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January 21, 1998

Mr. Larry Seto
Senior Hazardous Materials Specialist
Alameda County Department of Environmental Health
Environmental Protection Division
1131 Harbor Bay Parkway, #250
Alameda, California 94502-6577

SUBJECT: Continued Soil and Groundwater Investigation Work Plan Revised
Former Underground Storage Tanks 3 & 4 Location, Alameda Federal Center
620 Central Avenue, Alameda, California,
STID 4655
CAPE Project No. 2403C.24

Dear Mr. Seto:

Please find enclosed the revised subject Work Plan for the referenced project. Cape Environmental Management Inc (CAPE) shall perform the site investigation work to continue to assess the lateral extent, vertical extent, and concentrations of observed soil and groundwater impacts at the site. Information gathered during this investigation and from previous investigation work will assist in determining the appropriate course of action to remediate the site, if deemed necessary.

Please contact the undersigned with comments and questions at 714/427-6160.

Sincerely,

Cape Environmental Management Inc

William W. Millar, RG
Manager, Environmental Services

Attachments

cc James Lew, Civil Engineer, GSA Region 9
Ando Merendi, Environmental Engineer, GSA Region 9

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Continued Soil and Groundwater Investigation Revised Work Plan
Former Underground Storage Tanks 3&4 Locations

Alameda Federal Center
620 Central Avenue
Alameda, California

STID 4655
CAPE Project No. 2403C.24

1/26/98
Miller said the only change from the 12/97 report is that he corrected the background section to identify there are 5 MW on-site

prepared for:

General Services Administration, Region 9
San Francisco Service Center, (9PEC)
450 Golden Gate Avenue, Third Floor East
San Francisco, California 94102-3400

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prepared by:

Cape Environmental Management Inc
Harbor Corporate Park
3631 South Harbor Blvd., Suite 130
Santa Ana, California 92704

January 1998

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FIGURES

1.0 INTRODUCTION

Cape Environmental Management Inc (CAPE) has contracted with the General Services Administration (GSA) to continue the soil and groundwater investigation associated with the four underground storage tanks previously removed from the Alameda Federal Center, located at 620 Central Avenue, Alameda, California. Figure 1, Site Vicinity Map, indicates the facility location.

In accordance with required investigation activities, as specified by Alameda County Health Care Services, Environmental Health Services (EHS) letter, dated August 12, 1997, CAPE is proposing the following work plan to continue the investigation of the soil and groundwater impacts at the site. Guidance documents used in the preparation of this work plan include the Tri-Regional Board Staff Recommendations for Preliminary Evaluation and Investigation of Underground Tank Sites , dated August 10, 1990, the California Water Resources Control Board (CWRCB) Leaking Underground Fuel Tank Field Manual (LUFT), dated October 1989, and the above-referenced EHS correspondence with the GSA.

1.1 Background

It is CAPE's understanding that the EHS is in receipt of and has reviewed previous environmental reports pertaining to UST activities at the site. CAPE has reviewed a report titled Preliminary Report on Tank Removal, Site Investigation, Additional Investigation and Tank Closure Plans, dated May 1994, prepared by TKS Consulting Ltd., from which the following background information has been obtained.

On January 27, 1994 a 1,000-gallon gasoline and diesel fuel UST (Tank 1) and a 5,000- gallon gasoline UST (Tank 2) were removed from the site. There were two (2) 10,000-gallon USTs (Tanks 3 and 4) remaining in place. The remaining USTs were full of a material described as an extremely heavy black hydrocarbon with water, grease, and sandy sediment on the bottom. Laboratory analyses of the material contained in Tanks 3 and 4 characterized it as weathered #3 diesel fuel or bunker "C" fuel. These tanks had been decommissioned around 1950 and had been partially filled with sand and covered, leaving the fill ports open. Efforts to pump out the tank contents failed, due to the occurrence of rocks and a hardened clay material which plugged the vacuum hose.

Prior to the removal of Tanks 1 and 2, soil borings were advanced adjacent to both tank areas and soil samples were obtained for laboratory chemical analyses. Analysis of soil samples obtained near Tank 1 reported up to 12 parts per million (ppm) total petroleum hydrocarbons as diesel fuel (TPHd), 100 ppm oil and grease, and traces of heavy metals. Soil samples collected from near Tank 2 reported trace concentrations of TPHd, oil and grease, and trichloroethene (TCE) at 57, 120 and 7 ppm, respectively, and low levels of fluoranthene (12 ppm) and pyrene (26 ppm). Soil samples collected from near Tanks 3 and 4 identified elevated levels of TPHd and oil and grease at 5,100 and 19,000 ppm, respectively.

Three of the soil borings were converted to monitoring wells (MW1, MW2 and MW3). MW1 is located near Tanks 1 and 2; MW2 was apparently damaged during construction and rendered

unusable; and MW3 is located near Tanks 3 and 4. MW1 and MW2 were installed to a total depth of 14 feet below ground surface (bgs), with a screened interval from about 3 to 13 feet bgs, and are constructed of 2-inch nominal diameter PVC casing. Water samples collected from MW1 identified benzene, 1,2 dichloroethene (DCE), tetrachloroethene (PCE), and TCE at 0.6, 1.5, 1.0, and 3.0 parts per billion (ppb), respectively. Free product was identified in MW3.

Cape performed a Preliminary Site Assessment on May 16, 17, and 18, 1995, which constituted the initial first quarter of groundwater monitoring. As part of this investigation work CAPE installed groundwater monitoring wells MW-2R, MW-4, TW/MW-5, and MW-6 in the Tank 1 and Tank 2 area. In the Tank 3 and Tank 4 area four temporary borings were advanced. Field work for subsequent monitoring quarters was conducted on August 31 and October 5, 1995 (second quarter and addendum), December 8, 1995 (third quarter), and March 8, 1996 (fourth quarter). The following is a summary of groundwater monitoring program observations to date.

- oil and grease (O&G) was not detected in any samples throughout the duration of the program, with the exception of fourth quarter results which indicated a concentration of 16 milligrams per liter (mg/l) at MW-1.

- total volatile hydrocarbons (TVH) (gasoline) was not detected in any samples throughout the duration of the program. Analysis for TVH was subsequently terminated after the second quarter following EHS approval.

- With the exception of MW-1, benzene, toluene, ethyl benzene, and total xylenes (BTEX) compounds were not detected in any samples throughout the duration of the program and analyses were subsequently terminated after the second quarter. BTEX compounds were detected in the first quarter of monitoring at MW-1, with benzene reported at a concentration of 1.1 micrograms per liter (Tg/l), however BTEX compounds were not detected in the three subsequent quarters.

- Analysis of total dissolved solids (TDS) was conducted in the second quarter. Concentrations ranged from 380 to 450 milligrams per kilogram (mg/kg), which is below the recommended state maximum contaminant level (MCL) of 500 mg/l.

- With the exception of TW/MW-5 and MW-1, volatile halocarbons (VH) compounds were not detected throughout the program. TW/MW-5 was reported to contain a concentration of 1.0 Tg/l chloroform in the first quarter and 1.0 Tg/l cis-1,2-dichloroethene in the fourth quarter. VH compounds were not detected in the second and third quarters at TW/MW-5. In general, for MW-1 a decrease in VH compound concentrations was observed over the monitoring period. Most notably, PCE was detected in the first quarter at 7 Tg/l, in the second quarter at 1 3 Tg/l, and not detected in the third and fourth quarters. PCE and chloroform were each reported at 1 Tg/l in the first quarter and not detected in subsequent quarters. Also, concentrations of the VH compounds cis-1,2-dichloroethene and trans-1,2-dichloroethene showed a decreasing trend in concentrations for the first three quarters and were not detected in the fourth quarter It should be noted, however, that concentrations of cis-1,2-dichloroethene for MW-1 were reported at 7.4 and 5.7 Tg/l in the second and third

quarters, respectively, thereby exceeding the State MCL of 6.0 Tg/l during the second quarter.

- With the exception of TW/MW-5, polynucleic aromatic hydrocarbons (PNA) compounds were not detected throughout the monitoring program. At TW/MW-5, the first quarter of PNA analyses indicated trace concentrations which were reported below the method detection limit (MDL) of 10 Tg/l. This was accomplished by using the instrument detection limits (IDL) which ranged from 1 to 5 Tg/l. Napthalene was reported at a concentration of 7.5 Tg/l, fluoranthene at 8.5 Tg/l, pyrene at 14 Tg/l, chrysene at 5.5 Tg/l, and benzo(a)pyrene at 6.2 Tg/l. These compounds were not detected in the second, third, and fourth monitoring quarters. PNA analysis in the second quarter included all of the semi-volatile organic compounds, of which bis(2-ethylhexyl)phthalate was detected at a concentration of 14 Tg/l.

- In general, a fluctuation in total extractable petroleum hydrocarbons (TEPH) concentrations has been observed at monitoring wells MW-1 and MW-6 throughout the monitoring period. First quarter results for MW-1 indicated 5,500 Tg/l TEPHd (quantified as diesel), second quarter results of 840 Tg/l TEPHd and 1,400 Tg/l TEPHmo (quantified as motor oil), third quarter results of 49 Tg/l TEPHd, and fourth quarter monitoring results of 13,000 Tg/l TEPHd. TEPH results for MW-6 indicated not detected in the first quarter, 370 Tg/l TEPHd in the second quarter, 3,700 Tg/l TEPHd in the third quarter, and not detected in the fourth quarter. Results for TW/MW-5 indicated 680 Tg/l TEPHd in the first quarter, 230 Tg/l TEPHd in the second quarter, and not detected in the third and fourth quarters. TEPH analysis at MW-2R and MW-4 indicated not detected for the first quarter, concentrations of 140 and 190 Tg/l TEPHd, respectively in the second quarter, and not detected in the third and fourth quarters.

Based upon the information obtained during the monitoring program, CAPE recommended terminating quarterly groundwater sampling and testing for all wells. The EHS letter dated August 12, 1996 states that monitoring of MW-1 should continue. CAPE will continue monitoring MW-1.

Tanks 3 & 4 were removed from the site on December 6, 1996. Sampling and analysis of soils from the excavation were presented in closure documents prepared by others.

1.2 Site Description

The site is located in the northwest portion of the City of Alameda, approximately 500 feet east of the San Francisco Bay shoreline (refer to Figure 1 - Site Vicinity Map). The site covers an approximate area of 10 acres and maintains several building structures used for administrative office and storage functions. Figure 2 - Site Map, depicts the location and orientation of the subject site.

The site is situated in a relatively flat tidal plain area which slopes gently towards the San Francisco Bay. Boring logs from the site indicate that, generally, site soil consists of clayey gravel from 1 to 3 feet below ground surface (bgs), clean sand from 3 to 11 feet bgs, clay and

clayey sands of thicknesses ranging from 1 to 0.5 feet occurring at about 11 feet bgs, and clayey sand, silty sand, clean and heaving sands from 12 to 14 feet bgs. First groundwater was consistently encountered at a depths of 5 to 5.5 feet bgs. Tidal activity is suspected to influence groundwater flow at the site. Groundwater gradient has not been established.

2.0 SUBSURFACE INVESTIGATION PLAN

The following subsurface investigation plan has been designed to continue to assess the extent of impacted soil and groundwater due to the leaking USTs which have been removed from the site. In addition, the proposed plan will also continue the quarterly groundwater monitoring program.

2.1 Proposed Scope of Work

The following is a description of the proposed scope of work which has been designed to address requirements of the EHS for assessing the site. In general, field work will include the drilling of four (4) soil borings, and converting three (3) soil borings into permanent monitoring wells. Field work will also include collecting soil and groundwater samples and subsequent laboratory analyses as outlined below. Well MW-1 will be sounded, purged, and sampled as well. Following completion of investigation field work and laboratory analyses a report shall be prepared to describe field methods, techniques, observations, and include soil boring logs, groundwater well construction information, groundwater gradient calculations, and laboratory analyses. This report will be designed to meet EHS reporting requirements.

Tank Area 3 and 4

Field work at tank area 3 and 4 shall consist of advancing four (4) soil borings. The four (4) soil borings will be advanced adjacent to the tank pit, to a total depth of 15 feet below ground surface (bgs) with soil sample intervals of 5 feet and at any significant change in lithology, to assess soil conditions. Three of these soil borings will then be converted to groundwater monitoring wells and surveyed to determine groundwater elevations. One (1) boring will be advanced in the assumed up-gradient groundwater direction from the former UST excavation. The remaining two (2) wells will be installed down-gradient of the excavation. The fourth soil boring will be used to step-out from the monitoring well locations to assess the limits of soil impacts observed during the well installations. The groundwater monitoring wells will be constructed of 2-inch diameter PVC casing and will, in conjunction with the MW-1, be used to continue the quarterly groundwater monitoring program. Following installation, the wells will be developed, purged, sampled, and surveyed by a licensed land surveyor to an established benchmark. Survey information is necessary to determine groundwater gradient to an accuracy of ±0.01 foot. Figure 4, Tank 3 and 4 Area, indicates the approximate locations of removed USTs.

Soil samples will be submitted for laboratory analyses based on photo ionization detector (PID) readings, odor and staining observed. Thirteen (13) soil and three (3) water samples from tank area 3 & 4 will be submitted for analysis using each of the following methods EPA Test Method 8020/602 for BTEX, EPA Test Method 8015 (EHS Modified Gasoline and Diesel) for total petroleum hydrocarbons, EPA Test Method 8010/601 for chlorinated hydrocarbons, Standard

Methods Waste Water (SMWW) Test Method 5520 for O&G, and EPA Test Method 8310 for PNAs.

Tank Area 1 and 2

Field work at tank area 1 and 2 shall consist of sounding the existing groundwater monitoring wells. Well MW-1 will also be purged and sampled. The new groundwater monitoring wells in the Tank 3 and 4 area will be tied into the previously surveyed wells in the Tank 1 and 2 area.. Figure 3, Tank 1 and 2 Area, indicates the approximate locations of former USTs and monitoring wells.

The water sample will be submitted for laboratory analyses using each of the following methods EPA Test Method 602 for BTEX, EPA Test Method 8015 (EHS Modified Gasoline and Diesel) for total petroleum hydrocarbons, EPA Test Method 601 for chlorinated hydrocarbons, Standard Methods Waste Water (SMWW) Test Method 5520 for O&G, and EPA Test Method 8310 for PNAs.

2.2 Drilling Methods

2.2.1 Soil Borings

Soil samples will be collected in 2.5 inch-diameter brass sleeves contained in an 18 inch-long California-modified split spoon drive sampler advanced below the lead auger by repeated blows of a 140 pound drop hammer. Samples will be collected at 5-foot depth intervals or at any significant change in lithology (or at the direction of the field geologist/engineer) for logging and initial screening. Logging will include staining, smell, lithology and observations of soil physical characteristics. This data will be recorded according to the Unified Soil Classification System and other appropriate descriptors.

Appropriate decontamination procedures will be followed for all soil collection and handling activities to assure sample representativeness and avoid sample contamination and formation cross-contamination. Specifically, all drill augers and drive sampler components will be cleaned by high-pressure steam cleaner prior to contacting the formation. Alternatively, drive samples components may be decontaminated by brushing and agitation in Alconox laboratory detergent solutions and triple rinsed in potable tap water.

2.2.2 Groundwater Monitoring Wells

Three (3) monitoring wells are proposed for installation at Tank 3 and 4 area. The general method for monitoring well construction will consist of lowering a 10-foot section of well screen through the hollow-stem auger such that several feet of open screen is exposed above static water level, adding filter pack sand to 1-2 feet above the upper screened section, installing a sanitary seal of hydrated bentonite chips approximately 1-2 feet thick above this filter pack, then completing the upper annular seal with Volclay grout or other approved sealant, to ground surface. Each well will be finished with a traffic rated box and secured with a lockable cap.

2.2.3 Drilling Waste Handling

Soil cuttings, decontamination rinseate water, and purge fluids will be contained (drummed) in DOT approved 55-gallon drums, labeled, and stored in a secure area on-site pending laboratory analysis. Upon completion of chemical analysis the waste will be transported under manifest to a licensed disposal site.

2.2.4 Groundwater Gradient Determinations

The groundwater monitoring wells will be surveyed by a licensed land surveyor to within 0.1 lateral foot and 0.01 vertical foot. Water level measurements shall be taken (using an immiscible petroleum-water interface probe with 0.01 foot graduations) within 0.01 foot so that, by solving a three-point problem, groundwater gradient may be determined.

2.3 Sampling Methods

All soil samples will be screened by ambient temperature headspace methods for indications of hydrocarbon contamination. Results of the headspace readings will be recorded on the boring logs. This method involves placing approximately 5 cubic inches of soil into a sealed polyethylene bag and allowing the soil temperature to equilibrate for approximately 15 minutes. At that time, the probe of a portable PID, calibrated with 100 ppm isobutylene, will be inserted into the bag headspace and the reading will be recorded. Samples of soil material that exhibit a significant PID response will be selected for laboratory analysis.

Selected soil samples will be sealed with Teflon sheets, capped, labeled, and transferred under chain-of-custody to a state-certified laboratory.

Water samples will be transferred directly from the dedicated polyethylene bailers to appropriate laboratory supplied sample containers. A label indicating the date and time of sample collections, sampler's initials, sample designation, and analysis requested, will be affixed to each sample container. All groundwater sample containers will be immediately placed in a pre-cooled ice chest and maintained at a temperature of 40 Celsius for transport to the laboratory under Chain-of-Custody documentation.

2.4 Permitting

Following investigation Work Plan approval by the EHS and prior to initiation of field work, a drilling permit application will be submitted to the Alameda County Department of Public Works.

3.0 HEALTH AND SAFETY PLAN

A site health and safety plan has been prepared detailing potential physical and chemical hazards, emergency response procedures, and other related topics.

4.0 REPORT AND FINDINGS

Following completion of investigation field work and laboratory analyses a written report shall be prepared to describe field methods, techniques, observations, and include soil boring logs, scaled drawings, groundwater well construction information, groundwater gradient calculations, and laboratory analyses. The report shall describe findings of the investigation and recommendations for further investigations, if deemed necessary. This report will be designed to meet EHS reporting requirements.

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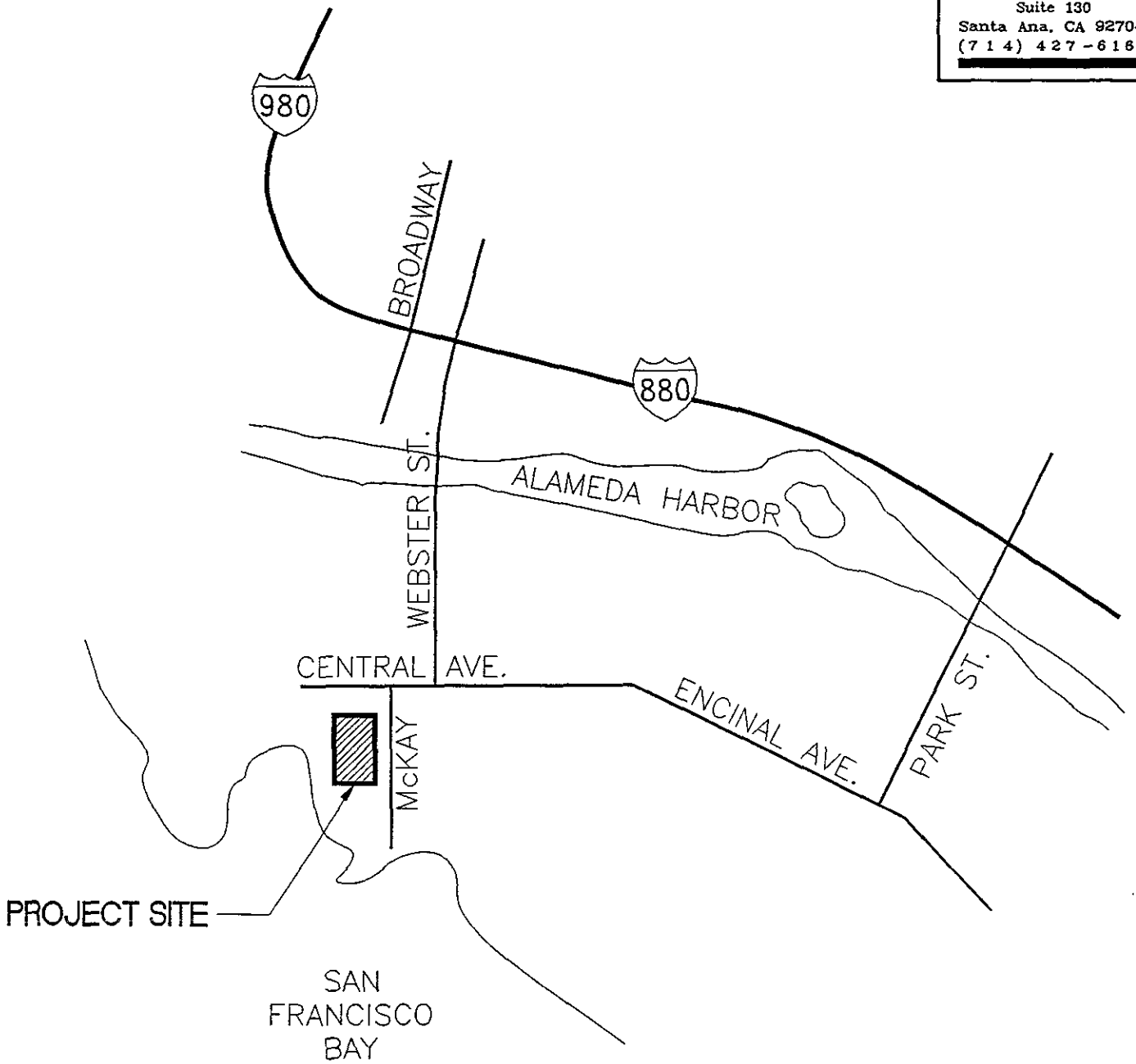
3631 So. Harbor Blvd.
Suite 130
Santa Ana, CA 92704
(714) 427-6160



VICINITY MAP

NOT TO SCALE

PROJECT NORTH

SHEET TITLE	CHECKED BY	PROJECT NUMBER
FIGURE 1 – SITE VICINITY MAP	W N M	2403C.24
PROJECT TITLE	**DRAWN BY**	**DATE** / **SHEET**
ALAMEDA FEDERAL CENTER, ALAMEDA, CA	G P F	NOV 1997 / 1 OF 4

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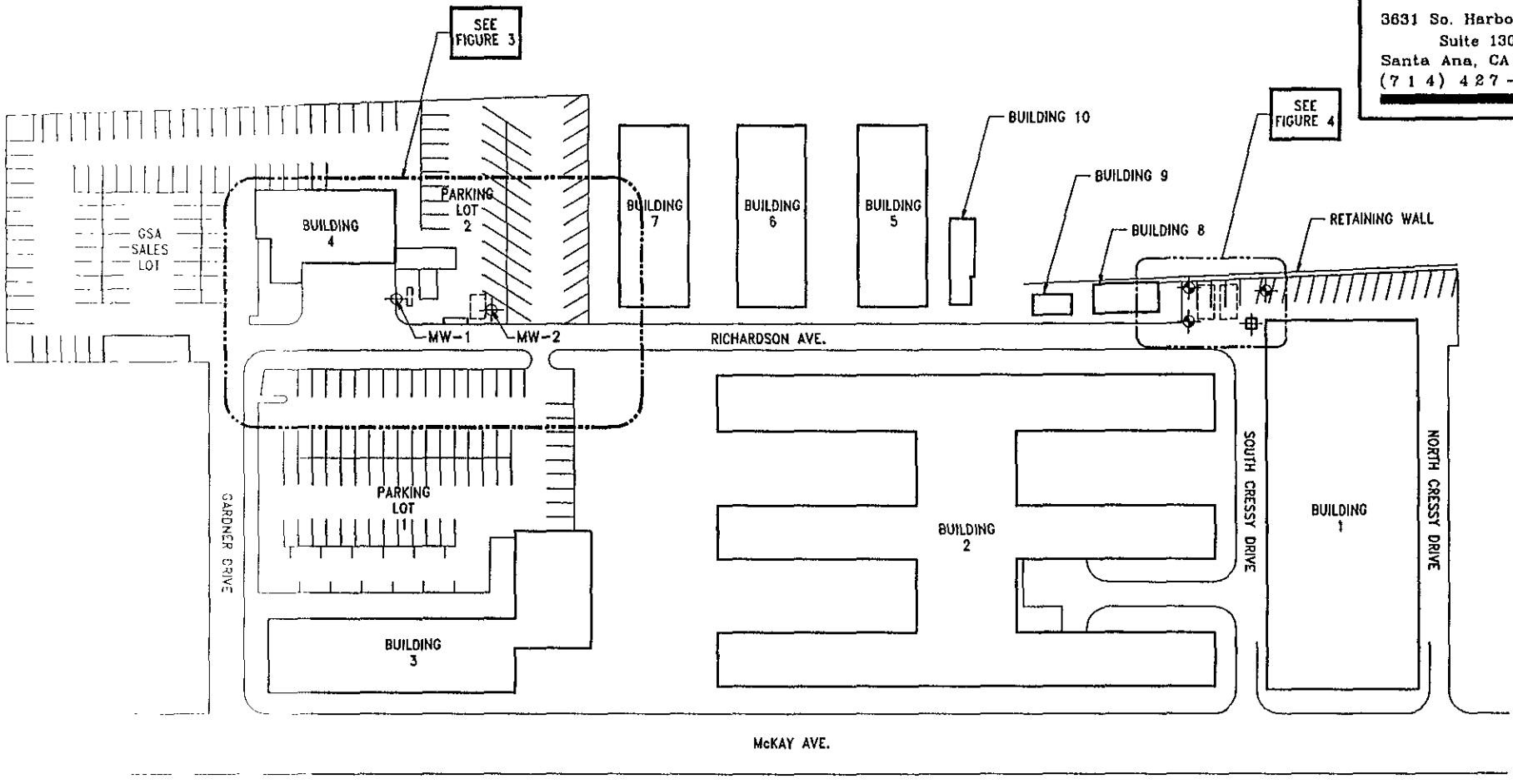

LEGEND

- MW-1 EXISTING MONITORING WELL
- PROPOSED MONITORING WELL
- PROPOSED SOIL BORING

GRAPHIC SCALE

0 10 50 100' 150'

SCALE 1" = 100'

PROJECT NORTH

SHEET TITLE: FIGURE 2 - SITE PLAN	CHECKED BY: W.W.M.	PROJECT NUMBER: 2403C.24	
PROJECT TITLE: ALAMEDA FEDERAL CENTER, ALAMEDA, CA	DRAWN BY: G.R.F.	DATE: NOV. 1997	SHEET: 2 OF 4

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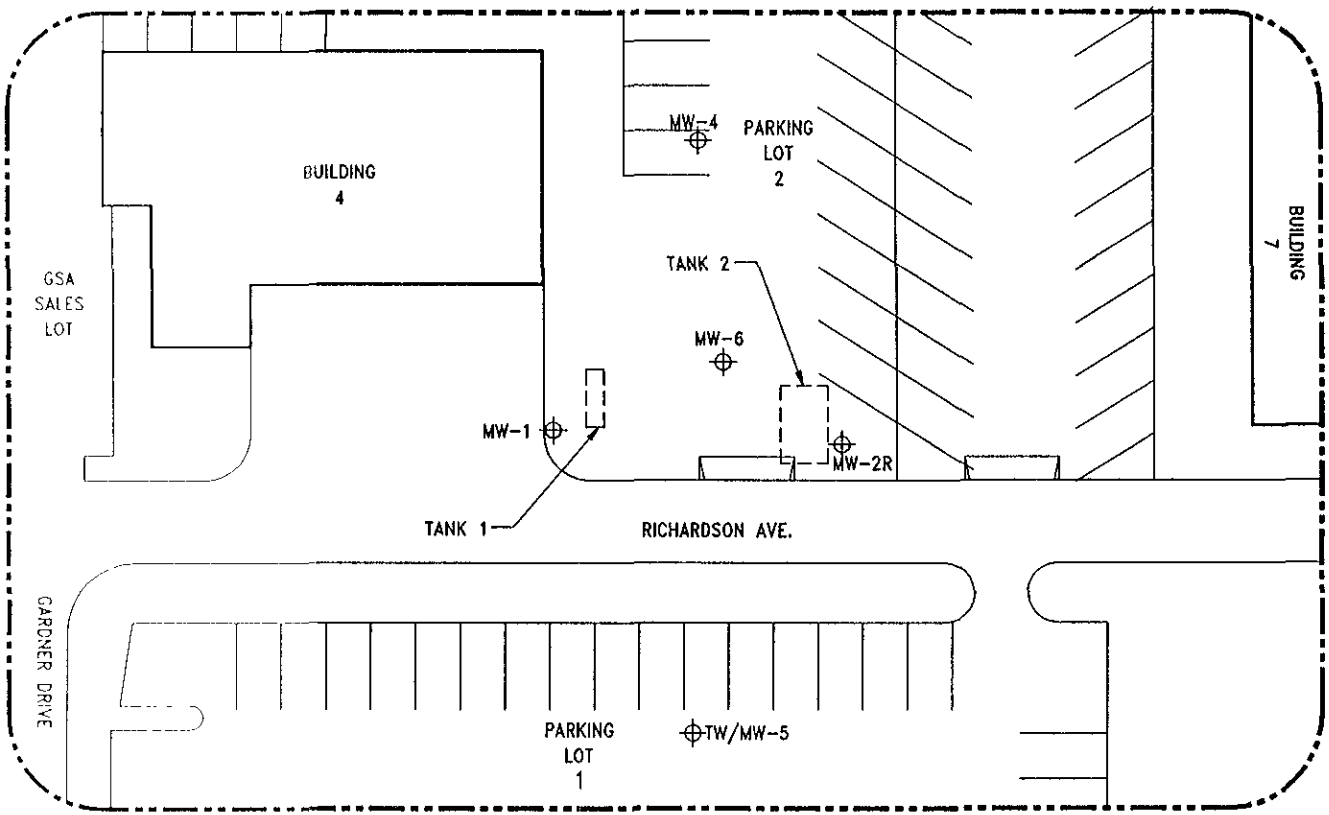
Suite 130
Santa Ana, CA 92704
(714) 427-6160



LEGEND

MW — EXISTING MONITORING WELL

APPROX. LOCATION OF REMOVED UST's

GRAPHIC SCALE

0 10 20 30 40

SCALE: 1" = 40'

PROJECT NORTH

SHEET TITLE: FIGURE 3 - TANK 1 & 2 AREA / BORING LOCATIONS	CHECKED BY: W.W.M.	PROJECT NUMBER: 2403C.24	
PROJECT TITLE: ALAMEDA FEDERAL CENTER, ALAMEDA, CA	DRAWN BY: G.R.F.	DATE: NOV. 1997	SHEET: 3 OF 4

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Suite 130
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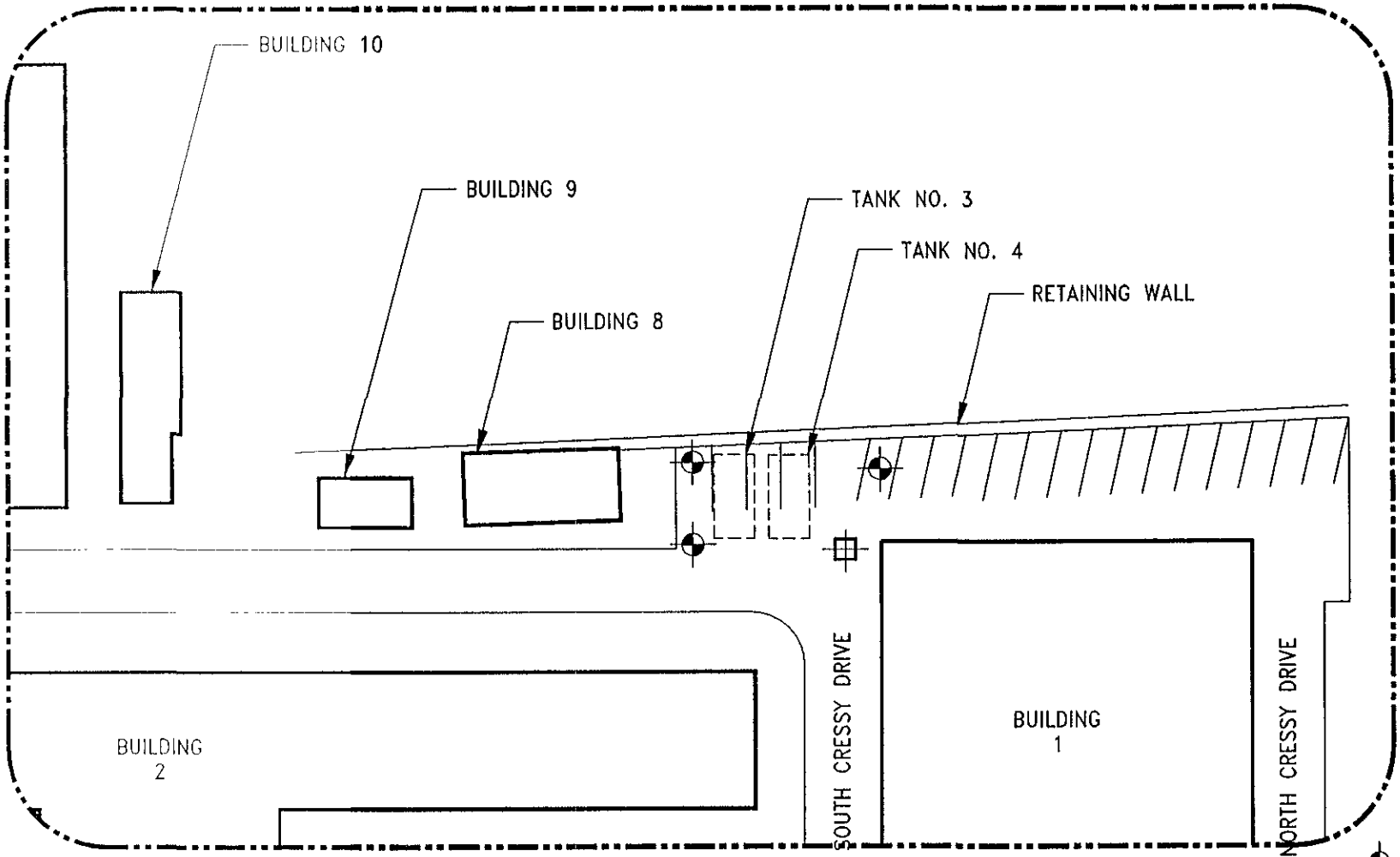
(714) 427-6160



LEGEND

PROPOSED MONITORING WELL

PROPOSED SOIL BORING

APPROX. LOCATION OF REMOVED UST's

GRAPHIC SCALE

0 10 20' 30' 40

SCALE, 1" = 40'

PROJECT NORTH

SHEET TITLE: FIGURE 4 – TANK 3 & 4 AREA / BORING LOCATIONS	CHECKED BY: W.W.M.	PROJECT NUMBER: 2403C.24	
PROJECT TITLE: ALAMEDA FEDERAL CENTER, ALAMEDA, CA	DRAWN BY: G.R.F.	DATE: NOV. 1997	SHEET: 4 OF 4