EL TORO, CALIFORNIA

SCALE	SHEET	OF	DOCUMENT CONTROL No.	OHM PROJECT No.	DRAWING No.
1"=40'	1	1	SW3420	17486	FIG 4-1

Southwest Division
Naval Facilities Engineering Command
Contracts Department
1220 Pacific Highway, Room 135
San Diego, California 92132-5187

Contract No. N68711-92-D-4670

COMPREHENSIVE LONG-TERM ENVIRONMENTAL ACTION NAVY

CLEAN II

EXTRACTS

NOTE: ANNOTATIONS MADE BY THE WRITER OF THE APHO 9 REPORT ARE IDENTIFIED WITH AN ARROW OR A STAR SYMBOL: ☆

FINAL WORK PLAN
PHASE II
REMEDIAL INVESTIGATION/ FEASIBILITY STUDY
MCAS EL TORO, CALIFORNIA

CTO-0059

Prepared by:

BECHTEL NATIONAL, INC.
401 West A St., Suite 1000
San Diego, California 92101

July 1995

Signature: Timothy W. Latas
Timothy W. Latas, CTO Leader

Date: 7/28/95

WORK PLAN APPENDIX R

DATA QUALITY OBJECTIVES
OPERABLE UNIT 3 –
SITE 19 – AIRCRAFT EXPEDITIONARY
REFUELING SITE

SUMMARY

STEP 1 – STATE THE PROBLEM

Site 19, the Aircraft Expeditionary Refueling site, was operated as a fuel storage and refueling area between 1964 and 1987. Soil beneath the site has been contaminated with chemical constituents associated with the aircraft fuel storage and refueling. Semivolatile organic compound-contaminated soil is present to a depth of approximately 35 feet below ground surface in the area of a JP-5 fuel spill. The human health and ecological risks associated with the impacted soil will be estimated so that a No Further Investigation, Early Action, or the appropriate remedial alternative can be recommended.

STEP 2 – IDENTIFY THE DECISION

The Phase II Remedial Investigation/Feasibility Study decisions to be considered at Site 19 are as follows: Do chemicals of potential concern in the shallow soil at Site 19 present an unacceptable risk to human health and the environment? Are the chemicals of potential concern present in the subsurface soil (greater than 10 feet below ground surface), and if so, do they present an unacceptable risk to groundwater? The possible decision outcomes are recommendations for No Further Investigation, Early Action, or Long-Term Action.

STEP 3 – IDENTIFY THE INPUTS AFFECTING THE DECISION

Inputs necessary to make these decisions include a list of chemicals of potential concern; the extent of impacted media; the background (ambient) concentrations of metals, herbicides, and pesticides; and the action levels for protection of human health and the environment.

STEP 4 – DEFINE THE BOUNDARIES OF THE STUDY

The study is limited to the geographic area of Site 19 which comprises four subareas: 1) the Northeast Stained Area (approximately 31,400 square feet); 2) the Excavated Area (approximately 22,860 square feet); 3) the Stained Area Around Excavation (approximately 159,000 square feet); and 4) a Pump Station (approximately 4,600 square feet).

STEP 5 – DEVELOP A DECISION RULE

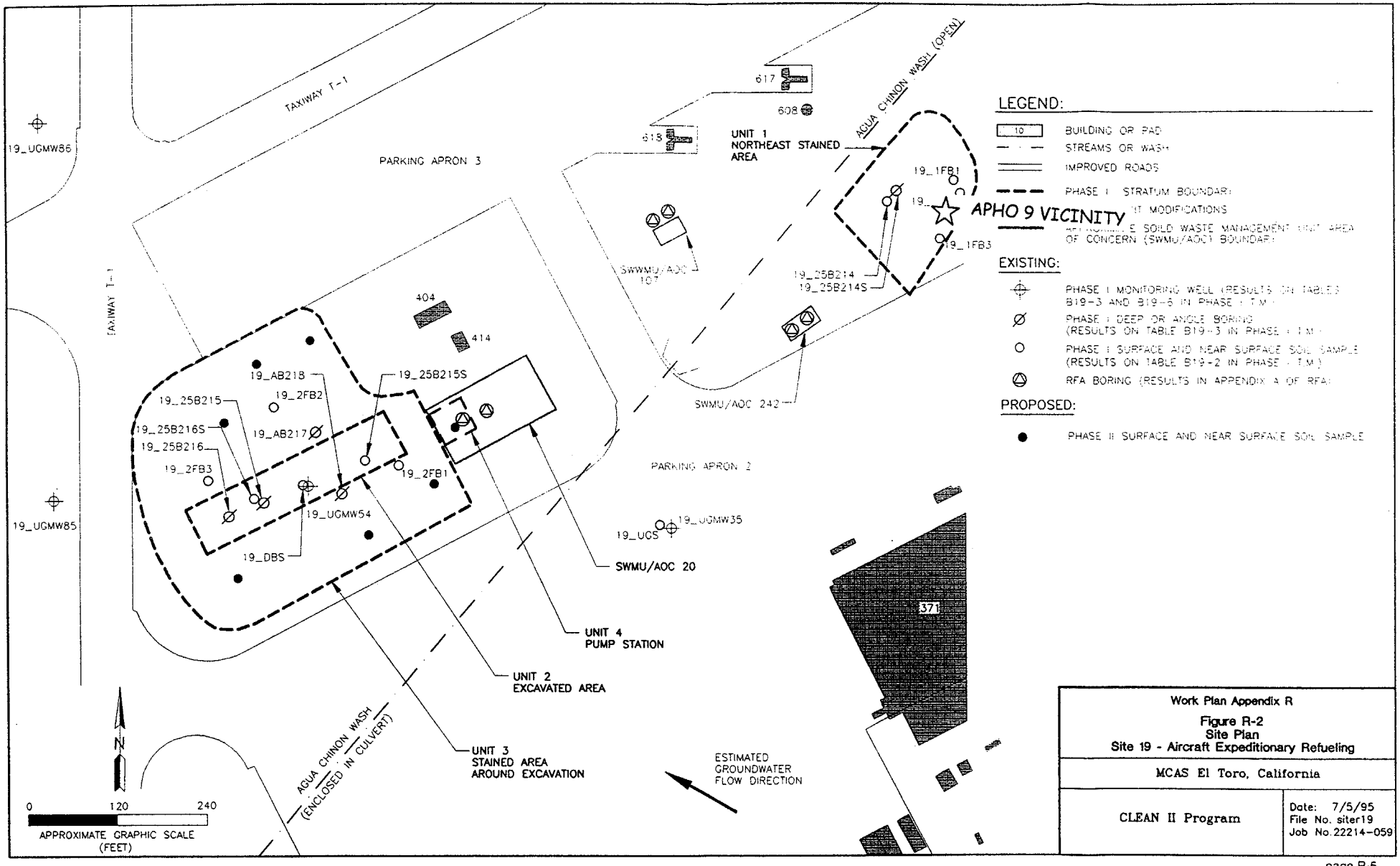
Action levels developed for decision-making purposes are a cumulative excess cancer risk of 10^{-6} in humans and a hazard index of 1.0 for chronic systemic toxicity in humans. Based on these risk levels, decision rules have been formulated to protect human health and the environment in residential, recreational, and industrial land use scenarios.

STEP 6 – SPECIFY LIMITS ON UNCERTAINTY

The number of samples necessary to estimate different levels of risk were calculated using the confidence level of 95 percent and power level of 80 percent limits specified for this project. The preliminary cancer and noncancer risk values were compared to the risk levels, and the appropriate number of samples necessary to estimate risk were selected for each unit.

STEP 7 – OPTIMIZE THE DESIGN

Shallow soil samples will be collected and analyzed at 0, 5, and 10 feet below ground surface at six locations in the Stained Area Around the Excavation; and one location at the Pump Station.



Work Plan Appendix R

Figure R-2
Site Plan
Site 19 - Aircraft Expeditionary Refueling

MCAS El Toro, California

CLEAN II Program

Date: 7/5/95
File No. siter19
Job No. 22214-059

NOTE: ANNOTATIONS MADE BY THE WRITER OF THE APHO 9 REPORT ARE IDENTIFIED WITH AN ARROW OR A STAR SYMBOL: ☆

In addition to the human health risk assessment conducted for a site, an ecological risk assessment may also be performed. The ecological risk assessment will evaluate current and potential risks to the environment posed by the chemical releases that have occurred at the sites.

IDENTIFICATION OF CLEANUP LEVELS

Cleanup levels will be based on ARARs, background concentrations, and risk levels that will be determined for the site.

CLEANUP TECHNOLOGY EFFECTIVENESS, IMPLEMENTABILITY, AND COSTS

Once cleanup levels have been established, the most appropriate and cost-effective approach will be identified to remediate the site, if necessary.

→ STEP 4 – DEFINE THE BOUNDARIES OF THE STUDY

This step defines the spatial and temporal boundaries of the problem and any practical constraints that may interfere with the study.

- Unit 1 – Northeast Stained Area (approximately 31,400 feet^2) is an area that contained two fuel bladder revetments adjacent to Agua Chinon Channel 500 feet north of Building 371. This unit has the same boundaries as Phase I RI Site 19 Stratum 1.
- Unit 2 – Excavated Area (approximately 22,860 feet^2) is an area northwest of Unit 1 where a JP-5 fuel spill occurred. This unit has the same boundaries as Phase I RI Site 19 Stratum 2.
- Unit 3 – Stained Area Around Excavation (approximately 159,000 feet^2) is the stained area surrounding Unit 2. This unit has the same boundaries as Phase I RI Site 19 Stratum 3.
- Unit 4 – Pump Station (approximately 4,600 feet^2) is an unpaved area fenced enclosure located northeast of Unit 2 and 3. Unit 4 was created for the Phase II RI/FS to vertically delineate fuel contamination in one boring location of SWMU/AOC 20.

Specification of temporal boundaries for the field sampling activities is unnecessary. Shallow and deeper subsurface soil conditions are not considered to be significantly different from conditions during the Phase I RI sampling or throughout the period since spillage or unregulated waste disposal activities occurred on the site.

STEP 5 – DEVELOP A DECISION RULE

Decision rules are required to state explicitly the types of inputs and logical basis for choosing among alternative actions during the Phase II RI/FS. A list of all decision rules for the project are included in Section 4 of the Work Plan. The specific decision rules that will be followed to determine an action are described below.

Table C - 19b

Site 19: Summary of Analytes and Minimum / Maximum Concentrations
Surface/Near-Surface Soil and Sediment

MCAS El Toro Phase I RI Technical Memorandum

ANALYTE BY GROUP	Units	Number of Samples	Number of Times Detected	Minimum Detected Conc.(a)	DVF(b)	Station with Minimum Detected Conc.	Maximum Detected Conc.(a)	DVF(b)	Station with Maximum Detected Conc.	Detection Limit
METALS										
ALUMINUM	MG/KG	24	24	3770		19_UGS	18400		19_1FB3	6.4
ANTIMONY	MG/KG	24	1	2.5	U	-	3.1	b	19_1FB3	2.5
ARSENIC	MG/KG	24	24	1.3	b	19_2FB2	5.1		19_2FB1	0.7
BARIUM	MG/KG	24	24	54.5		19_UGS	254		19_2FB1	0.02
BERYLLIUM	MG/KG	24	23	0.11	U	-	1.4		19_2FB1	0.1
CADMIUM	MG/KG	24	24	0.43	b	19_1FB2	2.8		19_1FB3	0.25
CALCIUM	MG/KG	24	24	1880		19_UGS	62200		19_1FB2	21.3
CHROMIUM	MG/KG	24	24	4.3		19_UGS	17.4		19_1FB3	0.76
COBALT	MG/KG	24	24	2	b	19_UGS	36.4		19_1FB3	1.2
COPPER	MG/KG	24	23	3.7	b	19_UGS	17.3		19_1FB3	0.19
IRON	MG/KG	24	24	5870		19_UGS	22500		19_1FB3	0.47
LEAD	MG/KG	24	24	1.4		19_UGS	10.2		19_2FB1	0.6
MAGNESIUM	MG/KG	24	24	2120		19_UGS	9780		19_2FB1	2.9
MANGANESE	MG/KG	24	24	78.8		19_UGS	374		19_1FB3	0.16
MERCURY	MG/KG	24	9	0.03	U	-	0.05	b	19_1FB2	0.1
NICKEL	MG/KG	24	21	2.1	b	19_UGS	18.7		19_1FB3	1.6
POTASSIUM	MG/KG	24	24	938	b	19_1FB2	6110		19_2FB1	39.3
SELENIUM	MG/KG	24	4	0.1	U	-	0.27	b	19_1FB3	0.5
SILVER	MG/KG	24	5	0.43	U	-	2.4	b	19_2FB1	0.43
SODIUM	MG/KG	24	24	154	b	19_2FB3	1200		19_1FB2	2.6
THALLIUM	MG/KG	24	14	0.14	b	19_DBS	0.44	b	19_1FB1	0.7
VANADIUM	MG/KG	24	24	14.4		19_UGS	54.2		19_1FB3	0.39
ZINC	MG/KG	24	24	20		19_UGS	69.8		19_2FB1	0.45
VOLATILE ORGANIC COMPOUNDS										
1,1,1-TRICHLOROETHANE	UG/KG	19	0	10	U	-	13	U	-	10
1,1,2,2-TETRACHLOROETHANE	UG/KG	19	0	10	U	-	13	U	-	10
1,1,2-TRICHLOROETHANE	UG/KG	19	0	10	U	-	13	U	-	10
1,1-DICHLOROETHANE	UG/KG	19	0	10	U	-	13	U	-	10
1,1-DICHLOROETHENE	UG/KG	19	0	10	U	-	13	U	-	10
1,2-DICHLOROETHANE	UG/KG	19	0	10	U	-	13	U	-	10
1,2-DICHLOROETHENE (TOTAL)	UG/KG	19	0	10	U	-	13	U	-	10
1,2-DICHLOROPROPANE	UG/KG	19	0	10	U	-	13	U	-	10

Table C - 19b

Site 19: Summary of Analytes and Minimum / Maximum Concentrations Surface/Near-Surface Soil and Sediment

MCAS El Toro Phase I RI Technical Memorandum

ANALYTE BY GROUP	Units	Number of Samples	Number of Times Detected	Minimum Detected Conc.(a)	DVF(b)	Station with Minimum Detected Conc.	Maximum Detected Conc.(a)	DVF(b)	Station with Maximum Detected Conc.	Detection Limit
2-BUTANONE	UG/KG	19	0	10	U	-	13	U	-	10
2-HEXANONE	UG/KG	19	0	10	U	-	13	U	-	10
4-METHYL-2-PENTANONE	UG/KG	19	0	10	U	-	13	U	-	10
ACETONE	UG/KG	19	8	6	J	19_2FB3	24		19_25B215S	10
BENZENE	UG/KG	19	0	10	U	-	13	U	-	10
BROMODICHLOROMETHANE	UG/KG	19	0	10	U	-	13	U	-	10
BROMOFORM	UG/KG	19	0	10	U	-	13	U	-	10
BROMOMETHANE (METHYL BROMIDE)	UG/KG	19	0	10	U	-	13	U	-	10
CARBON DISULFIDE	UG/KG	19	0	10	U	-	13	U	-	10
CARBON TETRACHLORIDE	UG/KG	19	0	10	U	-	13	U	-	10
CHLOROBENZENE	UG/KG	19	0	10	U	-	13	U	-	10
CHLORODIBROMOMETHANE	UG/KG	19	0	10	U	-	13	U	-	10
CHLOROETHANE	UG/KG	19	0	10	U	-	13	U	-	10
CHLOROFORM	UG/KG	19	0	10	U	-	13	U	-	10
CHLOROMETHANE (METHYL CHLORIDE)	UG/KG	19	0	10	U	-	13	U	-	10
CIS-1,3-DICHLOROPROPENE	UG/KG	19	0	10	U	-	13	U	-	10
ETHYLBENZENE	UG/KG	19	0	10	U	-	13	U	-	10
METHYLENE CHLORIDE	UG/KG	19	0	6	U	-	18	U	-	10
STYRENE	UG/KG	19	0	10	U	-	13	U	-	10
TETRACHLOROETHENE	UG/KG	19	0	10	U	-	13	U	-	10
TOLUENE	UG/KG	19	8	3	J	19_25B216S	11		19_25B215S	10
TRANS-1,3-DICHLOROPROPENE	UG/KG	19	0	10	U	-	13	U	-	10
TRICHLOROETHYLENE	UG/KG	19	0	10	U	-	13	U	-	10
VINYL CHLORIDE	UG/KG	19	0	10	U	-	13	U	-	10
XYLENE (TOTAL)	UG/KG	19	0	10	U	-	13	U	-	10
SEMIVOLATILE ORGANIC COMPOUNDS										
1,2,4-TRICHLOROBENZENE	UG/KG	19	0	670	U	-	830	U	-	680
1,2-DICHLOROBENZENE	UG/KG	19	0	670	U	-	830	U	-	680
1,3-DICHLOROBENZENE	UG/KG	19	0	670	U	-	830	U	-	680
1,4-DICHLOROBENZENE	UG/KG	19	0	670	U	-	830	U	-	680
2,4,5-TRICHLOROPHENOL	UG/KG	19	0	1600	U	-	2000	U	-	1600
2,4,6-TRICHLOROPHENOL	UG/KG	19	0	670	U	-	830	U	-	680
2,4-DICHLOROPHENOL	UG/KG	19	0	670	U	-	830	U	-	680

Table C - 19b

Site 19: Summary of Analytes and Minimum / Maximum Concentrations
Surface/Near-Surface Soil and Sediment

MCAS El Toro Phase I RI Technical Memorandum

ANALYTE BY GROUP	Units	Number of Samples	Number of Times Detected	Minimum Detected Conc.(a)	DVF(b)	Station with Minimum Detected Conc.	Maximum Detected Conc.(a)	DVF(b)	Station with Maximum Detected Conc.	Detection Limit
2,4-DIMETHYLPHENOL	UG/KG	19	0	670	U	-	830	U	-	680
2,4-DINITROPHENOL	UG/KG	19	0	1600	U	-	2000	U	-	1600
2,4-DINITROTOLUENE	UG/KG	19	0	670	U	-	830	U	-	680
2,6-DINITROTOLUENE	UG/KG	19	0	670	U	-	830	U	-	680
2-CHLORONAPHTHALENE	UG/KG	19	0	670	U	-	830	U	-	680
2-CHLOROPHENOL	UG/KG	19	0	670	U	-	830	U	-	680
2-METHYLNAPHTHALENE	UG/KG	19	4	160	J	19_1FB1	300	J	19_1FB2	680
2-METHYLPHENOL	UG/KG	19	0	670	U	-	830	U	-	680
2-NITROANILINE	UG/KG	19	0	1600	U	-	2000	U	-	1600
2-NITROPHENOL	UG/KG	19	0	670	U	-	830	U	-	680
3,3'-DICHLOROBENZIDINE	UG/KG	19	0	670	U	-	830	U	-	680
3-NITROANILINE	UG/KG	19	0	1600	U	-	2000	U	-	1600
4,6-DINITRO-2-METHYLPHENOL	UG/KG	19	0	1600	U	-	2000	U	-	1600
4-BROMOPHENYL PHENYL ETHER	UG/KG	19	0	670	U	-	830	U	-	680
4-CHLORO-3-METHYLPHENOL	UG/KG	19	0	670	U	-	830	U	-	680
4-CHLOROANILINE	UG/KG	19	0	670	U	-	830	U	-	680
4-CHLOROPHENYL PHENYL ETHER	UG/KG	19	0	670	U	-	830	U	-	680
4-METHYLPHENOL	UG/KG	19	0	670	U	-	830	U	-	680
4-NITROANILINE	UG/KG	19	0	1600	U	-	2000	U	-	1600
4-NITROPHENOL	UG/KG	19	0	1600	U	-	2000	U	-	1600
ACENAPHTHENE	UG/KG	19	5	420	J	19_1FB1	670	J	19_1FB2	680
ACENAPHTHYLENE	UG/KG	19	1	250	J	19_1FB2	250	J	19_1FB2	680
ANTHRACENE	UG/KG	19	6	310	J	19_1FB3	1100		19_1FB2	680
BENZO(A)ANTHRACENE	UG/KG	19	6	310	J	19_1FB2	1200		19_1FB2	680
BENZO(A)PYRENE	UG/KG	19	6	340	J	19_1FB2	1100		19_1FB2	680
BENZO(B)FLUORANTHENE	UG/KG	19	6	290	J	19_1FB1	1200		19_1FB2	680
BENZO(GHI)PERYLENE	UG/KG	19	6	270	J	19_1FB1	830		19_1FB2	680
BENZO(K)FLUORANTHENE	UG/KG	19	6	210	J	19_1FB2	970		19_1FB2	680
BENZYL BUTYL PHTHALATE	UG/KG	19	0	670	U	-	830	U	-	680
BIS(2-CHLOROETHOXY) METHANE	UG/KG	19	0	670	U	-	830	U	-	680
BIS(2-CHLOROETHYL)ETHER	UG/KG	19	0	670	U	-	830	U	-	680
BIS(2-CHLOROISOPROPYL) ETHER	UG/KG	19	0	670	U	-	830	U	-	680
BIS(2-ETHYLHEXYL)PHTHALATE	UG/KG	19	2	670	U	-	1100		19_1FB3	680

Table C - 19b

Site 19: Summary of Analytes and Minimum / Maximum Concentrations
Surface/Near-Surface Soil and Sediment

MCAS El Toro Phase I RI Technical Memorandum

ANALYTE BY GROUP	Units	Number of Samples	Number of Times Detected	Minimum Detected Conc.(a)	DVF(b)	Station with Minimum Detected Conc.	Maximum Detected Conc.(a)	DVF(b)	Station with Maximum Detected Conc.	Detection Limit
CARBAZOLE	UG/KG	19	6	250	J	19_1FB3	1300		19_1FB2	680
CHRYSENE	UG/KG	19	6	450	J	19_1FB2	1500		19_1FB2	680
DI-N-BUTYL PHTHALATE	UG/KG	19	0	670	U	-	830	U	-	680
DI-N-OCTYL PHTHALATE	UG/KG	19	0	670	U	-	830	U	-	680
DIBENZO(A,H)ANTHRACENE	UG/KG	19	3	150	J	19_1FB1	320	J	19_1FB2	680
DIBENZOFURAN	UG/KG	19	5	360	J	19_1FB1	860		19_1FB2	680
DIETHYL PHTHALATE	UG/KG	19	0	670	U	-	830	U	-	680
DIMETHYL PHTHALATE	UG/KG	19	0	670	U	-	830	U	-	680
FLUORANTHENE	UG/KG	19	7	370	J	19_1FB3	3900		19_1FB2	680
FLUORENE	UG/KG	19	6	230	J	19_1FB3	960		19_1FB2	680
HEXACHLOROBENZENE	UG/KG	19	0	670	U	-	830	U	-	680
HEXACHLOROBUTADIENE	UG/KG	19	0	670	U	-	830	U	-	680
HEXACHLOROCYCLOPENTADIENE	UG/KG	19	0	670	U	-	830	U	-	680
HEXACHLOROETHANE	UG/KG	19	0	670	U	-	830	U	-	680
INDENO(1,2,3-CD)PYRENE	UG/KG	19	6	250	J	19_1FB1	780		19_1FB2	680
ISOPHORONE	UG/KG	19	0	670	U	-	830	U	-	680
N-NITROSODIPHENYLAMINE	UG/KG	19	0	670	U	-	830	U	-	680
N-NITROSODIPROPYLAMINE	UG/KG	19	0	670	U	-	830	U	-	680
NAPHTHALENE	UG/KG	19	5	150	J	19_1FB1	280	J	19_1FB2	680
NITROBENZENE	UG/KG	19	0	670	U	-	830	U	-	680
PENTACHLOROPHENOL	UG/KG	19	0	1600	U	-	2000	U	-	1600
PHENANTHRENE	UG/KG	19	7	650	J	19_1FB3	5900		19_1FB2	680
PHENOL	UG/KG	19	0	670	U	-	830	U	-	680
PYRENE	UG/KG	19	7	260	J	19_1FB3	2700		19_1FB2	680
TOTAL FUEL HYDROCARBONS (DIESEL AND GASOLINE)										
TFH DIESEL	MG/KG	24	7	12.6	U	-	162		19_1FB1	12.8
TFH GASOLINE	MG/KG	24	6	0.05	U	-	0.49		19_1FB1	0.0515
TOTAL RECOVERABLE PETROLEUM HYDROCARBONS (TRPH)										
TRPH	MG/KG	23	6	20	U	-	230		19_1FB1	20

(a) If the analyte concentration is below the detection limit and is not an estimated value, then the value given is the detection limit.
(b) A definition of each data validation flag (DVF) is provided in Table C-1.