PRELIMINARY INVESTIGATION AND EVALUATION REPORT EXCHANGE CENTER LOCATION

U.S. COAST GUARD SUPPORT CENTER
Coast Guard Island
Alameda, California

5/93

Prepared For:

U.S. Coast Guard
Civil Engineering Unit
2000 Embarcadero, Suite 200
Oakland, CA 94606-5337

May, 1993

Project No: 582-34006

Professional Service Industries, Inc.

June 8, 1993

Ms. Juliet Shin
Alameda County
Department of Environmental Health
Division of Clean Water Programs
80 Swan Way, Room 200
Oakland, CA 94621

Re: Preliminary Investigation and Evaluation Report

Project: U.S. Coast Guard Support Center
Coast Guard Island
Exchange Center Location
Alameda, California
PSI Project No. 582-34006

Dear Ms. Shin:

In response to your letter dated November 13, 1992 requesting an investigation on Coast Guard Island, Professional Service Industries, Inc. (PSI) has completed all field related work and the attached Preliminary Investigation and Evaluation Report for your review. As you recall, the site is located in the front of the Exchange Center, Government Island, Alameda, California.

Enclosed are four (4) copies of the report.

The overall objective of the preliminary investigation was to characterize the groundwater by drilling eight soil boreholes, develop four of the eight into groundwater monitoring wells and evaluating the information obtained.

Please don't hesitate to call us at (510) 284-3070 should there be any questions about this report.

Sincerely,

Professional Service Industries, Inc.

Mark Casterson
Professional Senior

Steven N. Bradley, CEG 1625
Manager-Environmental Services

Kevin B. Oliver
Project Manager

c: LTJG Christopher Lutton, U.S. Coast Guard

3730 Mt Diablo Blvd Suite 345 • Lafayette CA 94549 • Phone 510/284-3070 • Fax 510 284-3154

TABLE OF CONTENTS

TABLE OF CONTENTS
(Continued)

EXECUTIVE SUMMARY

Preliminary Investigation and Evaluation Assessment

Professional Service Industries, Inc. (PSI) was retained by the U.S. Coast Guard, Civil Engineering Unit to conduct a Preliminary Investigation and Evaluation Assessment of the property adjacent to the Exchange Center, on Coast Guard Island, Alameda, California. The site had two eight thousand gallon gasoline underground storage tanks (UST's) removed and replaced by two new eight thousand gallon UST's.

The purpose of PSI's assessment is to determine if hydrocarbon contamination exists in the soil and groundwater beneath the site.

Findings

The site consists of the gasoline station located on the corner of Hudson Drive and Campbell Boulevard on Coast Guard Island.

No detectable quantities of Purgeable Hydrocarbons, benzene, toluene, ethyl-benzene and total xylenes (BTEX) were encountered in the soil samples taken at any of the eight boreholes drilled. None of the soil samples yielded photoionization detector (PID) readings over 4 ppm or had any obvious petroleum odors.

However detectable quantities of Purgeable Hydrocarbons and benzene were encountered in groundwater samples for MW3-EX and MW5-EX. Of these, benzene was above the maximum contamination level for drinking water as stated by the Department of Health Services in both MW3-EX and MW5-EX.

Based on the water levels taken from all five monitoring wells, the direction of groundwater flow appears to be in a southwesterly direction away from Exchange Center. At the time measured however, tidal fluctuations may have had a significant impact on groundwater flow directions. Groundwater flow and the degree of contamination will be closely observed in the following quarterly groundwater monitoring reports.

INTRODUCTION

General

This report presents the findings and conclusions of the Preliminary Investigation and Evaluation Report of the U.S. Coast Guard Support Center, adjacent to the Exchange Center, Coast Guard Island, Alameda, California, conducted for the U.S. Coast Guard, Civil Engineering Unit.

Purpose

The purpose of this preliminary investigation and evaluation report was to determine if hydrocarbon contamination exists at the site. The investigation was limited to addressing only the known, or suspected, possible contaminant(s).

PROJECT BACKGROUND

Site Location

The site upon which this assessment is made is the U.S. Coast Guard Support Center, Coast Guard Island, Alameda, California. Site Location Map, Figure 1, and Area Map, Figure 2, are attached in Appendix A.

Site Description and History

The site consists of the resale gasoline service station located on the corner of Hudson Drive and Campbell Boulevard on Coast Guard Island. Known or suspected, underground improvements consist of the removal and replacement of two 8,000 gallon underground storage tanks (UST's) in September of 1990.

Site topography throughout the entire U.S. Coast Guard base is primarily level.

FIELD EXPLORATION

Scope

The scope of services for this project, as directed by the U.S. Coast Guard Civil Engineering Unit, included the following:

* Completion and submittal of workplan.
* Completion of eight soil borings to an approximate depth of 20 feet.
* Collect soil samples from all eight soil borings.

* Install and develop four of the eight soil borings into groundwater monitoring wells.

* Purge and sample the four monitoring wells.

* Properly containerize excavated soils and decontamination rinsate in DOT-approved 55 gallon drums and store them on-site in a secured area.

* Prepare and issue quarterly monitoring reports (four including this report) of the monitoring wells.

Field sampling and testing methods were in general accordance with the procedures outlined by applicable EPA guidelines.

All field borehole and monitoring well locations were as close as conditions permitted to those previously approved by the U.S. Coast Guard Civil Engineering Unit. In the field, borehole and monitoring well locations were estimated from previously marked sites. Actual locations were modified in order to by-pass existing subsurface power, sewer, and water lines.

Drilling and Groundwater Monitoring Well Installation

Prior to commencing drilling activities, a representative of PSI met on-site with LTJG Christopher Lutton of the U.S. Coast Guard Civil Engineering Unit at the U.S. Coast Guard Support Center, Coast Guard Island, to determine boring locations and to attempt to locate the two existing 8,000 gallon UST.'s. In accordance with the scope of services developed by the U.S. Coast Guard Civil Engineering Unit, a total of eight borings locations were identified. Drilling activities began on Thursday April 1, 1993 and were completed on Monday, April 5, 1993, using a truck-mounted drill rig owned and operated by PC Drilling of Fremont, California. The location of each monitoring well and borehole is shown in Figure 3, Monitoring Well and Borehole Location Map. Each boring was advanced to a maximum depth of 20 feet below grade. All excavated soil was containerized in properly labeled, DOT-approved, 55 gallon drums and left on-site.

The wells were constructed with a 2-inch O.D. blank and slotted PVC pipe, with slot widths of 0.020 inches. A slotted casing was placed in the well to extend approximately 10 feet below and 5 feet above the groundwater surface to account for expected tidal level fluctuations. A non-slotted casing was instaled between the ground surface and the top of the slotted casing. All lengths of casing were steam cleaned to remove any existing contaminants. The joints between the lengths of casing were threaded. PVC cement was not used in the well construction process. A clean slip-on PVC cap was placed on the bottom of the casing. A water tight locking cap was installed on the top of the well, and a water-tight Christy box was constructed flush with the existing ground surface.

The gravel pack placed in the annular space between the well casing and the boring was consisted of standard grade sand (the equivalent of clean No. 3 Monterey silica sand). The gravel pack extended up from the bottom to approximately two feet above the top of the slotted casing. An approximately three to five foot thick layer of bentonite was placed immediately above the gravel pack. A five foot cement surface seal was then constructed (see Figure 4, Typical Monitoring Well Construction Design).

Boreholes not converted into monitoring wells were backfilled using a neat cement of bentonite slurry. After the cement had cured, an asphalt patch was added to ground level.

The monitoring wells were developed after installation until the water within the monitoring wells was low in clay and silt. The development established groundwater to flow through the gravel pack and into the well. The development well water was stored in DOT-approved 55 gallon drums in a secure area off-site.

After all four monitoring wells had been developed and recharged for over 48 hours, groundwater depth measurements were taken. A groundwater depth measurement was also preformed at the one existing monitoring well, MW-5 (see Figure 3 for location). Groundwater depth information is shown on Table I, Monitoring Well Water Level Elevations.

TABLE I

MONITORING WELL WATER LEVEL ELEVATIONS*

Well Number	Measuring Point Elevation	Depth to Water Measurement (Ft.)**	Water Level Elevation
MW-1EX	13.72	7.95	5.77
MW-2EX	13.74	8.00	5.74
MW-3EX	13.50	8.00	5.50
MW-4EX	13.38	7.95	5.43
MW-5EX	13.98	8.00	5.98

* Elevations in feet above Mean Sea Level
** Date of Measurement 4-8-93 @ 12:40 thru 13:00

Using groundwater depths and surveyed well locations, the direction of groundwater flow was calculated using a three point problem. Based on the water levels taken from all five monitoring wells, the direction of groundwater flow appears to be in a southwesterly direction away from the Exchange Center (see Figure 5, Groundwater Contour Map). Groundwater flow direction in this area however, is highly impacted by tidal fluctuations and will vary depending on time and date of reading.

A tidal influence on the monitoring well water level should be considered each time a water measurement is taken.

Soil and Groundwater Sampling

Soil samples were generally collected from the borings at a depth of approximately five feet and in the capillary fringe above the water table. Additional samples were collected based on field observations. Soils were screened in the field for the presence of volatile organics using a HNu Model 101 photoionization detector calibrated to isobutylene equivalents detectable to .1 ppm. The results of the infield screening revealed very low levels of contamination and were the basis used for submitting samples to the laboratory for analysis (see Appendix B). Soil samples were retrieved from the borings using a splitspoon sampler with brass sleeve inserts. Samples retrieved in this manner remain relatively undisturbed, thus, retaining the geologic profile of the sample zone. Sample sleeves were sealed with Teflon and plastic end caps and tape, labeled, and stored in a cooler with blue ice. Preliminary material descriptions were assigned to the samples in the field based on visual observations. The estimated stratigraphy at the test locations is presented on the individual boring logs in Appendix B.

Four groundwater monitoring wells were installed from four of the eight borings drilled during the field exploration. The samples were retrieved by lowering a disposable bottom filling/draining bailer into the groundwater accumulated in the monitoring wells (see Appendix C). The groundwater contained by the bailer was carefully transferred into EPA-approved sample containers.

To prevent cross-contamination of samples, all sampling equipment was decontaminated using a solution of Alconox detergent and tap water, then rinsed in tap water, and subjected to a final rinse in distilled water prior to, and between, sampling. Pre-cleaned auger flights were used to start each new boring. Decontamination rinsate was containerized in a properly labeled, DOT-approved 55 gallon drum and left on-site.

SUBSURFACE CONDITIONS

General

The provided subsurface description are only general estimates from field interpretation of conditions observed or inferred from limited data, and are, therefore, of limited accuracy. They may not represent all subsurface conditions at the site.

Site Stratigraphy

Artificial fill consisting of pea gravel was found in the upper three to nine feet of the boreholes. Soils encountered on this site consisted of dark gray silty sands that were saturated, very loose with minor clays and dark green/gray clays that were saturated, stiff and medium to high in plasticity.

Groundwater Conditions

Groundwater was generally encountered at a depth of approximately nine feet during drilling. Rough measurements made after drilling indicate stabilized groundwater was at a depth of approximately eight feet below ground surface. However, due to the site proximity to the Brooklyn Basin and Oakland Estuary, a strong tidal influence to subsurface groundwater conditions is anticipated.

LABORATORY TESTING

General

As proposed, laboratory testing consisted of submitting a total of 12 samples, seven soil samples and five grab groundwater samples, to a laboratory certified by the California Department of Health Services for analysis. Sequoia Analytical, of Concord, California, Laboratory Certificate #1271, was the laboratory selected by PSI. Laboratory testing methods were performed in general accordance with EPA or equivalent methodologies.

Soil Testing

Each soil sample was analyzed for Total Petroleum Hydrocarbons for gasoline (TPHG) using EPA Method 8015 modified for gasoline. The sample yielding the highest TPHG concentration was analyzed for benzene, toluene, xylene, and ethyl benzene (BTEX) using EPA Method 8020. The method detection limits for TPHG and BTEX for soil analysis are 1.0 mg/kg (milligrams per kilogram, or parts per million-ppm) and 0.005 mg/kg respectively. Table II, Soil Sample Location and Analysis Log, indicates the soil samples collected and the analyses run. Soil test results are discussed later in this report. The complete laboratory report by Sequoia Analytical, including QA/QC data and chain-of-custody documentation, is set forth in Appendix D.

Groundwater Testing

Groundwater samples were analyzed for TPHG and BTEX using the above EPA test methods. The method detection limit for TPHG for water analysis is 50 ug/L (micrograms per liter or, parts per billion - ppb). The method detection limit for BTEX for water analysis is 0.5 ug/L (micrograms per liter or, parts per billion - ppb). Groundwater test results are discussed later in this report. Table III, Water Sample Location and Analysis Log, indicates the groundwater samples collected and the analysis run. The complete laboratory report by Sequoia Analytical, including QA/QC data and chain-of-custody documentation is set forth in Appendix D.

PRELIMINARY CONTAMINATION ASSESSMENT

Soil Contamination Assessment

As previously mentioned, in-field soil vapor screening was performed using a HNu Model 101 photoionization detector (PID) detectable to .1 ppm. None of the soil samples yielded PID readings over 4 ppm or had any obvious petroleum odors.

Laboratory testing was performed on selected soil samples. The results of the in-field soil vapor screening and observations was the basis for the submittal of samples to the laboratory for analysis. None of the selected soil samples submitted to Sequoia Analytical reported any contamination levels above their reporting limit.

Table II, Soil Sample Location and Analysis Log, indicates the soil samples collected and the analyses run.

TABLE II

SOIL SAMPLE LOCATION AND ANALYSIS LOG (ppm)						
Boring and Mon. Well /Depth (ft)	**Sample Number**	**Purgeable Hydrocarbs.**	**Benzene**	**Toluene**	**Ethyl Benzene**	**Total Xylenes**
BH-1/20	BH1-EX	N.D.	N.D.	N.D.	N.D.	N.D.
BH-2/20	BH2-EX	N.D.	N.D.	N.D.	N.D.	N.D.
BH-3/20	BH3-EX	N.D.	N.D.	N.D.	N.D.	N.D.
MW-1/18.80	MW1-EX	N.D.	N.D.	N.D.	N.D.	N.D.
MW-2/19.80	MW2-EX	N.D.	N.D.	N.D.	N.D.	N.D.
MW-3/19.95	MW3-EX	N.D.	N.D.	N.D.	N.D.	N.D.
MW-4/19.95	MW4-EX	N.D.	N.D.	N.D.	N.D.	N.D.

Groundwater Contamination Assessment

Selected groundwater samples were retrieved from each of the monitoring wells drilled for this investigation (MW-1EX thru MW-4EX) and the existing monitoring well (MW-5EX) as detailed in Appendix D. Laboratory testing was performed to estimate the degree of groundwater contamination, if any, as summarized in Table III. Analyses performed included Total Purgeable Petroleum Hydrocarbons with

BTEX distinction. Groundwater samples MW3-EX and MW5-EX yielded Purgeable Hydrocarbon concentrations of 6,000 and 170 ug/L respectively. Benzene levels in these two wells were reported as 30 and 14 ug/L respectively. Groundwater sample MW5-EX also yielded a toluene level of 0.63 ug/L.

Table III, Water Sample Location and Analysis Log, indicates the groundwater samples collected and the analysis run.

TABLE III

WATER SAMPLE LOCATION AND ANALYSIS LOG (ppb)						
Boring and Mon. Well /Depth (ft)	Sample Number	Purgeable Hydrocarbs.	Benzene	Toluene	Ethyl Benzene	Total Xylenes
MW-1/18.80	MW1-EX	N.D.	N.D.	N.D.	N.D.	N.D.
MW-2/19.80	MW2-EX	N.D.	N.D.	N.D.	N.D.	N.D.
MW-3/19.95	MW3-EX	6,000	30	N.D.	N.D.	N.D.
MW-4/19.95	MW4-EX	N.D.	N.D.	N.D.	N.D.	N.D.
MW-5/12.65	MW5-EX	170	14	0.63	N.D.	N.D.

Screening Depth

No free product was found in any of the monitoring wells drilled or the existing monitoring well (MW-5EX).

CONCLUSIONS

General

The assessment and conclusions presented herein are based on the subjective evaluation of limited data. As a result, they are intended (and should be considered) to be preliminary in nature.

Conclusions

Based on the analytical results of the soil samples submitted, it appears that soil contamination does not exist in native soils at a depth of 20 feet in any of the eight boreholes drilled at this site. Groundwater samples in MW3-EX and MW5-EX, however yielded Purgeable Hydrocarbon concentrations of 6,000 and 170 ug/L respectively. Benzene levels in these two wells were reported as 30 and 14 ug/L respectively. Groundwater sample MW5-EX also yielded a toluene level of 0.63 ug/L.

Based on the water levels taken from all five monitoring wells, the direction of groundwater flow appears to be in a southwesterly direction away from Exchange Center. At the time measured however, tidal fluctuations may have had a significant impact on groundwater flow directions. Groundwater flow and the degree of contamination will be closely observed in the following quarterly groundwater monitoring reports. A discrete plume was not observed during the subsurface investigation.

RECOMMENDATIONS

Based on the conclusions of the preliminary contamination assessment, PSI offers the following recommendations:

* Disposal of both groundwater and soil cuttings will be through a hazardous waste contracting firm.

* Groundwater monitoring should continue for the remaining two quarters of 1993, and the first quarter of 1994. During this time possible groundwater contamination will be closely monitored and reports prepared for submittal to the Alameda County Health Care Services Agency.

* Should groundwater contamination in MW3-EX and MW5-EX continue to stay at this high level throughout the remaining three quarters of groundwater monitoring, PSI will submit to the U.S. Coast Guard a proposal for additional groundwater monitoring well installation, monitoring and potential remediation.

As noted in the warranty section below, this report is limited to the conditions observed and to the information available at the time the work was performed. If any additional information becomes available, it will be forwarded to you for your evaluation.

QUALITY ASSURANCE/QUALITY CONTROL

All work described in this report, including preparation of this report, was performed under the direct supervision of a California Certified Engineering Geologist trained in hazardous waste operations. All sampling was performed in general accordance with EPA-approved protocols. Downhole and sampling equipment was properly decontaminated prior to, and between, sampling events. Samples were kept in cold storage until delivery to a laboratory certified by the California Department of Health Services for analysis using EPA or equivalent methodologies.

WARRANTY

The field observations, measurements, and research reported herein are considered sufficient in detail and scope to form a reasonable basis for a preliminary contamination assessment of this property. PSI warrants that the findings and conclusions contained herein have been prepared in accordance with generally accepted environmental science and engineering methods only for the site as described in this report.

The preliminary investigation and evaluation report has been developed to provide the client with information regarding apparent indications of suspected adverse environmental conditions relating to the subject property. It is necessarily limited to the conditions observed and to the information available at the time the work was performed.

Due to the limited nature of the work, there is a possibility that conditions may exist which could not be identified within the scope of the assessment, or which were not apparent at the time of the report preparation. It is also possible that the testing methods employed at the time the report was prepared may later be superceded by other methods. The description, type, and composition of what are commonly referred to as "hazardous materials or conditions", can also change over time. PSI does not accept responsibility for changes in the state of the art, nor for changes in the scope of various lists of hazardous materials or conditions. PSI believes that the findings and conclusions provided in this report are reasonable. However, no warranties are implied or expressed.

APPENDIX A

SITE DRAWINGS

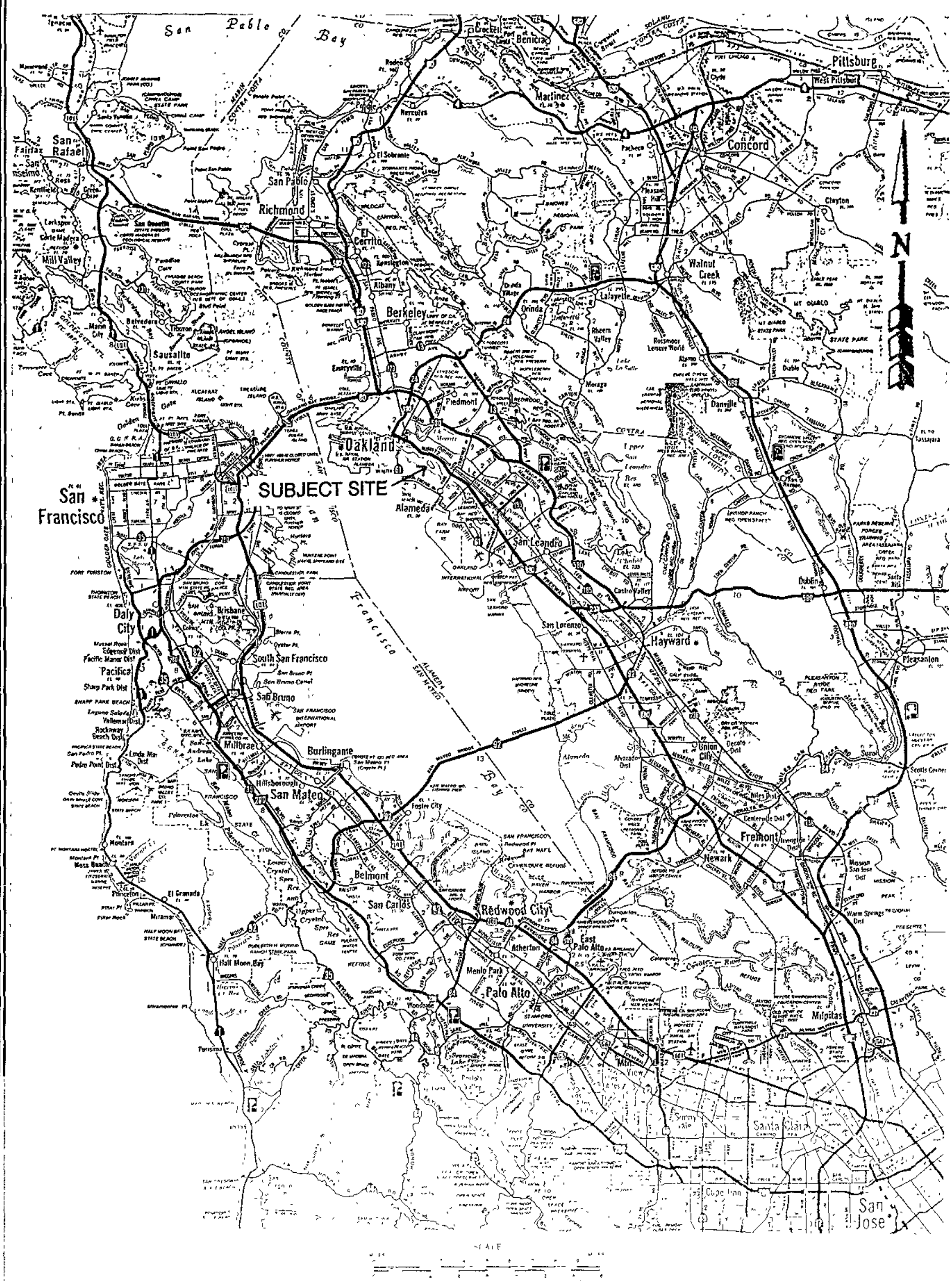


Figure 1, Site Location Map

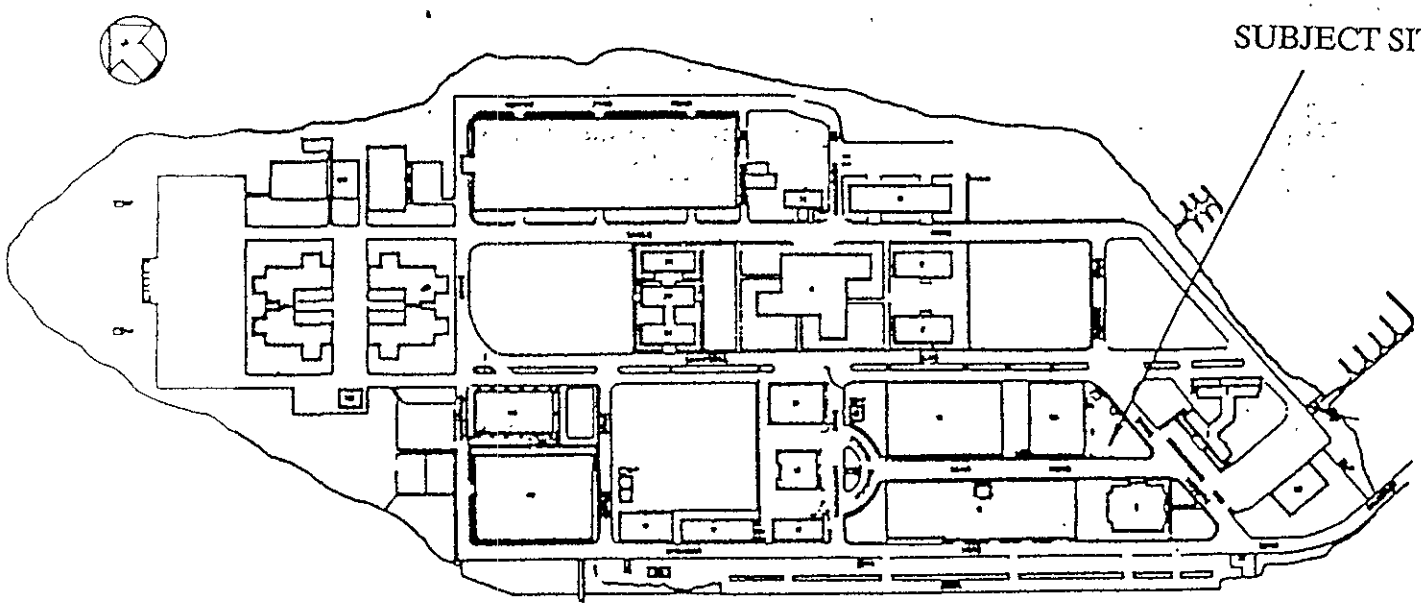
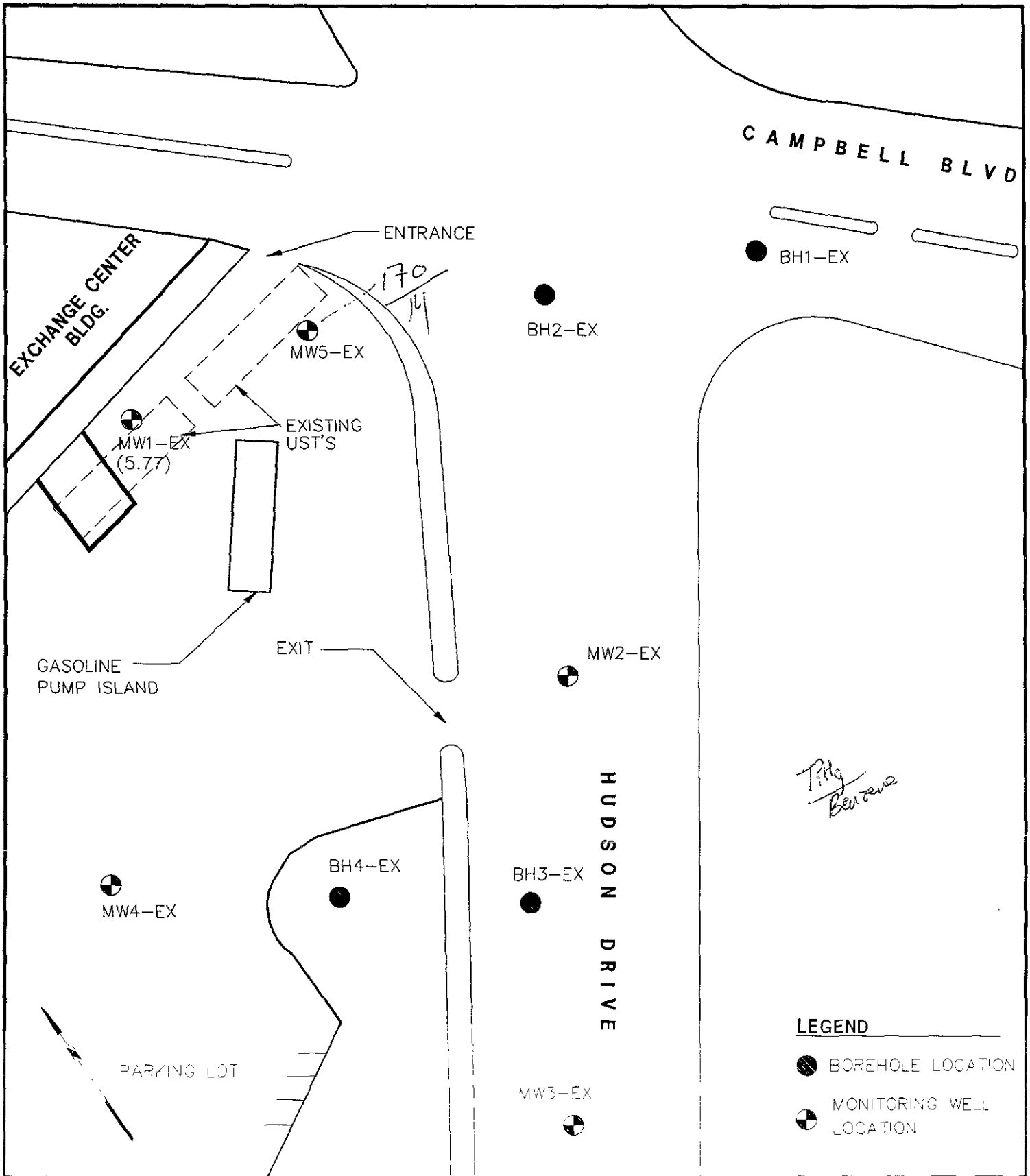


Figure 2, Area Map



C:\DWG\34006-3

PROFESSIONAL SERVICE INDUSTRIES, INC.
3730 MT DIABLO BLVD SUITE 345 LAFAYETTE, CA 94549
(510) 284-3070

PROJECT NAME:
U.S. COAST GUARD
ALAMEDA, CA

TITLE: FIGURE NO. 3
MONITORING WELL AND
BOREHOLE LOCATION MAP

DATE:	05/07/93
DWG NO.:	34006-3
PROJ NO.:	582-34006
DRAWN BY:	NIMAN
APP'D BY:	K. OLIVER
SCALE:	NOT TO SCALE

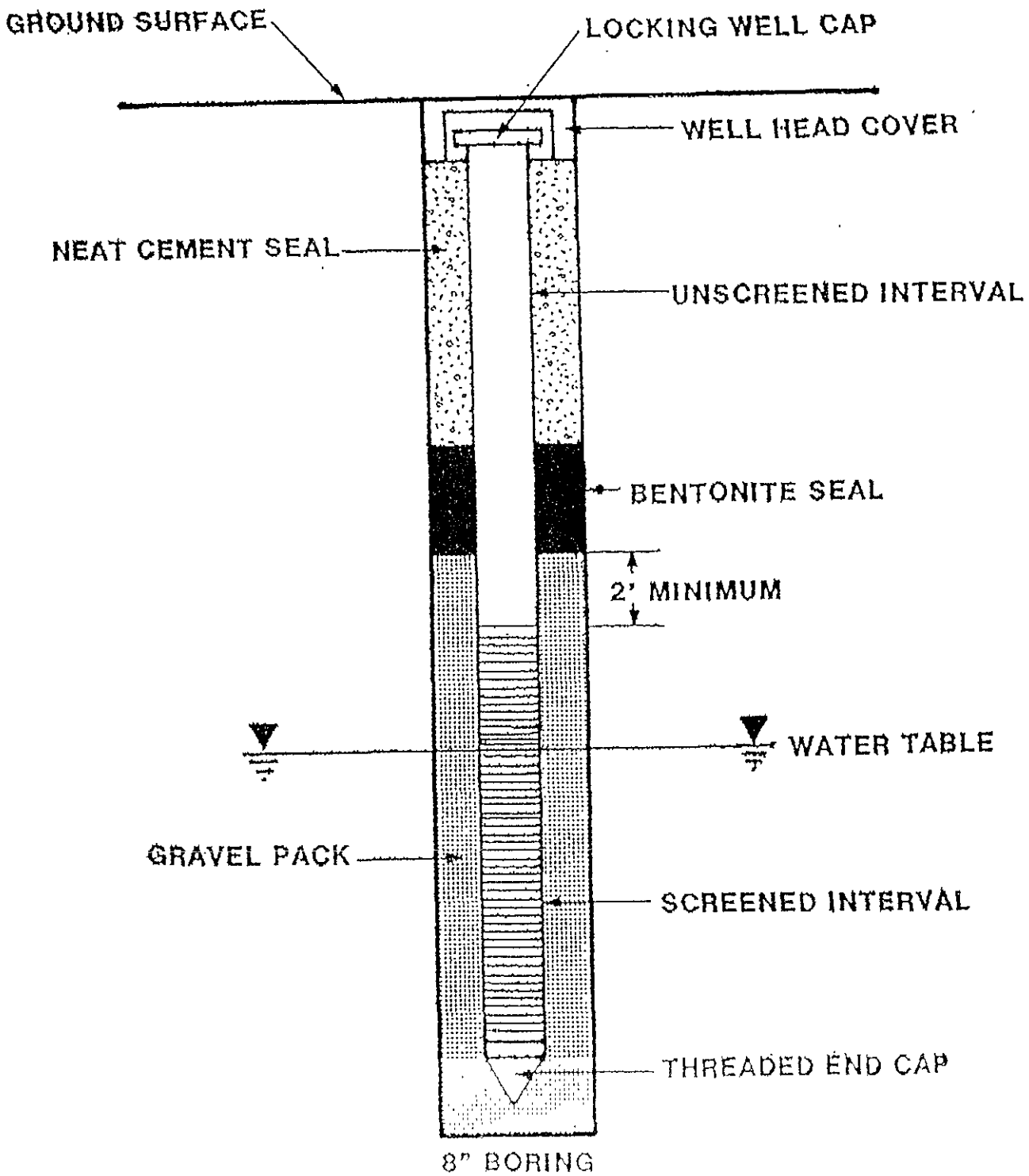
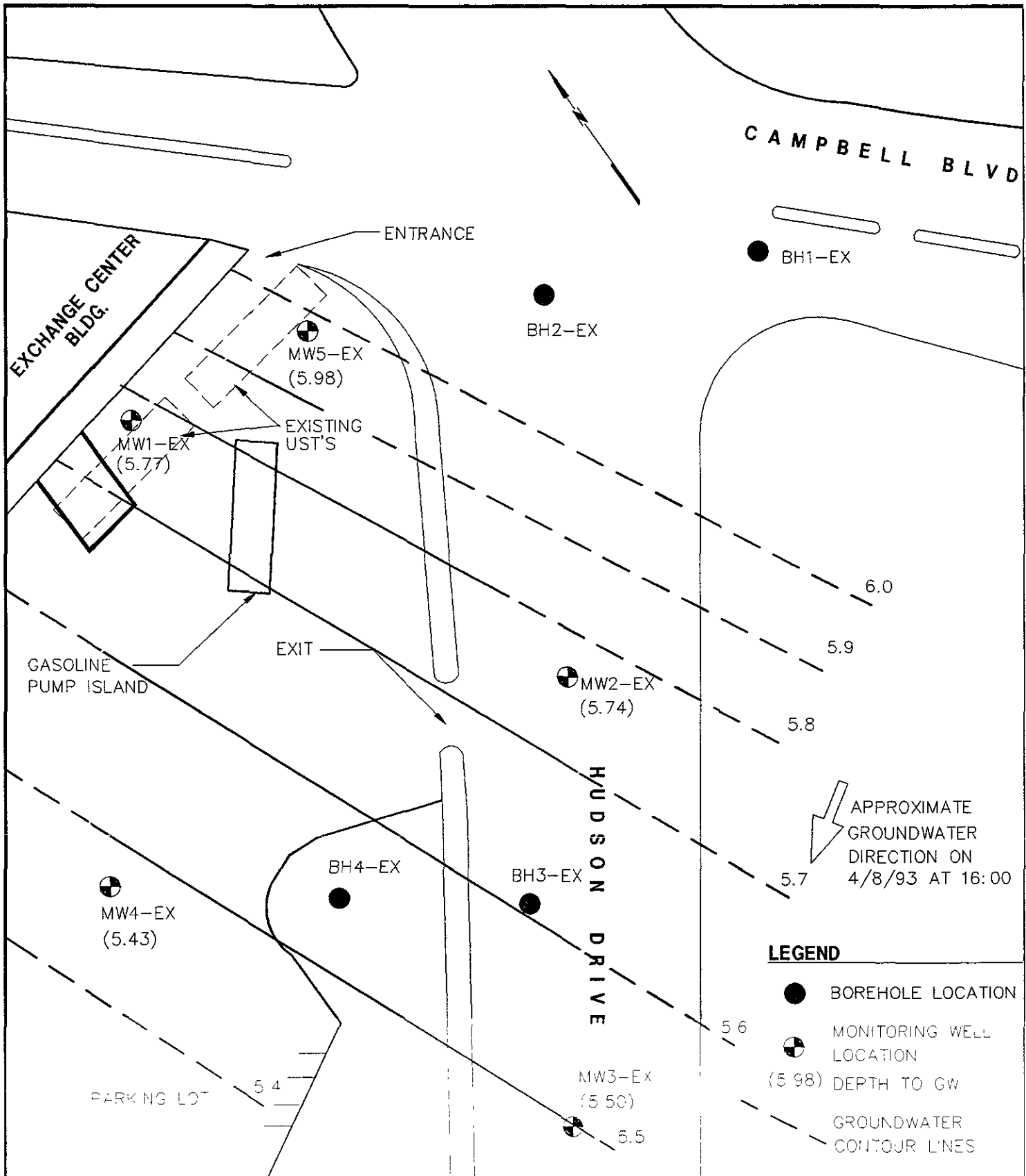


FIGURE 4, TYPICAL MONITORING WELL CONSTRUCTION DESIGN

PROJECT NO	DATE
582-34006	JANUARY, 1993



PROFESSIONAL SERVICE INDUSTRIES, INC.
530 MT DIABLO BLVD., SUITE 345 LAFAYETTE, CA 94549
(510) 284-3070

PROJECT NAME:	U.S. COAST GUARD ALAMEDA, CA
TITLE:	GROUNDWATER CONTOUR MAP
FIGURE NO.	5
DATE:	05/07/93
DWG NO.:	34006-5
PROJ NO.:	582-34006
DRAWN BY:	NIMAN
APP'D BY:	K OLIVER
SCALE:	NOT TO SCALE

C:\DWG\34006-5

APPENDIX B

BORING LOGS

Major Divisions			Group Symbols	Typical Names
Coarse-Grained Soils More than 50% retained on No. 200 sieve*	Gravels 50% or more of coarse fraction retained on No. 4 sieve	Clean Gravels	GW	Well-graded gravels and gravel-sand mixtures, little or no fines
			GP	Poorly graded gravels and gravel-sand mixtures, little or no fines
		Gravels with Fines	GM	Silty gravels, gravel-sand-silt mixtures
			GC	Clayey gravels, gravel-sand-clay mixtures
	Sands More than 50% of coarse fraction passes No. 4 sieve	Clean Sands	SW	Well-graded sands and gravelly sands, little or no fines
			SP	Poorly graded sands and gravelly sands, little or no fines
		Sands with Fines	SM	Silty sands, sand-silt mixtures
			SC	Clayey sands, sand-clay mixtures
Fine-Grained Soils 50% or more passes No. 200 sieve*	Silts and Clays Liquid limit 50% or less		ML	Inorganic silts, very fine sands, rock flour, silty or clayey fine sands
			CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays
			OL	Organic silts and organic silty clays of low plasticity
	Silts and Clays Liquid limit greater than 50%		MH	Inorganic silts, micaceous or diatomaceous fine sands or silts, elastic silts
			CH	Inorganic clays of high plasticity, fat clays
			OH	Organic clays of medium to high plasticity
Highly Organic Soils			PT	Peat, muck, and other highly organic soils

EXPLANATION	
SYMBOL	MEANING
	LOCATION OF SAMPLE TAKEN USING A STANDARD SPLIT TUBE SAMPLER, 2"O.D. 1-3/8"I.D. DRIVEN WITH A 140 LB HAMMER FALLING 30".
	LOCATION OF SAMPLE TAKEN USING A MODIFIED CAL. SAMPLER, 3-1/8"O.D., WITH 2-1/2"I.D. LINER RINGS, DRIVEN USING THE WT. OF KELLY BAR OR USING A 140 LB HAMMER FALLING 30".
	LOCATION OF SAMPLE TAKEN USING A 3" O.D. THIN-WALLED TUBE SAMPLER(SHELBY TUBE) HYDRAULICALLY PUSHED.
	LOCATION OF BULK SAMPLE TAKEN FROM AUGER CUTTINGS.
▼	ELEVATION OF GROUND WATER OR PERCHED WATER.
*	See Laboratory Test Results in Appendix D.

GRAIN SIZES

SILTS & CLAYS	SAND			GRAVEL		COBBLES	BOULDERS
	FINE	MEDIUM	COARSE	FINE	COARSE		

200 40 10 4 3/4" 3" 12"

U.S. STANDARD SIEVES CLEAR SQUARE SIEVE OPENINGS

UNIFIED SOIL CLASSIFICATION SYSTEM
(ASTM D-2487)
&
SYMBOLS OF LOGS

Figure B1

PROJECT NO 582-34006

DATE MAY, 1993

EXPLORATORY BORING LOG

PROJECT NO. 582-34006	LOGGED BY: M. CASTERSON	DATE DRILLED: 4/1/93	PAGE 1 OF 1
DRILL RIG: MOBILE B - 53		BORING ELEV: 13.72 Feet	BORING NO. MW1-EX
DEPTH TO GROUNDWATER 7.95 Feet		BORING DIAM: 8 inch	

SOIL / ROCK MATERIAL DESCRIPTION	USCS GROUP SYMBOL	DEPTH IN FEET	SAMPLE	BLOW COUNT	Photoionization Detector (PID)	REMARKS
				N	ppm	
Cement 6 inch Thick		1				
Artificial Fill - Sands and Gravels		2 3 4				
Dark Gray, Silty SAND, Saturated, Very Loose, Minor Clays.	SM	5 6 7 8		18	Zero	
Dark Green/Gray CLAY, Minor Silt, Saturated, Stiff, Medium to High Plasticity.	OH	9 10 11		11	Zero	* 10.5 - 11.0'
@ 15' Stiff		12 13 14 15 16		11	Zero	
@ 20' Stiff		17 18 19 20		12	Zero	
Boring Terminated at 20 Feet. Groundwater Encountered at 7.95 Feet. Well Constructed With 2 Inch O.D. Blank and Slotted PVC Liner.		21 22 23 24 25				

DATE	May 1993
JOB NO	582-34006
DWG NO	USCG-1
DRAWN	M. Casterson
CHK'D	K. Oliver
APP'D	S. Bradley

psi Professional Service Industries, Inc.

MW1-EX

U.S. Coast Guard
Government Island, California

Figure B2

EXPLORATORY BORING LOG

PROJECT NO.	LOGGED BY:	DATE DRILLED:	PAGE
582-34006	M. CASTERSON	4/2/93	1 OF 1

DRILL RIG:	BORING ELEV:	BORING NO.
MOBILE B - 53	13.74 Feet	MW2-EX

DEPTH TO GROUNDWATER	BORING DIAM:
8.00 Feet	8 inch

SOIL / ROCK MATERIAL DESCRIPTION	USCS GROUP SYMBOL	DEPTH IN FEET	SAMPLE	BLOW COUNT	Photoionization Detector (PID)	REMARKS
				N	ppm	
Asphault 3 inch Thick		1				
Artificial Fill - Sands and Gravels, Moist Medium Dense		2 3 4 5 6 7 8		14	3 ppm	
Dark Gray, Silty SAND, Saturated, Very Loose, Minor Clays.	SM	9 10				
Dark Green/Gray Clay, Minor Silt, Saturated, Stiff Medium to High Plasticity.	OH	11 12 13 14 15		12	2 ppm	* 10.5 - 11.0'
@ 15' Firm		16 17 18 19		10	2 ppm	
@ 20' Firm		20		6	2 ppm	
Boring Terminated at 20 Feet. Groundwater Encountered at 8.00 Feet. Well Constructed With 2 Inch O.D. Blank and Slotted PVC Liner.		21 22 23 24 25				

DATE	May 1993
JOB NO	582-34006
DWG NO	USCG-2
DRAWN	M. Casterson
CHK D	K. Oliver
APP D	S Bradley

psi Professional Service Industries, Inc.

MW2-EX

U.S. Coast Guard
Government Island, California

FIGURE B3

EXPLORATORY BORING LOG

PROJECT NO. 582-34006	LOGGED BY: M. CASTERSON	DATE DRILLED: 4/2/93	PAGE 1 OF 1
DRILL RIG: MOBILE B - 53		BORING ELEV: 13.50 Feet	BORING NO. MW3-EX
DEPTH TO GROUNDWATER: 8.00 Feet		BORING DIAM: 8 inch	

SOIL / ROCK MATERIAL DESCRIPTION	USCS GROUP SYMBOL	DEPTH IN FEET	SAMPLE	BLOW COUNT	Photolonization Detector (PID)	REMARKS
				N	ppm	
Asphault 3 inch Thick		1				
Artificial Fill - Sands and Gravels, Moist Medium Dense		2 3 4 5 6 7 8		23	3 ppm	
Dark Gray, Silty SAND, Saturated, Very Loose, Minor Clays.	SM	9				
Dark Green/Gray Clay, Minor Silt, Saturated, Stiff Medium to High Plasticity.	OH	10 11 12 13 14 15 16		9	4 ppm	* 10.5 - 11.0'
@ 15' very Soft				2	2 ppm	
@ 20' Firm		17 18 19 20				
Boring Terminated at 20 Feet. Groundwater Encountered at 8.00 Feet. Well Constructed With 2 Inch O.D. Blank and Slotted PVC Liner.		21 22 23 24 25		6	2 ppm	

DATE	May 1993
JOB NO	582-34006
DWG NO.	USCG-3
DRAWN	M Casterson
CHK D	K Oliver
APP D	S Bradley

psi Professional Service Industries, Inc.

MW3-EX

U.S. Coast Guard
Government Island, California

FIGURE B4

EXPLORATORY BORING LOG

PROJECT NO.	LOGGED BY:	DATE DRILLED:	PAGE
582-34006	M. CASTERSON	4/5/93	1 OF 1

DRILL RIG:	BORING ELEV:	BORING NO.
MOBILE B - 53	13.38 Feet	MW4-EX

DEPTH TO GROUNDWATER:	BORING DIAM:
7.95 Feet	8 inch

SOIL / ROCK MATERIAL DESCRIPTION	USCS GROUP SYMBOL	DEPTH IN FEET	SAMPLE	BLOW COUNT N	Photoionization Detector (PID) ppm	REMARKS
Asphault 3 inch Thick		1				
Artificial Fill - Sands and Gravels, Moist Medium Dense		2 3 4 5 6 7 8		16	Zero	
Dark Gray, Silty SAND, Saturated, Very Loose, Minor Clays.	SM	9 10		26	Zero	* 10.5 - 11.0'
Dark Green/Gray Clay, Minor Silt, Saturated, Very Stiff Medium to High Plasticity. Minor Shell Fragments.	OH	11 12 13 14				
@ 15' Firm		15 16 17 18 19		6	Zero	
@ 20' Firm		20		9	Zero	
Boring Terminated at 20 Feet. Groundwater Encountered at 7.95 Feet. Well Constructed With 2 Inch O.D. Blank and Slotted PVC Liner.		21 22 23 24 25				

DATE	May 1993
JOB NO	582-34006
DWG NO	USCG-4
DRAWN	M Casterson
CHK D	K Oliver
APP D	S. Bradley

psi Professional Service Industries, Inc.

MW4-EX
U.S. Coast Guard
Government Island, California

FIGURE
B5

EXPLORATORY BORING LOG

PROJECT NO.	LOGGED BY:	DATE DRILLED:	PAGE
582-34006	M. CASTERSON	4/1/93	1 OF 1

DRILL RIG:	BORING ELEV:	BORING NO.
MOBILE B - 53	Ground Level	BH1-EX

DEPTH TO GROUNDWATER	BORING DIAM:
8.00 Feet	8 inch

SOIL / ROCK MATERIAL DESCRIPTION	USCS GROUP SYMBOL	DEPTH IN FEET	SAMPLE	BLOW COUNT	Photoionization Detector (PID)	REMARKS
				N	ppm	
Asphault 3 inch Thick		1				
Artificial Fill - Sands and Gravels Moist, Medium Dense		2 3 4 5 6		22	1 ppm	
		7				
Dark Gray, Silty SAND, Saturated, Very Loose, Minor Clays.	SM	8 9		▼		
Dark Green/Gray CLAY, Minor Silts, Saturated, Stiff, Medium to High Plasticity.	OH	10 11		12	2 ppm	* 10.5 - 11.0'
		12 13 14				
@ 15' Very Stiff		15 16		21	Zero	
		17 18 19				
@ 20' Firm		20		7	Zero	
Boring Terminated at 20 Feet. Groundwater Encountered at 8.00 Feet.		21 22 23 24 25				

DATE	May 1993
JOB NO	582-34006
DWG NO	USCG-5
DRAWN	M. Casterson
CHK'D	K. Oliver
APP'D	S Bradley

psi Professional Service Industries, Inc.

BH1-EX

U.S. Coast Guard
Government Island, California

Figure B6

EXPLORATORY BORING LOG

PROJECT NO.	LOGGED BY:	DATE DRILLED:	PAGE
582-34006	M. CASTERSON	4/1/93	1 OF 1
DRILL RIG: MOBILE B - 53		BORING ELEV: Ground Elevation	BORING NO.
DEPTH TO GROUNDWATER 8.00 Feet		BORING DIAM: 8 inch	BH2-EX

SOIL / ROCK MATERIAL DESCRIPTION	USCS GROUP SYMBOL	DEPTH IN FEET	SAMPLE	BLOW COUNT	Photoionization Detector (PID)	REMARKS
				N	ppm	
Asphault 3 in Thick		1				
Artificial Fill - Sands and Gravels Moist, Medium Dense		2 3 4 5		25	Zero	
Dark Gray, Silty SAND, Saturated, Very Loose, Minor Clays.	SM	6 7 8	▼			
Dark Green/Gray CLAY, Minor Silts, Saturated, Stiff, Medium to High Plasticity.	OH	9 10 11		12	Zero	* 10.5 - 11.0'
@ 15' Very Stiff		12 13 14 15 16		20	Zero	
@ 20' Firm		17 18 19 20		6	Zero	
Boring Terminated at 20 Feet. Groundwater Encountered at 8.00 Feet.		21 22 23 24 25				

DATE	May 1993
JOB NO	582-34006
DWG NO	USCG-6
DRAWN	M Casterson
CHK D	K. Oliver
APP D	S Bradley

psi Professional Service Industries, Inc.

BH2-EX
U.S. Coast Guard
Government Island, California

FIGURE
B7

EXPLORATORY BORING LOG

PROJECT NO. 582-34006	LOGGED BY: M. CASTERSON	DATE DRILLED: 4/2/93	PAGE 1 OF 1
DRILL RIG: MOBILE B - 53		BORING ELEV: Ground Level	BORING NO. BH3-EX
DEPTH TO GROUNDWATER 8.10 Feet		BORING DIAM: 8 inch	

SOIL / ROCK MATERIAL DESCRIPTION	USCS GROUP SYMBOL	DEPTH IN FEET	SAMPLE	BLOW COUNT N	Photoionization Detector (PID) ppm	REMARKS
Asphault 3 inch Thick		1				
Artificial Fill - Sands and Gravels Moist, Loose.		2 3 4 5 6 7		7	1 ppm	
Dark Gray, Silty SAND, Saturated, Very Loose, Minor Clays.	SM	8 9		▼		
Dark Green/Gray CLAY, Minor Silts, Saturated, Stiff to Firm, Medium to High Plasticity.	OH	10 11		8	2 ppm	* 10.5 - 11.0'
@ 15' Stiff to Firm		12 13 14 15 16		8	Zero	
@ 20' Firm		17 18 19 20		4/3/3	Zero	
Boring Terminated at 20 Feet. Groundwater Encountered at 8.10 Feet.		21 22 23 24 25				

DATE	May 1993
JOB NO	582-34006
DWG NO	USCG-7
DRAWN	M. Casterson
CHK'D	K Oliver
APP'D	S Bradley

psi Professional Service Industries, Inc.

BH3-EX

U.S. Coast Guard
Government Island, California

Figure B8

EXPLORATORY BORING LOG

PROJECT NO. 582-34006	LOGGED BY: M. CASTERSON	DATE DRILLED: 4/5/93	PAGE 1 OF 1
DRILL RIG: MOBILE B - 53		BORING ELEV: Ground Level	BORING NO. BH4-EX
DEPTH TO GROUNDWATER 8.00 Feet		BORING DIAM: 8 inch	

SOIL / ROCK MATERIAL DESCRIPTION	USCS GROUP SYMBOL	DEPTH IN FEET	SAMPLE	BLOW COUNT N	Photoionization Detector (PID) ppm	REMARKS
Asphault 3 inch Thick		1				
Artificial Fill - Sands and Gravels, Moist, Medium Dense.		2 3 4 5 6 7		18	Zero	
Dark Gray, Silty SAND, Saturated, Very Loose, Minor Clays.	SM	8 9		▼		
Dark Green/Gray Clay, Minor Silts, Saturated, Very Stiff, Medium to High Plasticity.	OH	10 11		15	Zero	* 10.5 - 11.0'
@ 15' Soft		12 13 14 15 16		5	Zero	
@ 20' Firm		17 18 19 20		6	Zero	
Boring Terminated at 20 Feet. Groundwater Encountered at 8.10 Feet.		21 22 23 24 25				

DATE	May 1993
JOB NO	582-34006
DWG NO	USCG-8
DRAWN	M. Casterson
CHK'D	K. Oliver
APP'D	S Bradley

psi Professional Service Industries, Inc.

BH4-EX
U.S. Coast Guard
Government Island, California

Figure B9

APPENDIX C

GROUNDWATER SAMPLING DATA

GROUNDWATER SAMPLING DATA

Well No. MW-1 EX
Project # 582-34006

Time (24 Hr. Clock)	Volume Removed (gal)	Electrical Conductivity (umhos/cm)x100	Temperature (F)	pH	Odor/Sheen
13:24	0.30	1391	69.60	8.22	Odorless/Cloudy
13:27	1.20	1394	66.50	8.06	Odorless/Cloudy
13:33	2.10	1150	66.10	8.35	Odorless/Cloudy
13:45	3.00	5210	64.50	7.71	Odorless/Cloudy
13:51	3.90	3520	65.10	7.70	Odorless/Cloudy
13:56	4.80	5210	65.10	7.76	Odorless/Cloudy
14:02	5.70	3100	64.80	7.64	Odorless/Cloudy
14:07	6.60	2200	64.90	7.63	Odorless/Cloudy
14:12	7.50	5470	64.10	7.66	Odorless/Cloudy
14:17	8.40	9960	64.60	7.72	Odorless/Cloudy
14:22	9.30	9220	65.10	7.89	Odorless/Cloudy
14:27	10.20	9600	71.80	7.79	Odorless/Cloudy
14:31	11.10	5770	67.50	7.85	Odorless/Cloudy
14:37	12.00	3220	66.50	7.94	Odorless/Cloudy
14:40	12.90	3520	66.00	7.78	Odorless/Cloudy
14:45	13.80	7390	66.60	7.90	Odorless/Cloudy
14:49	14.70	1403	67.20	7.80	Odorless/Cloudy
14:54	15.60	3526	64.40	7.80	Odorless/Cloudy
15:03	16.50	3677	65.90	7.74	Odorless/Cloudy

Total Depth to Bottom	Depth to - Water =	Water Column (ft.)		Well Inside Diameter (in.) 2.00
18.80	7.95	10.85		Volume 2"=0.163 5"=1.02 10"=4.08
Volume Factor	x Water Column =	Well Casing Vol. (gal)		Factor 3"=0.367 6"=1.47 12"=4.08
0.163	10.85	1.77		V.F.=gal/ft. 4"=0.653 8"=2.61

Date (s) Purged	4/5/93	Well Dewatered	Yes No x
Purge Method	Teflon Bailer	Date Sampled	4/5/93
Total Volume Removed (gal)	16.5	Time Sampled	15:05
Casing Volumes Removed (gal)	9.32	Sample Method	Teflon Bailer
Purge Rate (GPM)	0.42	Weather Conditions	Sunny/warm
		Purged / Sampled by	M. Casterson
Depth to Water After Recovery 7.95 (ft.)		100 % Recovered Prior to Sampling	

Notes:

Professional Service Industries, Inc
WELL PURGING AND SAMPLING FIELD DATA
MW-1 EX
U.S. Coast Guard
Alameda, California

GROUNDWATER SAMPLING DATA

Well No. MW-2 EX
Project # 582-34006

Time (24 Hr. Clock)	Volume Removed (gal)	Electrical Conductivity (umhos/cm)x100	Temperature (F)	pH	Odor/Sheen
15:10	0.30	1289	68.60	8.43	Odorless/Cloudy
15:14	1.20	1301	66.90	8.21	Odorless/Cloudy
15:19	2.10	1330	69.30	8.02	Odorless/Cloudy
15:24	3.00	1362	69.20	8.24	Odorless/Cloudy
15:31	3.90	1237	68.60	8.02	Odorless/Cloudy
15:36	4.80	1267	67.80	8.45	Odorless/Cloudy
15:42	5.70	1268	69.20	8.52	Odorless/Cloudy
15:44	6.60	1273	68.40	8.22	Odorless/Cloudy
15:47	7.50	1260	68.80	8.18	Odorless/Cloudy
15:51	8.40	1245	68.80	8.04	Odorless/Cloudy
15:53	9.30	1366	69.70	7.81	Odorless/Cloudy
15:57	10.20	1347	71.30	7.86	Odorless/Cloudy
16:00	11.10	1283	70.30	7.83	Odorless/Cloudy
16:07	12.00	1230	69.60	7.80	Odorless/Cloudy
16:14	12.90	1145	69.50	7.81	Odorless/Cloudy
16:19	13.80	1187	69.00	7.83	Odorless/Cloudy
16:22	14.70	1171	69.00	7.84	Odorless/Cloudy
16:26	15.60	1406	69.00	7.84	Odorless/Cloudy
16:30	16.50	1250	68.80	7.75	Odorless/Cloudy
16:34	17.40	1222	68.30	7.70	Odorless/Cloudy

Total Depth to Bottom	Depth to - Water =	Water Column (ft.)	
19.80	8.00	11.80	
Volume Factor	x Water Column =	Well Casing Vol. (gal)	
0.163	11.80	1.92	

Well Inside Diameter (in.) 2.00
Volume 2"=0.163 5"=1.02 10"=4.08
Factor 3"=0.367 6"=1.47 12"=4.08
V.F.=gal/ft. 4"=0.653 8"=2.61

Date (s) Purged	4/5/93	Well Dewatered	Yes No x
Purge Method	Teflon Bailer	Date Sampled	4/5/93
Total Volume Removed (gal)	17.4	Time Sampled	16:40
Casing Volumes Removed (gal)	9.06	Sample Method	Teflon Bailer
Purge Rate (GPM)	0.21	Weather Conditions	Sunny/warm
		Purged / Sampled by	M. Casterson
Depth to Water After Recovery 8.0 (ft.)		100 % Recovered Prior to Sampling	

Notes:

Professional Service Industries, Inc
WELL PURGING AND SAMPLING FIELD DATA
MW-2 EX
U.S. Coast Guard
Alameda, California

GROUNDWATER SAMPLING DATA

Well No. MW-3 EX
Project # 582-34006

Time (24 Hr. Clock)	Volume Removed (gal)	Electrical Conductivity (umhos/cm)x100	Temperature (F)	pH	Odor/Sheen
8:26	0.03	1131	62.30	7.91	Odorless/Cloudy
8:31	1.20	1155	62.50	7.85	Odorless/Cloudy
8:33	2.10	1146	62.50	8.04	Odorless/Cloudy
8:33	3.00	1156	62.70	7.97	Odorless/Cloudy
8:36	3.90	1184	62.80	7.84	Odorless/Cloudy
8:40	4.80	1153	62.80	7.76	Odorless/Cloudy
8:42	5.70	1132	62.60	7.71	Odorless/Cloudy
8:45	6.60	1145	62.80	7.69	Odorless/Cloudy
8:47	7.50	1174	63.10	7.68	Odorless/Cloudy
8:49	8.40	1183	63.40	7.77	Odorless/Cloudy
8:51	9.30	1172	63.30	7:84	Odorless/Cloudy
8:54	10.20	1172	63.10	7.74	Odorless/Cloudy
8:56	11.10	1160	63.50	7.75	Odorless/Cloudy
8:58	12.00	1193	63.00	7.76	Odorless/Cloudy
9:00	12.90	1186	63.00	7.71	Odorless/Cloudy

Total Depth	Depth to	Water		Well Inside Diameter (in.) 2.00
to Bottom	- Water =	Column (ft.)		Volume 2"=0.163 5"=1.02 10"=4.08
19.95	8.00	11.95		Factor 3"=0.367 6"=1.47 12"=4.08
Volume Factor	x Water Column =	Well Casing Vol. (gal)		V.F.=gal/ft. 4"=0.653 8"=2.61
0.163	11.95	1.95		

Date (s) Purged	4/8/93	Well Dewatered	Yes No x
Purge Method	Teflon Bailer	Date Sampled	4/8/93
Total Volume Removed (gal)	12.90	Time Sampled	9:00
Casing Volumes Removed (gal)	6.61	Sample Method	Teflon Bailer
Purge Rate (GPM)	0.38	Weather Conditions	Sunny/warm
		Purged / Sampled by	M. Casterson
Depth to Water After Recovery 8.00 (ft.)		100 % Recovered Prior to Sampling	

Notes:

Professional Service Industries, Inc
WELL PURGING AND SAMPLING FIELD DATA
MW-3 EX
U.S. Coast Guard
Alameda, California

GROUNDWATER SAMPLING DATA

Well No. MW-4 EX
Project # 582-34006

Time (24 Hr. Clock)	Volume Removed (gal)	Electrical Conductivity (umhos/cm)x100	Temperature (F)	pH	Odor/Sheen
10:25	0.30	2030	65.40	7.73	Odorless/Cloudy
10:29	1.20	2160	65.90	7.85	Odorless/Cloudy
10:31	2.10	2360	66.30	7.75	Odorless/Cloudy
10:33	3.00	2190	66.50	7.83	Odorless/Cloudy
10:34	3.90	2230	66.50	7.72	Odorless/Cloudy
10:36	4.80	2270	66.40	7.84	Odorless/Cloudy
10:37	5.70	2250	66.20	7.78	Odorless/Cloudy
10:39	6.60	2230	66.00	7.70	Odorless/Cloudy
10:40	7.50	2210	65.80	7.81	Odorless/Cloudy
10:42	8.40	2190	65.30	7.88	Odorless/Cloudy
10:43	9.30	2230	65.70	7.90	Odorless/Cloudy
10:45	10.20	2260	66.10	7.77	Odorless/Cloudy
10:46	11.10	2220	65.90	7.91	Odorless/Cloudy
10:47	12.00	2230	65.70	7.90	Odorless/Cloudy
10:49	12.90	2210	65.80	7.95	Odorless/Cloudy
10:50	13.80	2230	65.80	7.77	Odorless/Cloudy

Total Depth to Bottom	Depth to - Water =	Water Column (ft.)		Well Inside Diameter (in.) 2.00
				Volume 2"=0.163 5"=1.02 10"=4.08
19.95	7.95	12.00		Factor 3"=0.367 6"=1.47 12"=4.08
Volume Factor	x Water Column =	Well Casing Vol. (gal)		V.F.=gal/ft. 4"=0.653 8"=2.61
0.163	12.00	1.96		

Date (s) Purged	4/8/93	Well Dewatered	Yes No x
Purge Method	Teflon Bailer	Date Sampled	4/8/93
Total Volume Removed (gal)	13.80	Time Sampled	10:50
Casing Volumes Removed (gal)	7.04	Sample Method	Teflon Bailer
Purge Rate (GPM)	0.55	Weather Conditions	Sunny/warm
		Purged / Sampled by	M. Casterson
Depth to Water After Recovery 8.00 (ft.)		99 % Recovered Prior to Sampling	

Notes:

Professional Service Industries, Inc
WELL PURGING AND SAMPLING FIELD DATA
MW-4 EX
U.S. Coast Guard
Alameda, California

GROUNDWATER SAMPLING DATA

Well No. MW-5 EX
Project # 582-34006

Time (24 Hr. Clock)	Volume Removed (gal)	Electrical Conductivity (umhos/cm)x100	Temperature (F)	pH	Odor/Sheen
12:24	0.30	1565	71.00	8.07	Odorless/Cloudy
12:26	1.20	1484	69.30	7.92	Odorless/Cloudy
12:28	2.10	1445	68.30	7.77	Odorless/Cloudy
12:30	3.00	1444	68.30	7.74	Odorless/Cloudy
12:32	3.90	1466	68.70	7.85	Odorless/Cloudy
12:33	4.80	1486	68.00	7.78	Odorless/Cloudy
12:35	5.70	1484	67.90	7.88	Odorless/Cloudy
12:36	6.60	1462	68.20	7.88	Odorless/Cloudy

Total Depth to Bottom	Depth to - Water =	Water Column (ft.)		Well Inside Diameter (in.) 2.00
12.65	8.20	4.45		Volume 2"=0.163 5"=1.02 10"=4.08
Volume Factor	x Water Column =	Well Casing Vol. (gal)		Factor 3"=0.367 6"=1.47 12"=4.08
0.163	4.45	0.73		V.F.=gal/ft. 4"=0.653 8"=2.61

Date (s) Purged	4/8/93	Well Dewatered	Yes No x
Purge Method	Teflon Bailer	Date Sampled	4/8/93
Total Volume Removed (gal)	6.60	Time Sampled	12:36
Casing Volumes Removed (gal)	9.04	Sample Method	Teflon Bailer
Purge Rate (GPM)	0.55	Weather Conditions	Sunny/warm
		Purged / Sampled by	M. Casterson
Depth to Water After Recovery 8.2 (ft.)		100 % Recovered Prior to Sampling	

Notes: Existing 4" MW

Professional Service Industries, Inc
WELL PURGING AND SAMPLING FIELD DATA
MW-5 EX
U.S. Coast Guard
Alameda, California

APPENDIX D

LABORATORY REPORTS

SEQUOIA ANALYTICAL

1900 Bates Avenue • Suite LM • Concord, California 94520
(510) 686-9600 • FAX (510) 686-9689

P.S.I.	Client Project ID:	U.S. Coast Guard	Sampled:	Apr 1, 1993
3730 Mt. Diablo Blvd., Ste 345	Sample Matrix:	Soil	Received:	Apr 2, 1993
Lafayette, CA 94549	Analysis Method:	EPA 5030/8015	Reported:	Apr 14, 1993
Attention: Kevin Oliver	First Sample #:	304-0147		

TOTAL PURGEABLE PETROLEUM HYDROCARBONS

Analyte	Reporting Limit mg/kg	Sample I.D. 304-0147 MW 2-EX	Sample I.D. 304-0148 MW 3-EX	Sample I.D. 304-0149 BH 1-EX	Sample I.D. 304-0150 BH 2-EX	Sample I.D. 304-0151 BH 3-EX
Purgeable Hydrocarbons	1.0	N.D.	N.D.	N.D.	N.D.	N.D.
Chromatogram Pattern:		--	--	--	--	--

Quality Control Data

Report Limit Multiplication Factor:	1.0	1.0	1.0	1.0	1.0
Date Analyzed:	4/8/93	4/7/93	4/8/93	4/7/93	4/7/93
Instrument Identification:	HP-2	HP-4	HP-2	HP-4	HP-4
Surrogate Recovery: (QC Limits = 70-130%)	105	106	102	102	101

Purgeable Hydrocarbons are quantitated against a fresh gasoline standard
Analytes reported as N.D. were not detected above the stated reporting limit

SEQUOIA ANALYTICAL

Karen L. Enstrom
Project Manager

SEQUOIA ANALYTICAL

1900 Bates Avenue • Suite LM • Concord, California 94520
(510) 686-9600 • FAX (510) 686-9689

P.S.I.
3730 Mt. Diablo Blvd., Ste 345
Lafayette, CA 94549
Attention: Kevin Oliver

Client Project ID: U.S. Coast Guard
Matrix:

QC Sample Group 3040146-151

Reported: Apr 14, 1993

QUALITY CONTROL DATA REPORT

ANALYTE	Benzene	Toluene	Ethyl-Benzene	Xylenes
Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020
Analyst:	A.P.	A.P.	A.P.	A.P.
Conc. Spiked:	0.40	0.40	0.40	1.2
Units:	mg/Kg	mg/Kg	mg/Kg	mg/Kg
LCS Batch#:	2LCS040793	2LCS040793	2LCS040793	2LCS040793
Date Prepared:	4/7/93	4/7/93	4/7/93	4/7/93
Date Analyzed:	4/7/93	4/7/93	4/7/93	4/7/93
Instrument I.D.#:	HP-4	HP-4	HP-4	HP-4
LCS % Recovery:	103	103	105	120
Control Limits:	70-130	70-130	70-130	70-130
MS/MSD Batch #:	3040150	3040150	3040150	3040150
Date Prepared:	4/7/93	4/7/93	4/7/93	4/7/93
Date Analyzed:	4/7/93	4/7/93	4/7/93	4/7/93
Instrument I.D.#:	HP-4	HP-4	HP-4	HP-4
Matrix Spike % Recovery:	102	102	105	116
Matrix Spike Duplicate % Recovery:	102	102	105	116
Relative % Difference:	0.0	0.0	0.0	0.0

SEQUOIA ANALYTICAL

Karen L Enstrom
Project Manager

Please Note

The LCS is a control sample of known, interferent free matrix that is analyzed using the same reagents, preparation and analytical methods employed for the samples The LCS % recovery data is used for validation of sample batch results Due to matrix effects the QC limits for MS/MSD's are advisory only and are not used to accept or reject batch results

SEQUOIA ANALYTICAL

1900 Bates Avenue • Suite LM • Concord, California 94520
(510) 686-9600 • FAX (510) 686-9689

P.S.I.	Client Project ID:	U.S. Coast Guard	Sampled:	Apr 1, 1993
3730 Mt. Diablo Blvd., Ste 345	Sample Matrix:	Soil	Received:	Apr 5, 1993
Lafayette, CA 94549	Analysis Method:	EPA 5030/8015/8020	Reported:	Apr 12, 1993
Attention: Kevin Oliver	First Sample #:	304-0152		

TOTAL PURGEABLE PETROLEUM HYDROCARBONS with BTEX DISTINCTION

Analyte	Reporting Limit mg/kg	Sample I.D. 304-0152 MW-1 EX
Purgeable Hydrocarbons	1.0	N.D.
Benzene	0.005	N.D.
Toluene	0.005	N.D.
Ethyl Benzene	0.005	N.D.
Total Xylenes	0.005	N.D.
Chromatogram Pattern:		--

Quality Control Data

Report Limit Multiplication Factor:	1.0
Date Analyzed:	4/7/93
Instrument Identification:	HP-4
Surrogate Recovery, %: (QC Limits = 70-130%)	100

Purgeable Hydrocarbons are quantitated against a fresh gasoline standard
Analytes reported as N D were not detected above the stated reporting limit.

SEQUOIA ANALYTICAL

Karen L. Enstrom
Project Manager

SEQUOIA ANALYTICAL

1900 Bates Avenue • Suite LM • Concord, California 94520
(510) 686-9600 • FAX (510) 686-9689

P.S.I.
3730 Mt. Diablo Blvd., Ste 345
Lafayette, CA 94549
Attention: Kevin Oliver

Client Project ID: U.S. Coast Guard
Matrix: Soil
QC Sample Group 304-0152

Reported: Apr 12, 1993

QUALITY CONTROL DATA REPORT

ANALYTE	Benzene	Toluene	Ethyl-Benzene	Xylenes
Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020
Analyst:	J.F.	J.F.	J.F.	J.F.
Conc. Spiked:	0.40	0.40	0.40	1.2
Units:	mg/kg	mg/kg	mg/kg	mg/kg
LCS Batch#:	2LCS040793	2LCS040793	2LCS040793	2LCS040793
Date Prepared:	4/7/93	4/7/93	4/7/93	4/7/93
Date Analyzed:	4/7/93	4/7/93	4/7/93	4/7/93
Instrument I.D.#:	HP-4	HP-4	HP-4	HP-4
LCS % Recovery:	103	103	105	120
Control Limits:	70-130%	70-130%	70-130%	70-130%
MS/MSD Batch #:	3040150	3040150	3040150	3040150
Date Prepared:	4/7/93	4/7/93	4/7/93	4/7/93
Date Analyzed:	4/7/93	4/7/93	4/7/93	4/7/93
Instrument I.D.#:	HP-4	HP-4	HP-4	HP-4
Matrix Spike % Recovery:	102	102	105	116
Matrix Spike Duplicate % Recovery:	102	102	105	116
Relative % Difference:	0 0	0 0	0 0	0 0

SEQUOIA ANALYTICAL

Karen L. Enstrom
Project Manager

Please Note:

The LCS is a control sample of known, interferent free matrix that is analyzed using the same reagents, preparation and analytical methods employed for the samples. The LCS % recovery data is used for validation of sample batch results. Due to matrix effects, the QC limits for MS/MSD's are advisory only and are not used to accept or reject batch results.

SEQUOIA ANALYTICAL
CHAIN OF CUSTODY

☐ 680 Chesapeake Drive • Redwood City, CA 94063 • (415) 364-9600 FAX (415) 364-9233
☐ 819 West Striker Ave. • Sacramento, CA 95834 • (916) 921-9600 FAX (916) 921-0100
☒ 1900 Bates Ave., Suite LM • Concord, CA 94520 • (510) 686-9600 FAX (510) 686-9689

Company Name: PROFESSIONAL SERVICE INDUSTRIES	Project Name: U.S. COAST GUARD
Address: 3230 MT. DIABLO BLVD. STE. 345	Billing Address (if different):
City: LAFAYETTE State: CA Zip Code: 945-49	
Telephone: (510) 284-3070 FAX #: 284-3151	P.O. #: 582-34006
Report To: KEVIN OLIVER Sampler: M. CASTERSON	QC Data: ☐ Level A (Standard) ☐ Level B ☐ Level C ☐ CLP

Turnaround Time: ☐ 15 Working Days ☐ 3 Working Days ☐ 2 - 8 Hours
☒ 10 Working Days ☐ 2 Working Days
☐ 5 Working Days ☐ 24 Hours

Analyses Requested

Client Sample I.D.	Date/Time Sampled	Matrix Desc.	# of Cont.	Cont. Type	Sequoia's Sample #	TPH6	BTEX					Comments
1 MW-1 EX	4-1-93	S	1	CORE		X	X					B040152
2.												
3												
4												
5												
6												
7												
8												
9												
10												

Relinquished By: Lou Engle	Date: 4/5/93	Time: 8:40	Received By:	Date:	Time:
Relinquished By:	Date:	Time:	Received By:	Date:	Time:
Relinquished By:	Date:	Time:	Received By Lab:	Date: 4-5-93	Time: 8:40 AM

Were Samples Received in Good Condition? ☐ Yes ☐ No Samples on Ice? ☐ Yes ☐ No Method of Shipment: _____ Page __ of __

Pink - Client
Yellow - Sequoia
White - Sequoia

SEQUOIA ANALYTICAL

1900 Bates Avenue • Suite LM • Concord, California 94520
(510) 686-9600 • FAX (510) 686-9689

P.S.I.	Client Project ID:	U.S. Coast Guard	Sampled:	Apr 5, 1993
3730 Mt. Diablo Blvd., Ste 345	Sample Matrix:	Soil	Received:	Apr 7, 1993
Lafayette, CA 94549	Analysis Method:	EPA 5030/8015	Reported:	Apr 15, 1993
Attention: Kevin Oliver	First Sample #:	304-0245		

TOTAL PURGEABLE PETROLEUM HYDROCARBONS

Analyte	Reporting Limit mg/kg	Sample I.D. 304-0245 MW-4EX
Purgeable Hydrocarbons	1.0	N.D.
Chromatogram Pattern:		--

Quality Control Data

Report Limit Multiplication Factor:	1.0
Date Analyzed:	4/8/93
Instrument Identification:	HP-4
Surrogate Recovery, %: (QC Limits = 70-130%)	98

Purgeable Hydrocarbons are quantitated against a fresh gasoline standard
Analytes reported as N.D. were not detected above the stated reporting limit

SEQUOIA ANALYTICAL

Karen L. Enstrom
Project Manager

SEQUOIA ANALYTICAL

1900 Bates Avenue • Suite LM • Concord, California 94520
(510) 686-9600 • FAX (510) 686-9689

P.S.I.
3730 Mt. Diablo Blvd., Ste 345
Lafayette, CA 94549
Attention: Kevin Oliver

Client Project ID: U.S. Coast Guard
Matrix: Soil
QC Sample Group 304-0245

Reported: Apr 15, 1993

QUALITY CONTROL DATA REPORT

ANALYTE	Benzene	Toluene	Ethyl-Benzene	Xylenes
Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020
Analyst:	A.P.	A.P.	A.P.	A.P.
Conc. Spiked:	0.40	0.40	0.40	1.2
Units:	mg/Kg	mg/Kg	mg/Kg	mg/Kg
LCS Batch#:	2LCS040893	2LCS040893	2LCS040893	2LCS040893
Date Prepared:	4/8/93	4/8/93	4/8/93	4/8/93
Date Analyzed:	4/8/93	4/8/93	4/8/93	4/8/93
Instrument I.D.#:	HP-4	HP-4	HP-4	HP-4
LCS % Recovery:	105	105	106	120
Control Limits:	70-130	70-130	70-130	70-130
MS/MSD Batch #:	3040281	3040281	3040281	3040281
Date Prepared:	4/8/93	4/8/93	4/8/93	4/8/93
Date Analyzed:	4/8/93	4/8/93	4/8/93	4/8/93
Instrument I.D.#:	HP-4	HP-4	HP-4	HP-4
Matrix Spike % Recovery:	55	98	98	111
Matrix Spike Duplicate % Recovery:	90	95	95	108
Relative % Difference:	48	2 6	2 6	2 3

SEQUOIA ANALYTICAL

Karen L. Enstrom
Project Manager

Please Note

The LCS is a control sample of known, interferent free matrix that is analyzed using the same reagents, preparation and analytical methods employed for the samples. The LCS % recovery data is used for validation of sample batch results. Due to matrix effects, the QC limits for MS/MSDs are advisory only and are not used to accept or reject batch results.

SEQUOIA ANALYTICAL
CHAIN OF CUSTODY

☐ [redacted] Chesapeake [redacted] • Redwood [redacted] CA [redacted] • [redacted] 364-[redacted] FAX [redacted] 15) [redacted] 9233 [redacted]
☐ 819 West Striker Ave. • Sacramento, CA 95834 • (916) 921-9600 FAX (916) 921-0100
☒ 1900 Bates Ave., Suite LM • Concord, CA 94520 • (510) 686-9600 FAX (510) 686-9689

Company Name: P.S.I	Project Name: U.S. COAST GUARD
Address: 3170 MT DIABLO BLVD	Billing Address (if different):
City: LAFAYETTE State: CA Zip Code:	
Telephone: (510) 284-3020 FAX #:	P.O. #:
Report To: KEVIN O'DOWD Sampler: MARK OESTREICH	QC Data: ☐ Level A (Standard) ☐ Level B ☐ Level C ☐ Level D

Turnaround Time: ☒ 10 Working Days ☐ 3 Working Days ☐ 2 - 8 Hours
☐ 7 Working Days ☐ 2 Working Days
☐ 5 Working Days ☐ 24 Hours

Analyses Requested

Client Sample I D	Date/Time Sampled	Matrix Desc.	# of Cont.	Cont. Type	Sequoia's Sample #	TPHg									Comments
1. MW-4 EX	4/5/93		1	S		X				3	0	4	0	2	45
2.															BTEX FOR
3.															THE HIGHEST
4.															OF PREVIOUSLY
5.															SUBMITTED
6.															SAMPLES
7.															
8.															
9.															
10.															

Relinquished By:	Date: 4/7/93	Time: 1:10pm	Received By:	Date:	Time:
Relinquished By:	Date:	Time:	Received By:	Date:	Time:
Relinquished By	Date:	Time:	Received By Lab:	Date: 4-7-93	Time: 1:10pm

Were Samples Received in Good Condition? ☐ Yes ☐ No Samples on Ice? ☐ Yes ☐ No Method of Shipment _____ Page __ of __

Pink - Client
Yellow - Sequoia
White - Sequoia

SEQUOIA ANALYTICAL

1900 Bates Avenue • Suite LM • Concord, California 94520
(510) 686-9600 • FAX (510) 686-9689

P.S.I.	Client Project ID:	U.S. Coast Guard	Sampled:	Apr 8, 1993
3730 Mt. Diablo Blvd., Ste 345	Sample Matrix:	Water	Received:	Apr 8, 1993
Lafayette, CA 94549	Analysis Method:	EPA 5030/8015/8020	Reported:	Apr 20, 1993
Attention: Kevin Oliver	First Sample #:	304-0326		

TOTAL PURGEABLE PETROLEUM HYDROCARBONS with BTEX DISTINCTION

Analyte	Reporting Limit µg/L	Sample I.D. 304-0326 MW1-SP	Sample I.D. 304-0327 MW1-EX	Sample I.D. 304-0328 MW2-EX	Sample I.D. 304-0329 MW3-EX	Sample I.D. 304-0330 MW4-EX	Sample I.D. 304-0331 MW5-EX
Purgeable Hydrocarbons	50	720	N.D.	N.D.	6,000	N.D.	170
Benzene	0.5	7.4	N.D.	N.D.	30	N.D.	14
Toluene	0.5	1.2	N.D.	N.D.	N.D.	N.D.	0.63
Ethyl Benzene	0.5	29	N.D.	N.D.	N.D.	N.D.	N.D.
Total Xylenes	0.5	20	N.D.	N.D.	N.D.	N.D.	1.5
Chromatogram Pattern:		Gasoline	--	--	Discrete Peak	--	Gasoline

Quality Control Data

Report Limit Multiplication Factor:	1.0	1.0	1.0	50	1.0	1.0
Date Analyzed:	4/12/93	4/12/93	4/12/93	4/13/93	4/12/93	4/12/93
Instrument Identification:	HP-2	HP-2	HP-2	HP-4	HP-2	HP-2
Surrogate Recovery, %: (QC Limits = 70-130%)	122	106	100	104	103	106

Purgeable Hydrocarbons are quantitated against a fresh gasoline standard
Analytes reported as N D were not detected above the stated reporting limit

SEQUOIA ANALYTICAL

Karen L. Enstrom
Project Manager

SEQUOIA ANALYTICAL

1900 Bates Avenue • Suite LM • Concord, California 94520
(510) 686-9600 • FAX (510) 686-9689

P.S.I.
3730 Mt. Diablo Blvd., Ste 345
Lafayette, CA 94549
Attention: Kevin Oliver

Client Project ID: U.S. Coast Guard
Matrix: Water
QC Sample Group 3040326-331

Reported: Apr 20, 1993

QUALITY CONTROL DATA REPORT

ANALYTE	Benzene	Toluene	Ethyl-Benzene	Xylenes
Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020
Analyst:	J.F.	J.F.	J.F.	J.F.
Conc. Spiked:	20	20	20	60
Units:	µg/L	µg/L	µg/L	µg/L
LCS Batch#:	1LCS041293	1LCS041293	1LCS041293	1LCS041293
Date Prepared:	4/12/93	4/12/93	4/12/93	4/12/93
Date Analyzed:	4/12/93	4/12/93	4/12/93	4/12/93
Instrument I.D.#:	HP-2	HP-2	HP-2	HP-2
LCS % Recovery:	120	114	112	116
Control Limits:	70-130%	70-130%	70-130%	70-130%
MS/MSD Batch #:	3040332	3040332	3040332	3040332
Date Prepared:	4/12/93	4/12/93	4/12/93	4/12/93
Date Analyzed:	4/12/93	4/12/93	4/12/93	4/12/93
Instrument I.D.#:	HP-2	HP-2	HP-2	HP-2
Matrix Spike % Recovery:	120	110	110	113
Matrix Spike Duplicate % Recovery:	115	110	105	116
Relative % Difference:	4 2	0 0	4 6	3 0

SEQUOIA ANALYTICAL

Karen L. Enstrom
Project Manager

Please Note:

The LCS is a control sample of known, interferent free matrix that is analyzed using the same reagents preparation and analytical methods employed for the samples. The LCS % recovery data is used for validation of sample batch results. Due to matrix effects, the QC limits for MS/MSD's are advisory only and are not used to accept or reject batch results.

[redacted]EQU[redacted]IA [redacted]NA[redacted]TIC[redacted]L [redacted] [redacted]680 [redacted]ape[redacted]Drive[redacted]dwo[redacted]City, [redacted]406[redacted]415)[redacted]960[redacted]AX (4[redacted]864-[redacted] [redacted]

CHAIN OF CUSTODY

☐ 819 West Striker Ave. • Sacramento, CA 95834 • (916) 921-9600 FAX (916) 921-0100
☒ 1900 Bates Ave., Suite LM • Concord, CA 94520 • (510) 686-9600 FAX (510) 686-9689

Company Name: PROFESSIONAL SERVICE INDUSTRIES	Project Name: US COAST GUARD
Address: 3730 MT. DIABLO, STE 345	Billing Address (if different):
City: LAFAYETTE State: CA Zip Code: 94549	
Telephone: (510) 284-3070 FAX #: 284-3151	P.O. #: 582-34006
Report To: KEVIN O'RUBA Sampler: MARK CASTERSON	QC Data: ☒ Level A (Standard) ☐ Level B ☐ Level C ☐ Level D

Turnaround Time: ☒ 10 Working Days ☐ 7 Working Days ☐ 5 Working Days ☐ 3 Working Days ☐ 2 Working Days ☐ 24 Hours ☐ 2 - 8 Hours

Analyses Requested

Client Sample I.D.	Date/Time Sampled	Matrix Desc.	# of Cont.	Cont. Type	Sequoia's Sample #	TPHG	BTXE								Comments
1. MW1-SP	4-8-93	L	2	VOA		↓	↓						↓		3040326AB
2. MW-1-EX	↓	↓	1	↓		↓	↓						↓		327
3. MW2-EX	↓	↓	↓	↓		↓	↓						↓		328
4. MW-3-EX	↓	↓	↓	↓		↓	↓						↓		329
5. MW-4-EX	↓	↓	↓	↓		↓	↓						↓		330
6. MW-5 EX	↓	↓	↓	↓		↓	↓						↓		331
7.															
8.															
9.															
10.															

Relinquished By: [signature]	Date: 4-8-93	Time: 1550	Received By: [signature]	Date: 4/8/93	Time: 1550
Relinquished By: [signature]	Date: 4/8/93	Time: 1636	Received By:	Date:	Time:
Relinquished By:	Date:	Time:	Received By Lab: [signature]	Date: 4-8-93	Time: 4:30 pm

Were Samples Received in Good Condition? ☐ Yes ☐ No   Samples on Ice? ☐ Yes ☐ No   Method of Shipment______________   Page __ of __

Pink - Client
Yellow - Sequoia
White - Sequoia

APPENDIX E

WORK PLAN

WORKPLAN FOR SUBSURFACE INVESTIGATIONS

LOCATION ADJACENT TO THE EXCHANGE CENTER

U.S. COAST GUARD
GOVERNMENT ISLAND
ALAMEDA, CALIFORNIA

PROJECT NO. 582-34006

FEBRUARY 1993

WORKPLAN FOR SUBSURFACE INVESTIGATIONS

LOCATION ADJACENT TO THE EXCHANGE CENTER
UNITED STATES COAST GUARD
GOVERNMENT ISLAND
ALAMEDA, CALIFORNIA

Conducted for

The United States Coast Guard
Civil Engineering Unit, Oakland
2000 Embarcadero - Suite 200
Oakland, California 94606-5000

Project Number 582-34006

February 1993

Conducted by: Mark Casterson
Professional Service Industries, Inc.
3730 Mount Diablo Boulevard, Suite 345
Lafayette, California 94549
(510) 284-3070

CONTENTS

Introduction

The U.S. Coast Guard Support Center is located on Government Island, Alameda, California (See Figure 1, Vicinity Map, and Figure 2, Site Plan).

This workplan for subsurface investigation includes the following:

1) Completion of a Site Safety Plan 2) Completion of eight soil borings to an approximate depth of 25 feet 3) Four of the eight proposed soil borings will be reamed and developed into groundwater monitoring wells 4) Purging and sampling of the four monitoring wells 5) Collection of soil samples 6) Preparation/issue of report summarizing field activities, procedures, findings and recommendations 7) Quarterly monitoring (four only) of the monitoring wells and 8) Preparation/issue of quarterly monitoring reports.

A report summarizing our field activities, procedures, and recommendations, will be prepared under the direct supervision of a qualified professional registered in the State of California and submitted for your review upon completion of the subsurface investigation.

All work will be completed in accordance with the Regional Water Quality Control Board (RWQCB) and "Tri-Regional Board Staff Recommendations for Initial Evaluation of Underground Tanks", revised 18 May, 1989. All work will be under the direction of a California registered engineer or geologist.

Analytical testing will be performed by a laboratory certified by the California Department of Health Services under the Environmental Accreditation Program.

Site History

In September of 1990, two 8,000 gallon unleaded gasoline underground storage tanks (UST's) were removed from in front of the Exchange Center at the U.S. Coast Guard Support Center, Alameda, California. These two UST's had been installed in 1977 and when removed, were noted as being in good condition with no visible holes found in either of the two tanks.

Upon removal, a very strong hydrocarbon smell was observed. Soil and water samples were taken of the spoils pile and in the excavation pit. As a result of the laboratory test, the spoils pile were disposed of as hazardous waste. The water samples show above action gasoline contamination levels requiring a site assessment.

Figure 3, Location of Existing 8,000 Gallon Unleaded Storage Tanks (UST's), shows the location of the two new UST's with respect to the front of the Exchange Center. The volume of gasoline pumped at this station for each of the two 8,000 gallon tanks removed was approximately 32,000 gallons per month.

According to the U.S. Coast Guard, no nearby wells are located on the island base, hence a survey of nearby wells was not available for submittal.

The following is a list of other sources of information checked in the preparation of this report.

1) Alameda County Health Agency, Division of Hazardous Materials on-site report by Ms. Cynthia Chapman, Hazardous Materials Specialist, on the removal of the two 8,000 gallon unleaded gasoline leaking underground storage tanks (LUST).

2) Tri-Regional Board Staff (RWQCB) Recommendations for Preliminary Investigation and Evaluation of Underground Tank Sites, 1990.

3) TRI-Regional Board Staff (RWQCB) Recommendations Internal Evaluation of Underground Tanks, Revised 18 May 1989

4) Appendix A-Reports. Tri-Regional Board Staff (RWQCB) Recommendations for Preliminary Investigation and Evaluation of Underground Tank Sites.

5) Alameda County Health Care Services Agency, Juliet Shin, Hazardous Materials Specialist.

6) LTJG Christopher Lutton, U.S.C.G, Project Manager for this scope of services.

Proposed Drilling and Soil Sampling Program

Subsurface conditions will be explored by completing eight soil borings through backfilled soils in the front of the Exchange Center on the U.S. Coast Guard Base, located on the Alameda Island, California (See Figure 4, Proposed Monitoring Well and Borehole Location Map). These borings are to be drilled to an approximate depth of 25 feet. Soil samples will be collected on a continuous basis from 5 to 25 feet in each of the borings. Soils encountered during drilling and sampling will be described using the Unified Soil Classification System under the direction of a qualified professional geologist registered in the State of California.

The primary purpose of completing the boring and sampling program is to define the lateral and vertical extent, as well as concentrations, of contamination that exist within the area of contamination.

Borings will be advanced utilizing a truck-mounted drill rig equipped with 8-inch outside diameter (O.D.) hollow stem augers. Soil samples will be collected using a modified California splitspoon sampler with brass sleeve inserts. Samples retrieved in this manner remain relatively undisturbed, thus retaining the geologic profile of the sample zone.

To prevent cross-contamination of samples, all sampling instruments will be decontaminated prior to, and between, sampling using a solution of non-phosphate soap and tap water, triple-rinsed in tap water, followed by a final rinse with distilled water. Auger flights will be decontaminated prior to commencement of drilling activities, and between each boring, using a high pressure steam cleaner. All decontamination rinsate will be stored in Department of Transportation (DOT) approved 55 gallon drums in a secured area on-site.

Soil will be collected and stored in brass sleeves. The ends of the brass sleeves will be covered with Teflon tape and plastic caps. The samples will then be labeled by identifying the boring number and depth from which the sample was collected. Samples will be placed in a cooled ice chest for storage until delivery to a California State certified laboratory for analysis. Proper chain-of-custody documentation will be maintained on all samples in accordance with Alameda County, Health Care Services Agency, Hazardous Materials Division (ACHCSA-HMD) guidelines.

Four of the soil borings will be completed as groundwater monitoring wills as described in the following section. The remaining borings will be backfilled using a neat cement of bentonite slurry. Soil cuttings from all borings will be placed in DOT approved 55 gallon drums and stored in a fenced secure area on-site.

Materials stored on-site (i.e., drill cuttings, decontamination rinsate, and well development and purge water) will be sampled and analyzed for the suspect contaminants. A determination on their disposition will be made after the laboratory results have been received.

The wells will be constructed with a 2-inch O.D. blank and slotted PVC pipe, with slot widths of 0.020 inches. A slotted casing will be placed in the well to extend approximately 10 feet below and 5 feet above the groundwater surface to account for expected tidal level fluctuations. A non-slotted casing will be installed between the ground surface and the top of the slotted casing. All lengths of casing will be steam cleaned to remove any existing contaminants. The joints between the lengths of casing will be threaded , and PVC cement will not be used in the well construction process. A clean slip-on PVC cap will be placed on the bottom of the casing. A water-tight locking cap will be installed on the top of the well, and a water-tight Christy box will be constructed flush with the existing ground surface.

The gravel pack placed in the annular space between the well casing and the boring wall will consist of clean No. 3 Monterey silica (or its equivalent) sand. The gravel pack will extend up from the bottom of the boring to approximately two feet above the top of the slotted casing. An approximately three to five foot thick layer of bentonite will be placed immediately above the gravel pack. The annular space above the bentonite will be filled with grout. A five foot cement surface seal will be constructed (See Figure 5, Typical Monitoring Well Construction Design).

The proposed well will be developed after installation until the water is clay or silt free. The development will establish groundwater flow through the gravel pack and into the well. The development well water will be stored in DOT-approved 55 gallon drums in a fenced secure area on-site.

After the monitoring wells have been developed and recharged for at least 48 hours, groundwater depth measurements will be taken from all four monitoring wells. The water levels will be determined by lowering an electronic probe into the well. When the probe comes in contact with the waters surface, an indicator light is lit. The depth to groundwater is then recorded from the probes cord.

Using groundwater depths and surveyed well locations, the direction of groundwater flow will be calculated using a three point problem. The hydraulic gradient will also be calculated in determining the horizontal and vertical limits of groundwater contamination.

Proposed Groundwater Sampling

Prior to purging the wells for collection of groundwater samples, the groundwater will be checked for free product using a clear Teflon bailer. The well will then be purged until the groundwater temperature, conductivity, and pH are stabilized. We anticipate the removal of five to seven well volumes, per well, of groundwater using a stainless steel bailer. Once the well water has stabilized and the water level recharges to at least 80 percent of its initial level, a sample will be collected and a final water level measurement will be recorded.

Samples will be collected using a stainless steel bailing device to reduce the possibility of the loss of volatile constituents from the sample. The bailer will be decontaminated prior to, and between,sampling using a solution of non-phosphate soap and tap water.

Proposed Laboratory Analysis

Soil and groundwater samples will be submitted for analysis to Sequoia Analytical, of Concord, California, a State of California Department of Health Services certified laboratory. Each soil sample will be analyzed for Total Petroleum Hydrocarbons for gasoline (TPHG) using EPA Method 8015 modified for gasoline. The sample yielding the highest TPHG concentration will be additionally analyzed for benzene, toluene, xylene, and ethyl benzene (BTXE) using EPA Method 8020. The method detection limits for TPHG and BTXE for soil analysis are 1.0 mg/kg and 0.05 mg/kg, respectively.

Groundwater samples will be analyzed for TPHG and BTXE using the above EPA test methods. The method detection limit for TPHG for water analysis is 50 mg/kg. The method detection limit for BTXE for water analysis is 0.3 mg/kg for benzene and toluene, and 0.5 mg/kg for xylene and ethyl benzene.

Sample remains will be disposed of by Sequoia Analytical.

Results of the laboratory testing, quality assurance/quality control (QA/QC) program, and chain-of-custody documentation will be provided in the final report.

Proposed Quality Assurance/Quality Control

This project will be staffed with personnel trained in hazardous waste operations and familiar with the history of the site. Drilling will be performed by a State of California licensed drilling company. All work will be performed under the direct supervision of a professional engineer or geologist registered in the State of California.

All sampling equipment (i.e., California splitspoon, bailer) will be properly decontaminated prior to, and between, sample collection using a solution of tap water and non-phosphate soap, triple-rinsed in tap water, and followed by a final rinse with distilled water. Auger flights will be decontaminated prior to, and between, borings using a high pressure steam cleaner.

Soil and groundwater samples will be collected in a manner which minimizes the possibility of the loss of volatile constituents. Once collected, samples will be placed in cold storage until delivery to a laboratory certified by the California Department of Health Services. Proper chain-of-custody documentation, which includes the name of the sampler, the site location, the sample collection, will be maintained on all samples.

Proposed Site Safety

All persons working on this investigation will be required to have completed an approved OSHA 40-hour hazardous waste operations course while maintaining current 8-hour refresher course status, as required.

Based on previous site investigations, it is anticipated that Level D protection will be required. Persons handling suspected gasoline contaminated soils will be further required to nitrile gloves.

The complete Site Safety and Health Plan is appended.

Should the scope of this workplan meet with your approval, please contact the undersigned immediately in order to expedite this project. The opportunity to present this workplan is appreciated and we look forward with working with you on this project.

Sincerely
PROFESSIONAL SERVICE INDUSTRIES, INC.

Mark Casterson
Professional Senior

Kevin B. Oliver
Project Manager

FIGURES

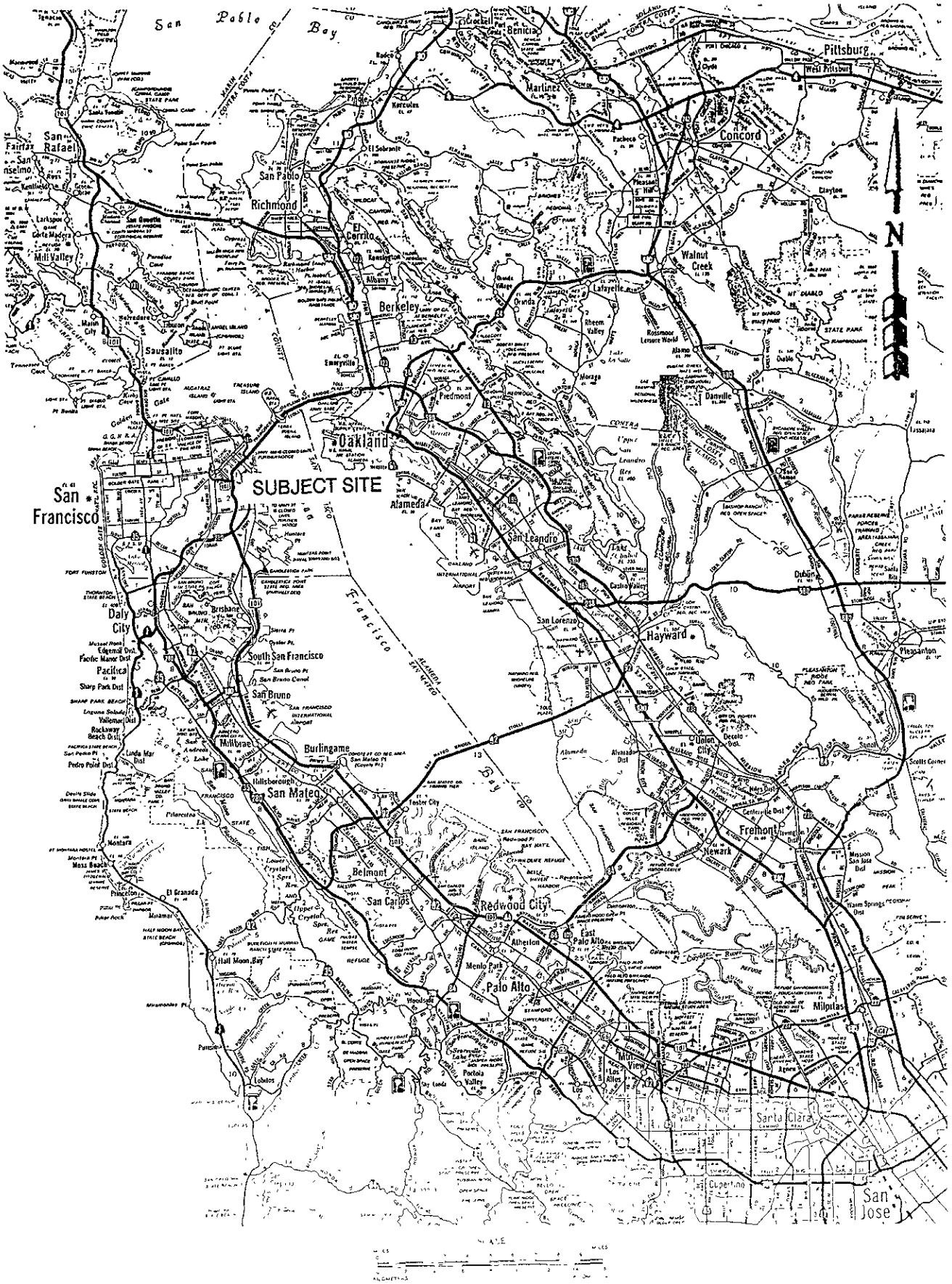


FIGURE 1, VICINITY MAP

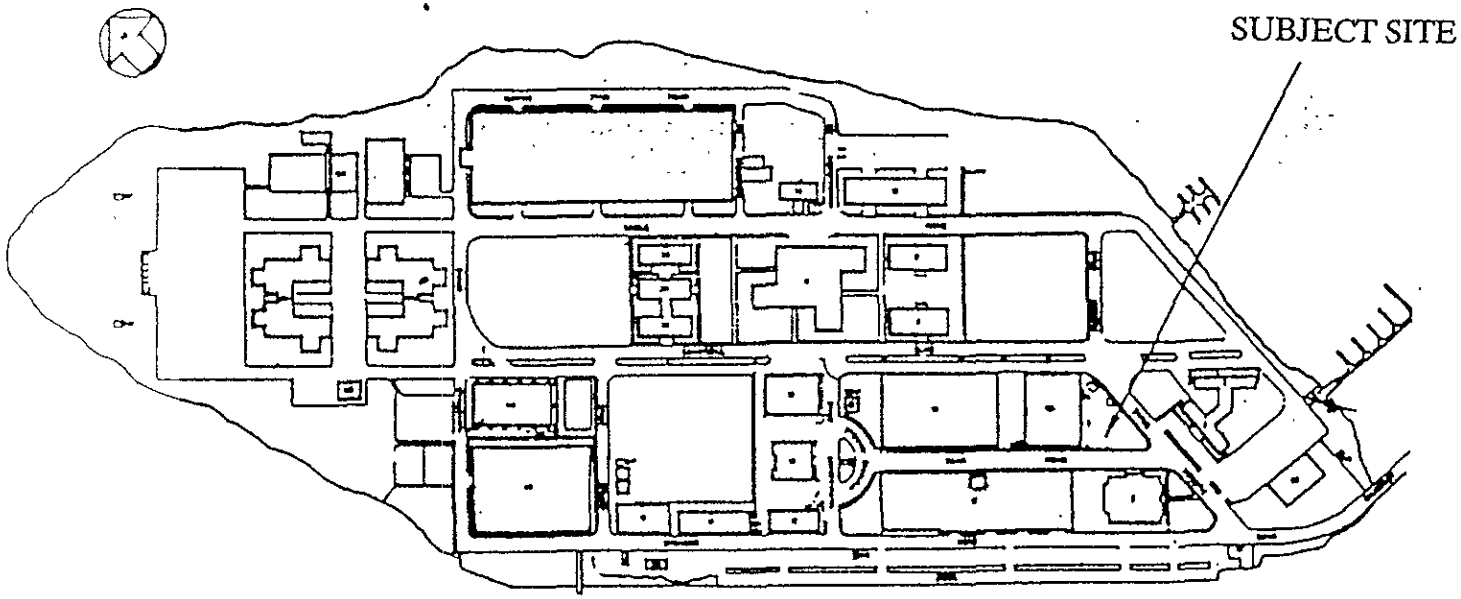
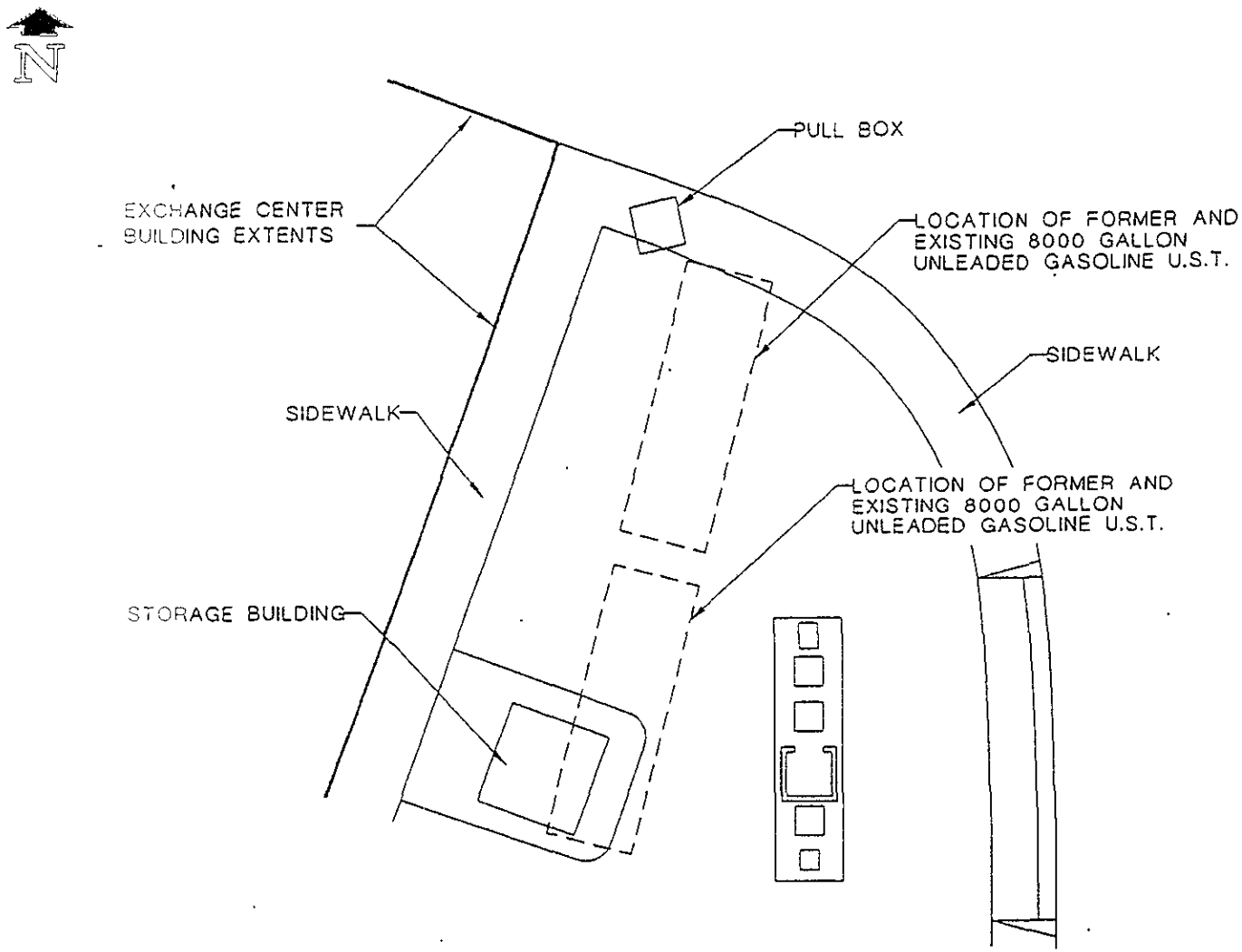
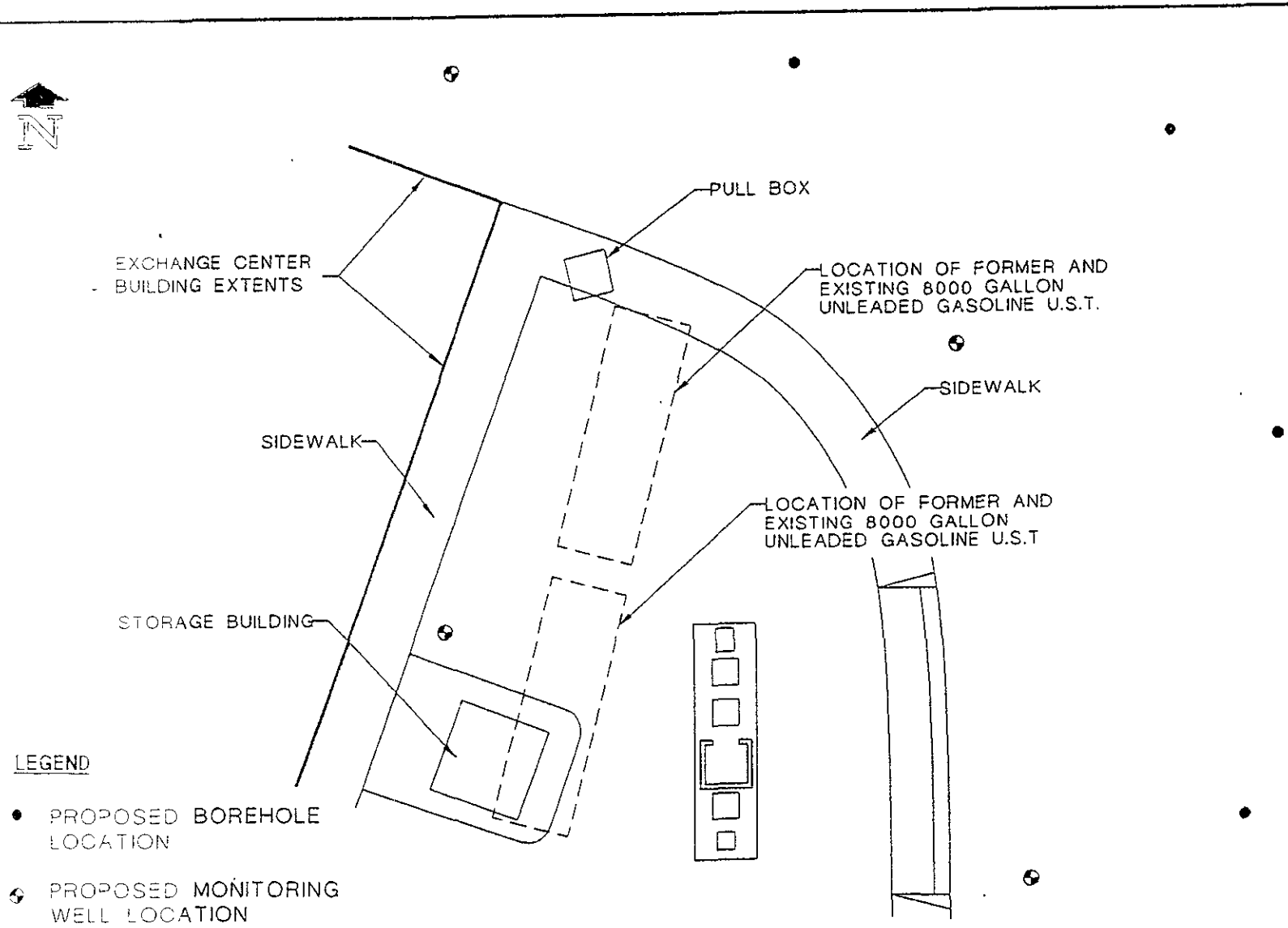


Figure 2, Area Map



PROFESSIONAL SERVICE INDUSTRIES, INC.
3730 MT. DIABLO BLVD., SUITE 345 LAFAYETTE, CA 94549
(510) 284-3070

PROJECT NAME: U.S. COAST GUARD ALAMEDA, CALIFORINA	DRAWN BY: B BRITTON	DATE: 01/29/93	APPROVED BY: K OLIVER
TITLE: FIGURE 3 LOCATIONS OF EXISTING 8000 GALLON U.S.T.'S MAP	SCALE: NONE	PROJECT NO.:582-34006 DRAWING NO.: E:\CG\CG-2	



PROFESSIONAL SERVICE INDUSTRIES, INC.
3730 MT. DIABLO BLVD., SUITE 345 LAFAYETTE, CA 94549
(510) 284-3070

PROJECT NAME: U.S. COAST GUARD ALAMEDA, CALIFORINA	DRAWN BY: B BRITTON	DATE: 01/29/93	APPROVED BY: K OLIVER
TITLE: FIGURE 4 LOCATIONS OF EXISTING 8000 GALLON U.S.T.'S MAP	SCALE: NONE	PROJECT NO.:582-34008 DRAWING NO.: E:\CG\CG-2	

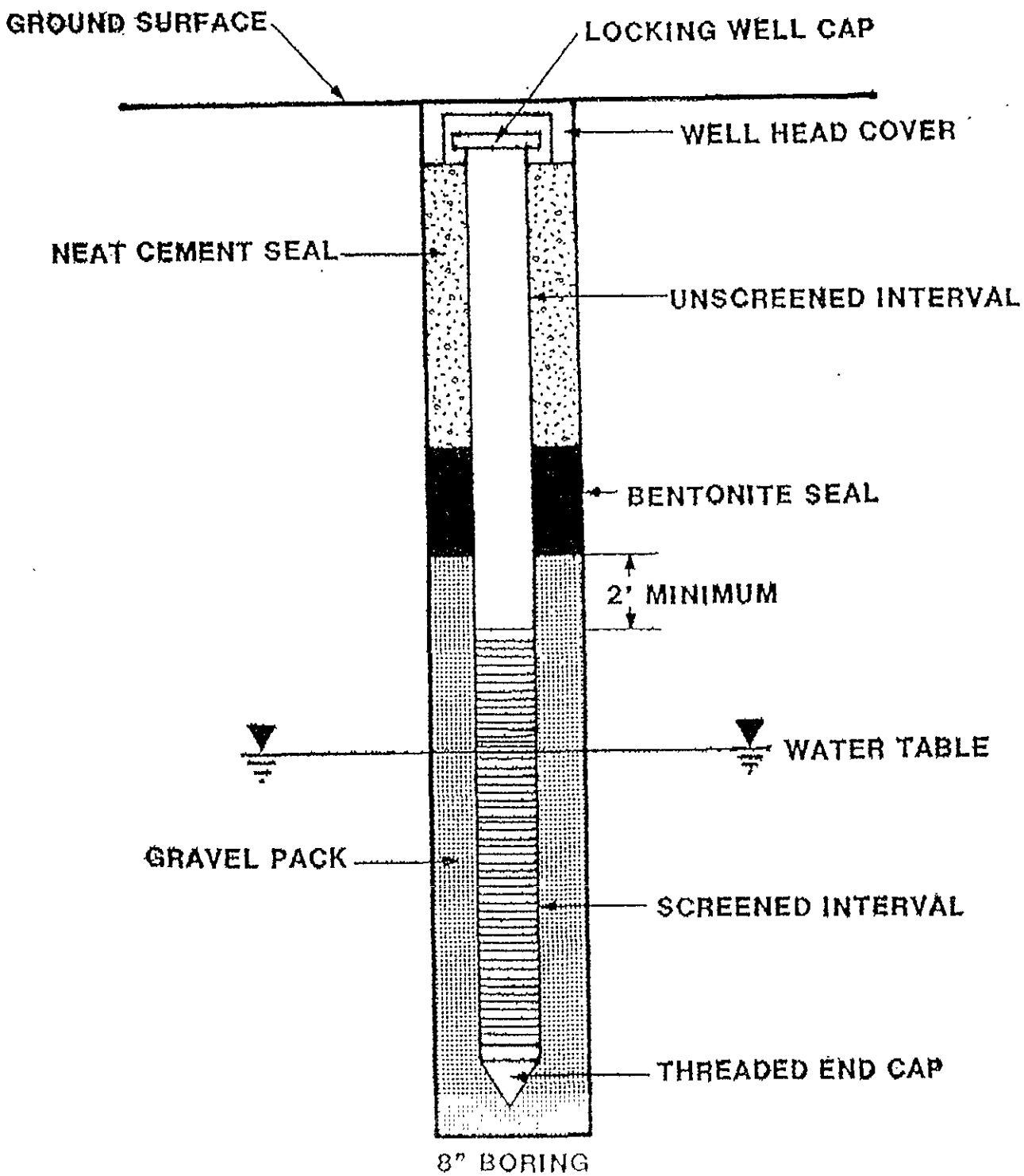


FIGURE 5, TYPICAL MONITORING WELL CONSTRUCTION DESIGN

PROJECT NO	DATE
582-34006	JANUARY, 1993

APPENDIX

SITE SAFETY AND HEALTH PLAN

PROFESSIONAL SERVICE INDUSTRIES, INC.
SITE SAFETY AND HEALTH PLAN

1.0 Introduction- This Safety and Health Plan (SHP) is prepared to provide information for worker safety and emergency procedures on the specific site named and described below. The SHP as prepared is not intended as a stand-alone document, but will augment the Professional Service Industries Employer's Safety and Health Plan (ESHP), and serve as Appendix D of that document. A copy of the ESHP and prepared SHP must be made available to all personnel working under the conditions of the SHP, and must be reviewed with all personnel. Following review, all personnel will sign the acknowledgement page indicating that they have read and understand therequirements of the SHP.

2.0 ORGANIZATION:

SHP Prepared By: MARK CASTERSON Date: 1/29/93

Approved By: KEVIN OLIVER Date: 1/29/93

Site Safety and Health Supervisor: MARK CASTERSON

Address 3730 MT. DIABLO BLVD.,STE345,LAFAYETTE,CA 94549 Tel: (510)284-3070

PSI Site Supervisor: _____ Tel: _____

3.0 SITE DESCRIPTION:

Site Name: U.S. COAST GUARD EXCHANGE CENTER

Location: GOVERNMENT ISLAND, CALIFORNIA

Site Contact: LTJG CHRISTOPHER LUTTON Tel (510)535-7267

Address: U.S. COAST GUARD,2000 EMBARCADERO,STE.200,OAKLAND, CA

Site Characteristics (Use, terrain, buildings, etc.) SITE LOCATED AT THE U.S. COAST GUARD (USCG) EXCHANGE CENTER, GOVERNMENT ISLAND SUPPORT CENTER, ALAMEDA, CALIFORNIA. FLAT TERRAIN WITH A GAS STATION ADJACENT TO THE NEARBY EXCHANGE CENTER.

4.0 TASK ANALYSIS:

Proposed Date(s) of PSI Work: **APRIL 1, 1993**

General Description of Work to be Accomplished: **DRILLING OF EIGHT SOIL BORINGS TO AN APPROXIMATE DEPTH OF 25 FEET AND CONVERTING FOUR OF THE EIGHT INTO MONITORING WELLS.**

Task to Be Performed: _____

Hazard Risk: ____ Unknown ____ High ____ Moderate __X__ Low

Level of Protection: ____ A ____ B ____ C __X__ D

Task to Be Performed: _____

Hazard Risk: ____ Unknown ____ High ____ Moderate ____ Low

Level of Protection: ____ A ____ B ____ C ____ D

Task to Be Performed: _____

Hazard Risk: ____ Unknown ____ High ____ Moderate ____ Low

Level of Protection: ____ A ____ B ____ C ____ D

Task to Be Performed: _____

Hazard Risk: ____ Unknown ____ High ____ Moderate ____ Low

Level of Protection: ____ A ____ B ____ C ____ D

Task to Be Performed: _____

Hazard Risk: ____ Unknown ____ High ____ Moderate ____ Low

Level of Protection: ____ A ____ B ____ C ____ D

5.0 HAZARD ANALYSIS:

Hazards Present:

____ Biological	____ Ionizing Radiation
__X__ Physical Safety	____ Cold/Heat Stress
____ Oxygen Deficiency	____ Electrical
____ Fire/Explosion	____ Chemical

Contaminant Locations

____ Air	____ Water	____ Sediment
__X__ Soil	____ Surface	__X__ Underground
____ Other (Specify): _____		

Hazard Discussion: **THE EVERY DAY HAZARDS ASSOCIATED WITH THE DRILLING OF BOREHOLES.**

6.0 PERSONAL PROTECTIVE EQUIPMENT:

Level D: Task(s) DRILLING AND SAMPLING OF MONITORING WELLS.

X Hard Hat

X Ear Protection

____ Respirator: Half-mask _____ Full-mask _____

Cartridge Type: _____

____ Face Protection: Shield _____ Glasses: _____

____ Inner Gloves: Material _____

X Outer Gloves: Material _____

____ Coveralls: Hooded: Yes _____ No _____

Material: _____

X Steel-Toed Boots: Material _____

____ Disposable Booties: Material _____

____ Other (Specify): _____

Level ____ Task(s): _____

____ Hard Hat

____ Ear Protection

____ Respirator: Half-mask _____ Full-mask _____

Cartridge Type: _____

____ Face Protection: Shield _____ Glasses: _____

____ Inner Gloves: Material _____

____ Outer Gloves: Material _____

____ Coveralls: Hooded: Yes _____ No _____

Material: _____

____ Steel-Toed Boots: Material _____

____ Disposable Booties: Material _____

____ Other (Specify): _____

7.0 MONITORING INSTRUMENTS:

Equipment Required:

_____ Combustible Gas/Oxygen Meter

_____ Hydrogen Sulfide Meter

__X__ Photolonization Detector (HNU/TIP)

__X__ Organic Vapor Analyzer

_____ Colorimetric Detector Tubes

_____ Radiation Survey Meter

_____ Dosimeter Badges

_____ Other (Specify): _____

Monitoring Frequency and Levels:

Hazard: _____

Frequency:_____ Action Level _____

Response: _____

_____

Hazard: _____

Frequency:_____ Action Level _____

Response: _____

_____

Hazard: _____

Frequency:_____ Action Level _____

Response: _____

_____

Hazard: _____

Frequency:_____ Action Level _____

Response: _____

_____

8.0 DECONTAMINATION:

Level:_____ Task(s): N/A

Decontaminating Fluid(s): _____

Station # _____ Procedure: _____

Station # _____ Procedure: _____

Station # _____ Procedure: _____

Station # _____ Procedure: _____

Station # _____ Procedure: _____

Level:_____ Task(s): _____

Decontaminating Fluid(s): _____

Station # _____ Procedure: _____

Station # _____ Procedure: _____

Station # _____ Procedure: _____

Station # _____ Procedure: _____

Station # _____ Procedure: _____

Level:_____ Task(s): _____

Decontaminating Fluid(s): _____

Station # _____ Procedure: _____

Station # _____ Procedure: _____

Station # _____ Procedure: _____

Station # _____ Procedure: _____

Station # _____ Procedure: _____

Station # _____ Procedure: _____

Station # _____ Procedure: _____

Station # _____ Procedure: _____

Station # _____ Procedure: _____

9.0 EMERGENCY PROCEDURES

Emergency Signals:

Evacuate Site: **U.S. COAST GUARD EXCHANGE CENTER**

Leave Area Immediately: Gripping wrists or waist of another worker with both hands.

I Can't Breathe: Hand gripping throat.

Need Assistance: Hands on top of head.

I'm Okay- I Understand: Thumbs up

No- Negative: Thumbs down.

Other: _____

_____

Emergency Telephone Numbers

Local Police Department	(510) 522 - 2423
Local Fire Department	(510) 522 - 2423
Local Rescue Department	(510) 222 - 2423
Primary Hospital Name: **ALAMEDA HOSPITAL**	
Telephone:	(510) 522 - 3700
Secondary Hospital Name: **HIGHLAND HOSPITAL**	
Telephone:	(510) 534 - 8055

Environmental Medicine Resources

-24 Hour Telephone	(404) 455-0818
-Satellite Paging	(800) 869-2337 ID Ext 5125
National Poison Control Center	(800) 492-2414
Chemical Mfg. Association -Chemical Referral Center	(800) 262-8200

DIRECTIONS TO EMERGENCY MEDICAL FACILITIES

Primary Hospital: **ALAMEDA HOSPITAL**

Address: **2070 CLINTON AVENUE, ALAMEDA**

Telephone Number: **(510) 522-3700**

Description of route to Primary Hospital (Show Map on Following Page):

DRIVE FROM GOVERNMENT ISLAND TO EMBARCADERO ROAD. RIGHT ON EMBARCADERO TO KENNEDY STREET. TURN RIGHT ON KENNEDY STREET AND DRIVE TO PARK STREET. TURN RIGHT ON PARK STREET AND DRIVE APPROXIMATELY 3/4 OF A MILE TO CLINTON AVENUE. TURN RIGHT ON CLINTON AVENUE AND DRIVE APPROXIMATELY 1/4 MILE. HOSPITAL WILL BE ON LEFT HAND SIDE.

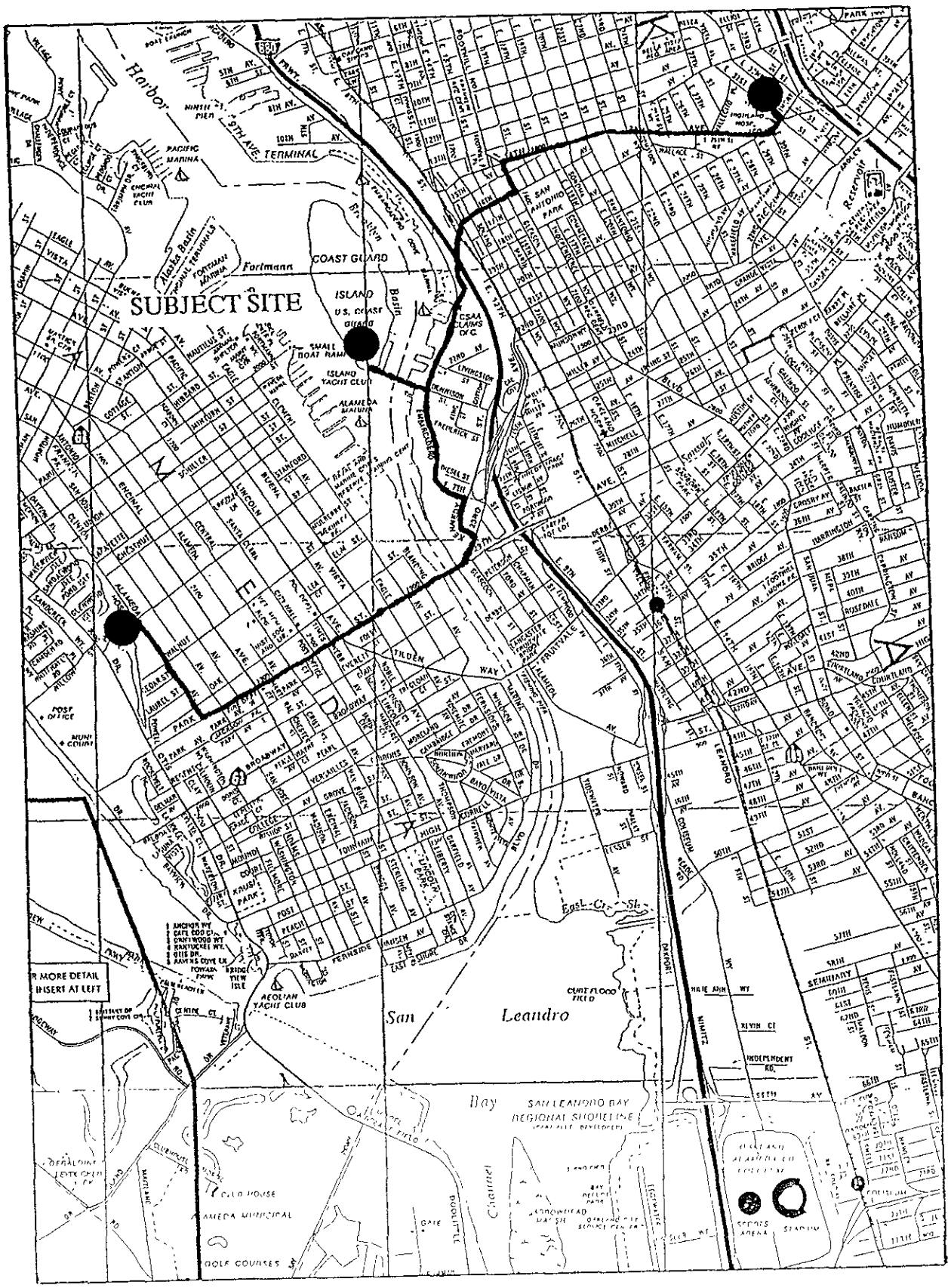
Secondary Hospital: **HIGHLAND HOSPITAL**

Address: **1411 EAST 31ST STREET**

Telephone Number: **(510) 534-8055**

Description of route to Secondary Hospital (Show Map on Following Page):

DRIVE FROM GOVERNMENT ISLAND TO EMBARCADERO ROAD. TURN LEFT ON EMBARCADERO AND VEAR RIGHT ON 16TH AVENUE. TAKE 16TH AVENUE OVER THE 880 FREEWAY UNTIL FOOTHILL BOULEVARD. TURN LEFT ON FOOTHILL UNTIL 14TH AVENUE. TURN RIGHT ON 14TH AVENUE UNTIL EAST 31ST STREET. TURN LEFT ON EAST 31ST STREET, HOSPITAL IS ON LEFT HAND SIDE.



Route to Primary and Secondary Hospitals

10.0 ACKNOWLEDGEMENT OF TRAINING

This will acknowledge that the information contained in the foregoing Site Safety and Health Plan and the PSI Employer's Safety and Health Plan has been presented and explained to me; and that I understand the information and agree to comply with the requirements and provisions contained in these documents.

Name: _____ Date: _____

Name: _____ Date: _____

Name: _____ Date: _____

Name: _____ Date: _____

Name: _____ Date: _____

Name: _____ Date: _____

Name: _____ Date: _____

Name: _____ Date: _____

Name: _____ Date: _____

Name: _____ Date: _____

Name: _____ Date: _____

Name: _____ Date: _____

Name: _____ Date: _____

Name: _____ Date: _____

Name: _____ Date: _____

Name: _____ Date: _____

Name: _____ Date: _____

Name: _____ Date: _____

Name(s) of Presentor(s):

_____ _____
(NAME) (NAME)

_____ _____
(SIGNATURE) (SIGNATURE)

APPENDIX F

SURVEYED MONITORING WELL SITE LOCATIONS

JOHN E. KOCH
Land Surveyor
CA. State Lic. No. LS4811
5427 Telegraph Ave., Suite A
Oakland, CA 94609
(510)655-9956
FAX(510)655-9745

PSI
3730 Mount Diablo Blvd. Suite 345
Lafayette, CA. 94549
(510)284-3070
FAX(510)284-3154

LICENSED LAND SURVEYOR
JOHN E. KOCH
No. 4811
Exp. 09-30-96
STATE OF CALIFORNIA

Tabulation of Elevations as of 05:00 p.m. 04/27/93

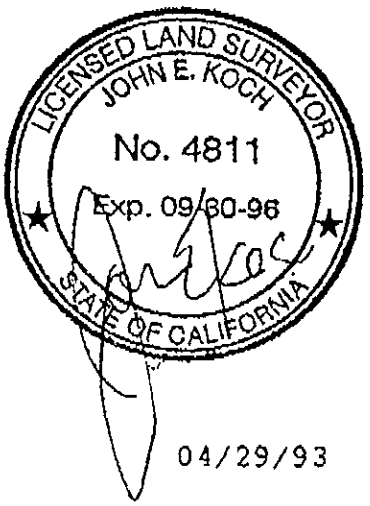
Job #93031
PSI PROJECT NO.:582-34006
Project Geologist: Mark Casterson
Site: USCG BASE
Alameda, CA

MONITOR WELL DATA TABLE

Well #	Gd. El.	Orient	T.O.C. El.	Casing dia.	Orient
MW-1EX	13.72	NE	13.55	2"	NE
MW-2EX	13.74	NE	13.42	2"	NE
MW-3EX	13.50	NE	13.15	2"	NE
MW-4EX	13.38	NE	13.07	2"	NE
MW-5EX	13.98	NE	13.14	4"	NE
MW-1SP	14.30	NE	14.04	2"	NE

NOTES:

1. Datum is MLLW.
2. Bench Mark CG-4 (El. = 13.69') for MW-1EX through MW-5EX; CG-2 (El. = 14.55') for MW-1SP.
3. Ground Elevation (Gd. El.) is at mark at top of box.
4. Top of Casing Elevation (T.O.C. El.) is at mark on top of PVC.



JOHN E. KOCH
Land Surveyor
CA. State Lic. No. LS4811
5427 Telegraph Ave., Suite A
Oakland, CA 94609
(510)655-9956
FAX(510)655-9745

04/29/93

PROFESSIONAL SERVICE INDUSTRIES, INC.
3730 Mt. Diablo Blvd.
Suite 345
Lafayette, CA. 94549
(510)284-3070
FAX(510)284-3154

Job #93031
PSI Project NO.:582-34006
Project Geologist:Mark Casterson
Site: U.S. Coast Guard Alameda

LOCATIONS & ELEVATIONS OF MW'S

FILE NAME IS 93031 PSI/ALAMEDA COAST GUARD BASE
PSI PROJECT NO.:582-34006

PT#	NORTHING	EASTING	DESCRIPTION	ELEVATION
1	2111410.532	6056664.527	MW-1EX	13.550
2	2111395.763	6056723.741	MW-2EX	13.420
3	2111328.645	6056726.726	MW-3EX	13.150
4	2111353.267	6056665.647	MW-4EX	13.070
5	2111431.333	6056687.847	MW-5EX	13.140
11	2112287.123	6055625.563	MW-1SP	14.040
21	2111450.351	6056683.297	COR EX BLDG	13.920
22	2111309.834	6056578.120	COR EX BLDG	12.900
23	2111408.372	6056688.412	CTR 42" IS	14.093
24	2111384.265	6056682.014	CTR 42" IS	14.051
25	2112259.261	6055574.742	COR SP PAD	15.325
26	2112153.950	6055715.746	COR SP PAD	15.283
202	2112305.388	6055614.336	CG-2	14.550
203	2112580.564	6055810.558	CG-3	13.350
204	2111721.440	6056042.040	CG-4	13.690
205	2111097.810	6056876.100	CG-5	13.670

NOTES:
1. Datum is MLLW.
2. MW elevations are to TOC and are +/- 0.01' relative to CG-4 for 1EX through 5EX & relative to CG-2 for MW-1SP.
3. MW locations are to center of box and are +/- 0.1' relative to U.S. Army Corps of Engineers brass disc monuments (NAD83).

APPENDIX G

ALAMEDA COUNTY CORRESPONDENCE

ALAMEDA COUNTY
HEALTH CARE SERVICES
AGENCY
DAVID J. KEARS, Agency Director

RAFAT A. SHAHID, ASST. AGENCY DIRECTOR
DEPARTMENT OF ENVIRONMENTAL HEALTH
State Water Resources Control Board
Division of Clean Water Programs
UST Local Oversight Program
80 Swan Way, Rm 200
Oakland, CA 94621
(510) 271-4530

November 13, 1992

Mr. Christopher C. Lutton, LJG
United States Coast Guard
Civil Engineering Unit Oakland
2000 Embarcadero, Ste. 200
Oakland, CA 94606-5337

STID 2911

RE: Required investigations for former underground storage tanks (USTs) at the U.S. Coast Guard Support Center, Alameda, California

Dear Mr. Lutton,

Two 8,000-gallon unleaded gasoline USTs were removed from the above site in 1990. Soil samples were collected from the native soil beneath these two tanks and the excavated soil from the tank pit. Additionally, one ground water sample was collected from the tank pit. Analysis of the soil samples identified Total Petroleum Hydrocarbons as gasoline (TPHg) at 55 parts per million (ppm) and 380 ppm beneath the tanks. Furthermore, analysis of the ground water sample identified up to 13,000 parts per billion (ppb) TPHg.

Guidelines established by the California Regional Water Quality Control Board (RWQCB) require that a soil and ground water investigation be conducted whenever an unauthorized release of product is suspected from an UST. The observed soil and ground water contamination would indicate that such an event has occurred.

You are required to conduct a **Preliminary Site Assessment (PSA)** to determine the lateral and vertical extent and severity of latent soil and ground water contamination which may have resulted from the release at the site. The information gathered by the PSA will be used to determine an appropriate course of action to remediate the site, if deemed necessary. The PSA must be conducted in accordance with the RWQCB's Staff Recommendations for the Initial Evaluation and Investigation of Underground Tanks.

The PSA proposal is due **within 60 days** of the receipt of this letter. Once the proposal is approved, field work should commence within 60 days. A report must be submitted within 45 days after the completion of this phase of work at the site.

ENCLOSURE( )

The report must describe the status of the investigation and must include, among others, the following elements:

- Details and results of all work performed during the designated period of time: records of field observations and data, boring and well construction logs, water level data, chain-of-custody forms, laboratory results for all samples collected and analyzed, tabulations of free product thicknesses and dissolved fractions, etc.
- Status of ground water contamination characterization
- Interpretation of results: free and dissolved product plume definition maps for each target component, geologic cross sections, etc.
- Recommendations or plans for additional investigative work or remediation

Additionally, two 2,000-gallon gasoline USTs and one 2,000-gallon diesel UST were removed from other areas of the site in December 1988. Soil samples collected from the native soil beneath the diesel UST did not identify any contamination exceeding detection limits. Soil samples collected from beneath the other two gasoline USTs did identify minor concentrations of benzene, toluene, ethylbenzene, and xylenes. Furthermore, soil samples collected from the excavated soil identified up to 710 ppm TPHg, and the native soil in the tank pit was saturated with water, indicating shallow ground water.

You are required to conduct ground water investigations in the area of the two 2,000-gallon gasoline USTs to confirm that the shallow ground water in this area was not impacted by the release from these USTs. A work plan for this investigation should be submitted to this office, along with the work plan for the two 8,000-gallon USTs, within 60 days of the receipt of this letter.

All reports and proposals must be submitted under seal of a California-Registered Geologist, -Certified Engineering Geologist, or -Registered Civil Engineer. Please include a statement of qualifications for each lead professional involved with this project.

Please be advised that this is a formal request for technical reports pursuant to **California Water Code Section 13267 (b).** Any extensions of the stated deadlines, or modifications of the required tasks, must be confirmed in writing by either this agency or RWQCB.

Thank you for your cooperation. If you have any questions or comments, please contact me at (510) 271-4530.

Sincerely,

Juliet Shin
Hazardous Materials Specialist

cc: Richard Hiett, RWQCB
Robert La Grone, Alameda Fire Dept.
Edgar Howell-File(JS)

ALAMEDA COUNTY
HEALTH CARE SERVICES
AGENCY
DAVID J. KEARS, Agency Director

RAFAT A. SHAHID, ASST. AGENCY DIRECTOR

DEPARTMENT OF ENVIRONMENTAL HEALTH
State Water Resources Control Board
Division of Clean Water Programs
UST Local Oversight Program
80 Swan Way, Rm 200
Oakland, CA 94621
(510) 271-4530

February 25, 1993

Mr. Christopher C. Lutton, LJG
United States Coast Guard
Civil Engineering Unit Oakland
2000 Embarcadero, Ste. 200
Oakland, CA 94606-5337

STID 2911

Re: Work plan for investigations at the U.S. Coast Guard Support Center, Alameda, California

Dear Mr. Lutton,

This office has received and reviewed Professional Service Industries, Inc.'s (PSI) work plans, dated February 1993, addressing investigations for the area concerning the retail gas station and the location of the two 2,000-gallon gasoline underground storage tanks (USTs) at the U.S. Coast Guard Support Center. It was noted that neither of these work plans address the former 2,000-gallon diesel UST, although moderate concentrations of diesel were identified in the excavated soils. You are required to conduct further investigations to determine whether groundwater was impacted from the former diesel UST. A work plan shall be submitted to this office **within the next 60 days** of the date of this letter addressing investigations at the former diesel UST location. Any extensions of the due dates must be approved by this office or RWQCB.

The two work plans already submitted are acceptable to this office with the following additions/reminders:

- Soil samples are to be collected at 5-foot intervals, changes in lithology, or areas exhibiting stains or odors (or readings on the Photoionization Detector). A minimum of one soil sample shall be analyzed from each of the borings.

- The detection limits proposed in the work plans are too high. The detection limits for TPHg should be 50 ppb, 0.3 ppb for benzene and toluene, and 0.5 ppb xylenes and ethyl benzene.

- A number of borings have been proposed for the area west of the former 8,000-gallon USTs. Per the conversation between Mark Casterson, PSI consultant, and myself on February 25, 1993, it appears that if contamination is not observed in the soil collected from the easternmost well locations,

then it appears that the extent of the soil contamination would be defined and no further soil borings would be required east of these wells.

- Soil and ground water samples collected from the sites with the 2,000-gallon USTs should be analyzed for TPH as diesel, in addition to TPH as gasoline and BTEX, since concentrations of diesel were identified in the stockpiled soil.

If you have any questions or comments, please contact me at (510) 271-4530.

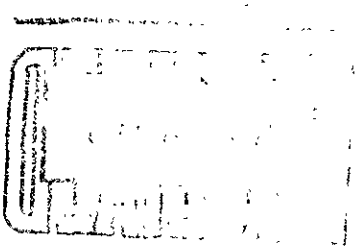
Sincerely,

Juliet Shin
Hazardous Materials Specialist

cc: Richard Hiett, RWQCB

Mark Casterson
Professional Service Industries, Inc.
3730 Mount Diablo Blvd., Ste 345
Lafayette, CA 94549

Edgar Howell-File(JS)



ALAMEDA COUNTY
HEALTH CARE SERVICES
AGENCY
DAVID J. KEARS, Agency Director

RAFAT A. SHAHID, ASST. AGENCY DIRECTOR

DEPARTMENT OF ENVIRONMENTAL HEALTH
State Water Resources Control Board
Division of Clean Water Programs
UST Local Oversight Program
80 Swan Way, Rm 200
Oakland, CA 94621
(510) 271-4530

March 3, 1993

Commanding Officer
United States Coast Guard
Civil Engineering Unit Oakland
2000 Embarcadero, Ste. 200
Oakland, CA 94606-5337

STID 2911

Re: The former 2,000-gallon diesel tank located at the U.S. Coast Guard Support Center, Alameda, California

To Whom It May Concern,

According to a Hunter Environmental Tank Removal Report, dated January 24, 1989, two 2,000-gallon gasoline underground storage tanks (USTs), and one 2,000-gallon diesel UST were removed from the above site in December 1988. Concentrations of toluene, ethyl benzene, and xylenes were identified in the gasoline UST tank pit, and, consequently, the U.S. Coast Guard retained PSI consultants to prepare and submit a work plan to address further investigations at this tank pit.

Soil samples collected from the 2,000-gallon diesel UST did not identify any contamination. However, in a recent letter from the County to your site, dated February 25, 1993, you were requested to conduct further investigations for the former 2,000-gallon diesel tank because of diesel contamination identified in stockpiled soil and because of shallow ground water at the site. However, per a conversation between Christopher Lutton, LTJG, and myself on March 3, 1993, Mr. Lutton stated one of the two 2,000-gallon "gasoline" USTs appeared to have been used for diesel storage, and that the diesel contamination in the stockpiled soil, excavated from all the tank pits, was probably the result of releases from this tank. Considering this new piece of information and the lack of soil contamination identified beneath the tank, this office will not be requiring further investigations for the 2,000-gallon diesel tank at this time.

If you have any questions or comments, please contact me at (510) 271-4530.

Sincerely,

Juliet Shin
Hazardous Materials Specialist

cc: Richard Hiett, RWQCB

Mark Casterson
Professional Service Industries, Inc.
3730 Mount Diablo Boulevard, Ste 345
Lafayette, California 94549

Edgar Howell-File(JS)