

**PRELIMINARY INVESTIGATION ^{5/93}
AND EVALUATION REPORT
LOCATION IN THE VICINITY OF FORMER
2,000 GALLON GASOLINE UNDERGROUND
STORAGE TANKS**

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

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
Swimming Pool 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 is attaching the resulting Preliminary Investigation and Evaluation Report for your review. As you recall, the site is located in the vicinity of two former 2,000 gallon gasoline underground storage tanks (swimming pool location).

Enclosed are four (4) copies of the report.

The overall objective of the preliminary investigation was to characterize the groundwater by drilling and installing one groundwater monitoring well and evaluating the information obtained by.

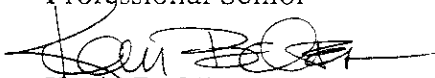
Please don't hesitate to call us at (510) 284-3070 should there be any questions about this report.

Sincerely,

Professional Service Industries, Inc.



Mark Casterson
Professional Senior



Kevin B. Oliver
Project Manager



Steven N. Bradley, CEG 1625
Manager-Environmental Services

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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 Assessment of the property adjacent to the swimming pool, on Coast Guard Island, Alameda, California. This site previously had two thousand gallon underground storage tanks located here. The tanks were set for gasoline storage.

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

Findings

The site consists of a concrete pad located near the intersection of Campbell Boulevard and Wakefield Drive. The pad lies in the center of Campbell Boulevard adjacent to the swimming pool on Coast Guard Island.

On December 30, 1988, two 2,000 gallon steel underground storage tanks (UST's) containing unleaded gasoline had been removed.

From the installation of one 20 foot groundwater monitoring well the following information was obtained:

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

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

Based on the select sampling and analytical results of the soils sampled, soil contamination does not exist in the backfill and underlying native soil at a depth of 20 feet in MW1-SP. No detectable quantities of purgeable hydrocarbons, benzene, toluene, ethyl benzene and total xylenes (BTEX) were encountered in the soil samples taken at the boring location.

However detectable quantities of purgeable hydrocarbons, benzene, toluene, ethyl benzene and total xylenes (BTEX) were encountered in the groundwater sample. Of these benzene was above the maximum contamination level for drinking water standards as stated by Department of Health Services.

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 base swimming pool, 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 contamination exists in the area around the two previously removed underground hydrocarbon storage tanks, near the base swimming pool. 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 at 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 a concrete pad located near the intersection of Campbell Boulevard and Wakefield Drive. The pad lies in the center of Campbell Boulevard adjacent to the swimming pool on Coast Guard Island. Known or suspected underground improvements consisted of the removal of two 2,000 gallon steel underground storage tanks (UST's) containing unleaded gasoline that were removed on December 30, 1988.

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 one soil boring to an approximate depth of 20 feet.

- * Collect soil samples from soil boring.
- * Install and develop soil boring into a groundwater monitoring well.
- * Purge and sample the monitoring well.
- * Properly containerize excavated soils and decontamination rinsate in DOT-approved 55 gallon drums and store them on-site in a secure area.
- * Prepare and issue quarterly monitoring reports (four including this report) of the monitoring well.

Field sampling and testing methods were in general accordance with the procedures outlined by applicable EPA guidelines. Monitoring well location was as close as conditions permitted to those previously approved by the U.S. Coast Guard Civil Engineering Unit. In the field, monitoring well location was estimated from previously marked site.

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 the boring location. In accordance with the scope of services developed by the U.S. Coast Guard Civil Engineering Unit, the boring location was identified. Drilling activities were conducted on Wednesday, March 31, 1993 using a truck-mounted drill rig owned and operated by PC Drilling of Fremont, California. The location of the monitoring well is shown in, Figure 3, Monitoring Well Location Map. The boring was advanced to a maximum depth of 20 feet below grade. All excavated soil was containerized in a properly labeled, DOT-approved 55 gallon drum and left on-site.

*7/19/93
 Per a conversation
 between
 Mark
 Andersen, PSI,
 the screen
 length is from
 14' bgs.*

The well was 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 installed 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, and 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 constructed (see Figure 4, Typical Monitoring Well Construction Design).

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

After the monitoring well had been developed and recharged for over 48 hours, a groundwater depth measurement was taken. Groundwater depth information is shown on Table I, Monitoring Well Water Level Elevations.

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

TABLE I

<u>MONITORING WELL WATER LEVEL ELEVATIONS*</u>			
<u>Well Number</u>	<u>Measuring Point Elevation</u>	<u>Depth to Water Measurement (Ft.)**</u>	<u>Water Level Elevation</u>
MW-1SP	14.30	4.5	9.85

* Elevations in feet above Mean Sea Level

** Date of Measurement 4-8-93 @ 14:00

Soil and Groundwater Sampling

Soil samples were generally collected from the boring at a depth of approximately five feet and in the capillary fringe above the water table. 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 no levels of contamination and were the basis used for submitting samples to the laboratory for analysis. Soil samples were retrieved from the boring 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 log in Appendix B.

One groundwater monitoring well was installed from the boring during the field exploration. The sample was retrieved by lowering a disposable bottom filling/drainage bailer into the groundwater accumulated in the monitoring well (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 descriptions 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 eleven feet of the hole. Soils encountered consisted of dark gray silty sands with minor clays that were saturated and very loose; and dark green/gray clays that were saturated, stiff and medium to high in plasticity.

Groundwater Conditions

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

Groundwater was encountered at this depth due to the amount of porous artificial fill (pea gravel) used in the filling of two former 2,000 gallon gasoline underground storage tank sites.

LABORATORY TESTING

General

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

Soil Testing

The soil sample was analyzed for Total Petroleum Hydrocarbons for gasoline (TPHG) using EPA Method 8015 modified for gasoline. The sample taken at 10 feet, was also 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 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. 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) calibrated to isobutylene equivalents detectable to .1 ppm. None of the soil samples yielded PID readings above background levels or obvious petroleum odors.

Laboratory testing was performed on the selected soil sample. The results of the in-field soil vapor screening and observations were the basis for the submittal of the sample to the laboratory for analysis. The selected soil sample submitted to Sequoia Analytical reported no contamination levels above their reporting limits.

Table II, Soil Sample Location and analysis log, indicates the analyses run.

TABLE II

<u>SOIL SAMPLE LOCATION AND ANALYSIS LOG (ppm)</u>						
<u>Boring and Mon. Well /Depth (ft)</u>	<u>Sample Number</u>	<u>Purgeable Hydrocarbs.</u>	<u>Benzene</u>	<u>Toluene</u>	<u>Ethyl Benzene</u>	<u>Total Xylenes</u>
MW-1/10.0	MW1-SP	N.D.	N.D.	N.D.	N.D.	N.D.

Groundwater Contamination Assessment

Laboratory testing was performed to estimate the degree of groundwater contamination, if any, found in this area (as summarized in Table III). Analyses performed included Total Purgeable Petroleum Hydrocarbons with BTEX distinction. Groundwater contamination from this sample consisted of readings above the stated reporting limit for both TPHG and BTEX.

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

TABLE III

<u>WATER SAMPLE LOCATION AND ANALYSIS LOG (ppb)</u>						
<u>Boring and Mon. Well /Depth (ft)</u>	<u>Sample Number</u>	<u>Purgeable Hydrocarbs.</u>	<u>Benzene</u>	<u>Toluene</u>	<u>Ethyl Benzene</u>	<u>Total Xylenes</u>
MW-1/10.0	MW1-SP	720	7.4	1.2	29	20

No free product was found in MW-1SP.

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 soils sampled, soil contamination does not exist in native soils at a depth of 20 feet in MW1-SP. No detectable quantities of purgeable hydrocarbons, benzene, toluene, ethyl benzene and total xylenes (BTEX) were encountered in the soil samples taken at the boring location. There was no indication from field screening that contamination existed in the granular artificial fill materials found to a depth of 11.0 feet.

However detectable quantities of purgeable hydrocarbons, benzene, toluene, ethyl benzene and total xylenes (BTEX) were encountered in the groundwater sample. Of these benzene was above the maximum contamination level for drinking water standards as stated by Department of Health Services.

RECOMMENDATIONS

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

- * Disposal of both groundwater and soil cuttings should be through a hazardous waste contracting firm.
- * Groundwater monitoring should continue for the remaining two quarters of 1993, and the first quarter of 1994. Should analytical results continue to remain at this level, PSI will inform the Alameda

County Health Care Services Agency, that groundwater monitoring continue to be monitored on a quarterly basis.

- * Should groundwater contamination continue to stay at this level throughout the second year of groundwater monitoring if required, PSI will submit to the U.S. Coast Guard a proposal for additional groundwater assessment activities which are anticipated to include monitoring well installation and 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 contamination assessment 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 superseded 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

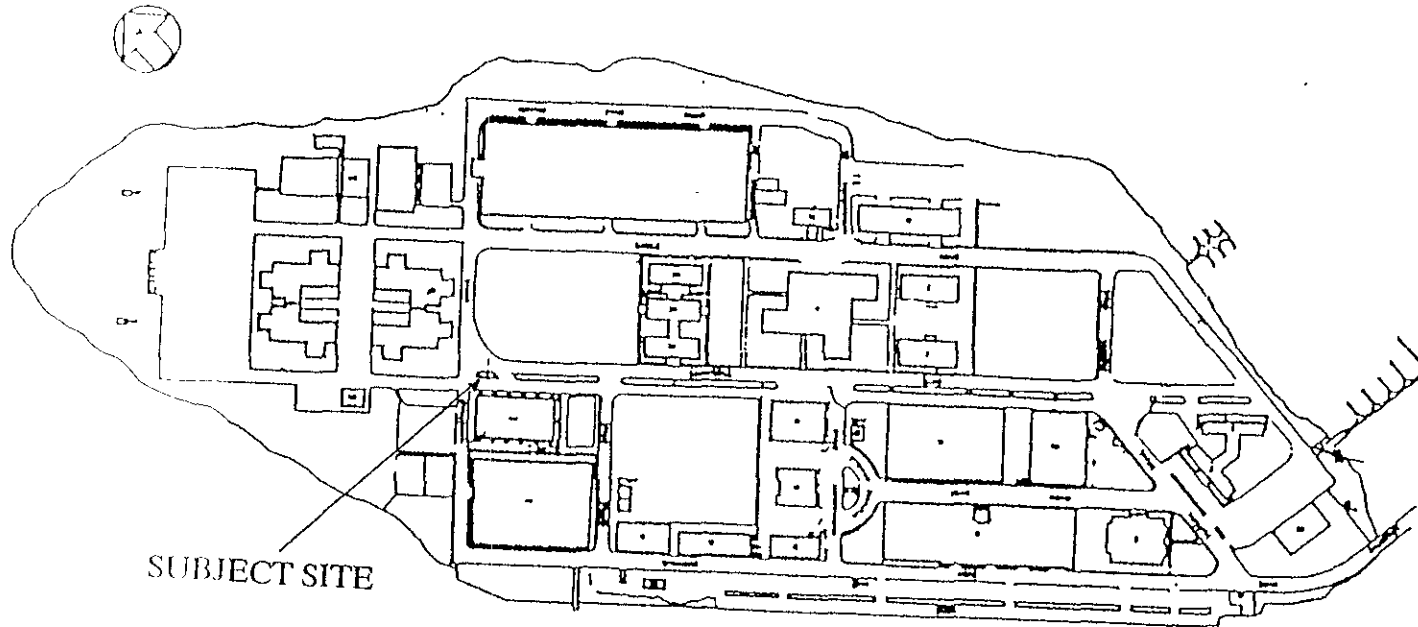
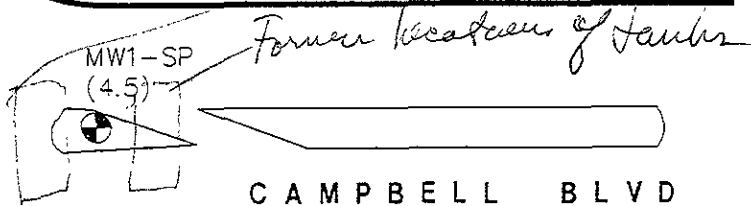


FIGURE 2, SITE PLAN



WAKEFIELD DRIVE

ATHLETIC FIELD



SWIMMING POOL

LEGEND

- MONITORING WELL LOCATION
- (4.5) DEPTH TO GROUNDWATER

PROJECT NAME:	U.S. COAST GUARD ALAMEDA, CA	DATE:	05/07/93
TITLE:	MONITORING WELL LOCATION MAP	DWG NO.:	34006-3A
FIGURE NO. 3		PROJ NO.:	582-34006
		DRAWN BY:	N TOOR
		APP'D BY:	K. OLIVER
		SCALE:	NOT TO SCALE



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

DWG. 3A

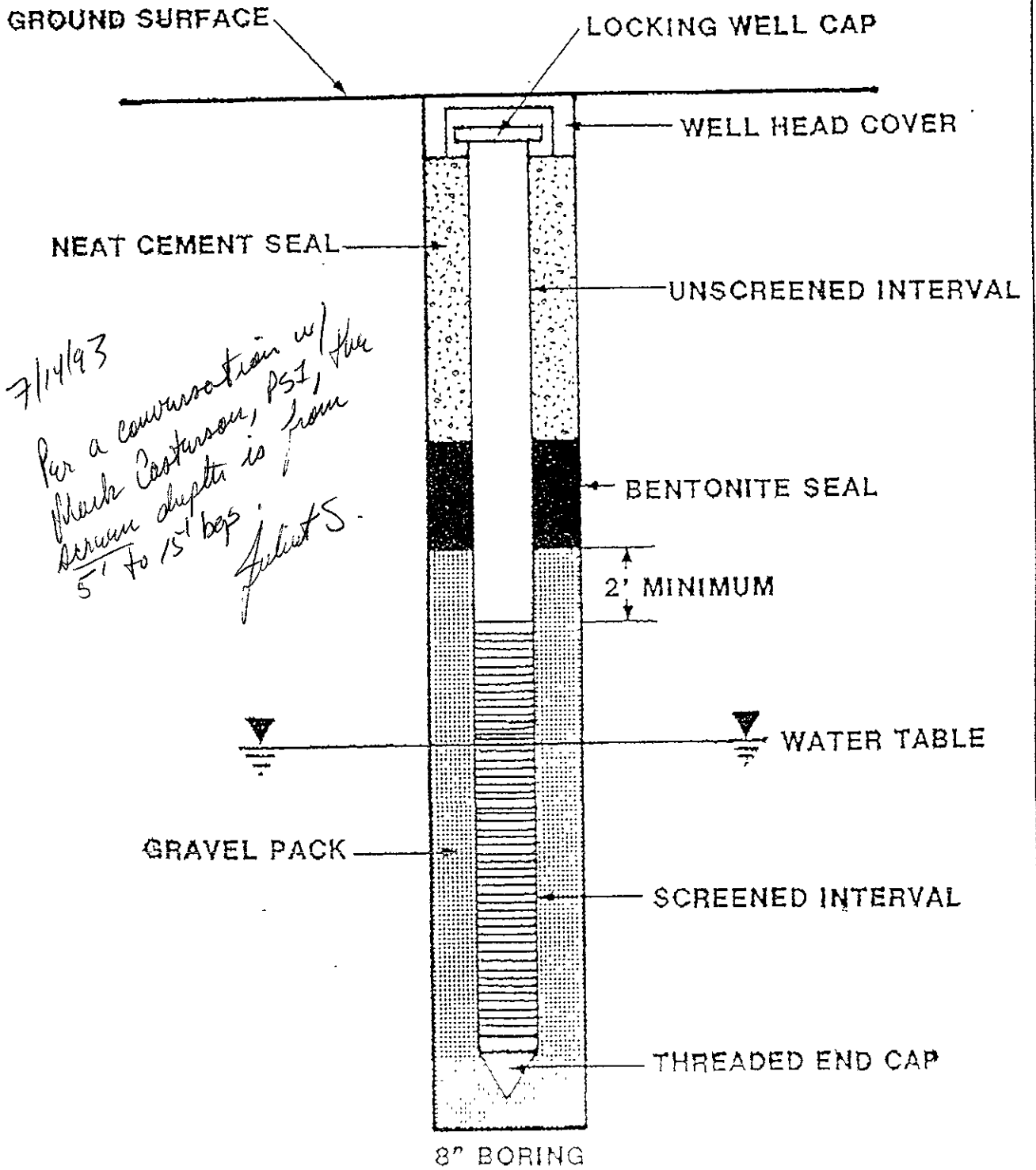


FIGURE 4. TYPICAL MONITORING WELL CONSTRUCTION DESIGN

PROJECT NO
582-34006

DATE
JANUARY, 1993

APPENDIX B
BORING LOGS

Major Divisions		Group Symbols	Typical Names	EXPLANATION	
				SYMBOL	MEANING
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	<input type="checkbox"/> 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". <input checked="" type="checkbox"/> 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". <input checked="" type="checkbox"/> LOCATION OF SAMPLE TAKEN USING A 3" O.D. THIN-WALLED TUBE SAMPLER (SHELBY TUBE) HYDRAULICALLY PUSHED. <input checked="" type="checkbox"/> LOCATION OF BULK SAMPLE TAKEN FROM AUGER CUTTINGS.
			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*	Sils and Clays Liquid limit 50% or less	ML	Inorganic silts, very fine sands, rock flour, silty or clayey fine sands	<input checked="" type="checkbox"/> ELEVATION OF GROUND WATER OR PERCHED WATER. ~ See Laboratory Test Results in Appendix D.	
		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		
	Sils 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		

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		

EXPLORATORY BORING LOG

PROJECT NO. 582-34006	LOGGED BY: M. CASTERSON	DATE DRILLED: 3/31/93	PAGE 1 OF 1
DRILL RIG: MOBILE B - 53	BORING ELEV: 14.30 Feet		BORING NO. MW1-SP
DEPTH TO GROUNDWATER 4.00 Feet	BORING DIAM: 8 inch		

SOIL / ROCK MATERIAL DESCRIPTION	USCS GROUP SYMBOL	DEPTH IN FEET	SAMPLE	BLOW COUNT	Photoluminescence Detector (PID)	REMARKS	
Cement 4 inch thick		1			N		
Artificial Fill - Sands and Gravels, Moist Medium Dense <i>7/14/93 Per a conversation w/ Mark Casterson PSI, the screen depth is from 5' to 15' bgs. - Subint S.</i>		2					
		3					
		4			▼		
		5			14	Zero	
		6					
		7					
		8					
		9					
		10					
		11			10	2 ppm	* 10.5 - 11.0'
	Dark Gray, Silty SAND, Saturated, Very Loose, Minor Clays.	SM	12				
Dark Green/Gray Clay, Minor Silt, Saturated, @20' Stiff Medium to High Plasticity.		13					
		14					
		15					
		16			11	Zero	
		17					
		18					
		19					
		20					
Boring Terminated at 20 Feet. Groundwater Encountered at 4.00 Feet. Well Constructed With 2 Inch O.D. Blank and Slotted PVC Liner.		21			16	Zero	
		22					
		23					
		24					
		25					

DATE May 993		Professional Service Industries, Inc.	
JOB NO 582-34006		MW1-SP U.S. Coast Guard Government Isiana, California	
DWG NO USCG-9			
DRAWN M. Casterson			
CHK'D K. Oliver			
APP'D S. Bracey		FIGURE B2	

APPENDIX C
GROUNDWATER SAMPLING DATA

APPENDIX D
LABORATORY REPORTS



SEQUOIA ANALYTICAL

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

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

Client Project ID: U.S. Coast Guard
Sample Matrix: Soil
Analysis Method: EPA 5030/8015/8020
First Sample #: 304-0146

Sampled: Mar 31, 1993
Received: Apr 2, 1993
Reported: Apr 14, 1993

TOTAL PURGEABLE PETROLEUM HYDROCARBONS with BTEX DISTINCTION

Analyte	Reporting Limit mg/kg	Sample I.D. 304-0146 MW 1-SP
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%)	110

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.
730 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

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.


Karen L. Enstrom
Project Manager



SEQUIA ANALYTICAL

CHAIN OF CUSTODY

690 Chequamegon Drive • Redwood City, CA 94063 • (415) 364-9600 FAX (415) 261-9233
 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: <u>TECHNICAL SERVICE FACILITIES</u>		Project Name: <u>V.S. COAST GUARD</u>	
Address: <u>2730 MT. DIABLO STE 345</u>		Billing Address (if different):	
City: <u>LIVERMORE</u>	State: <u>CA</u>	Zip Code: <u>94549</u>	
Telephone: <u>510-284-3070</u> FAX #: <u>284-3131</u>		P.O. #: <u>582-34006</u>	
Report To: <u>KEVIN CLUEC</u>	Sampler: <u>M. CASTELSON</u>	QC Data: <input type="checkbox"/> Level A (Standard) <input type="checkbox"/> Level B <input type="checkbox"/> Level C <input type="checkbox"/> 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 ID	Date/Time Sampled	Matrix Desc.	# of Cont.	Cont. Type	Sequoia's Sample #	Analyses Requested										Comments			
						TPH4	BTEX												
1 MW1-SP	3-31-93	S	1	GRE		X	X												
2 MW2-EX	4-1-93					X													ANALYZE
3 MW3-EX						X													HIGHEST
4 BH1-EX						X													TPH4 for
5 BH2-EX						X													BTEX
6 BH3-EX						X													
7																			
8																			
9																			
10																			

Relinquished By: <u>KEVIN CLUEC</u>	Date: <u>4/2/93</u>	Time: <u>5:55 PM</u>	Received By:	Date:	Time:
Relinquished By:	Date:	Time:	Received By:	Date:	Time:
Relinquished By:	Date:	Time:	Received By Lab: <u>[Signature]</u>	Date: <u>4-2-93</u>	Time: <u>5:55 PM</u>

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.
30 Mt. Diablo Blvd., Ste 345
Lafayette, CA 94549
Attention: Kevin Oliver

Client Project ID: U.S. Coast Guard
Sample Matrix: Water
Analysis Method: EPA 5030/8015/8020
First Sample #: 304-0326

Sampled: Apr 8, 1993
Received: Apr 8, 1993
Reported: Apr 20, 1993

TOTAL PURGEABLE PETROLEUM HYDROCARBONS with BTEX DISTINCTION

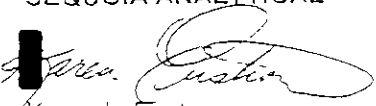
Analyte	Reporting Limit µg/L	Sample I.D. 304-0326 MW1-SP	Sample I.D. 304-0327 MW1-EX	Sample I.D. 304-0328 MW2-EX	Sample I.D. 304-0329 MW3-EX	Sample I.D. 304-0330 MW4-EX	Sample I.D. 304-0331 MW5-EX
Purgeable Hydrocarbons	50	720	N.D.	N.D.	6,000	N.D.	170
Benzene	0.5	7.4	N.D.	N.D.	30	N.D.	14
Toluene	0.5	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

S.I.
730 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	3.0	4.6	3.0

SEQUOIA ANALYTICAL

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.


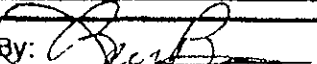
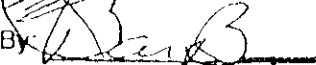

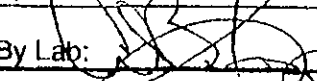
Karen L. Enstrom
Project Manager

Company Name: PROFESSIONAL SERVICE INDUSTRIES		Project Name: US COAST GUARD	
Address: 3730 MT DEARLO, 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 OLIVERA	Sampler: MARK CARLSON	QC Data: <input checked="" type="checkbox"/> Level A (Standard) <input type="checkbox"/> Level B <input type="checkbox"/> Level C <input type="checkbox"/> 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 #	[Diagonal Hatching]					Comments
1. MW1-SP	4-8-93	L	2	VOA							30410326AB
2. MW1-EX	↓	↓	1	↓							327
3. MW2-EX	↓	↓	↓	↓							328
4. MW3-EX	↓	↓	↓	↓							329
5. MW4-EX	↓	↓	↓	↓							330
6. MW5-EX	↓	↓	↓	↓							331
7.											
8.											
9.											
10.											

Relinquished By: 	Date: 4-8-93 Time: 1550	Received By: 	Date: 4/8/93 Time: 1550
Relinquished By: 	Date: 4/8/93 Time: 11:30	Received By: 	Date: Time:
Relinquished By:	Date: Time:	Received By Lab: 	Date: 4-8-93 Time: 4:30 pm

Pink - Client
 Yellow - Sequoia
 White - Sequoia

APPENDIX E
WORK PLAN

*WORKPLAN FOR DRILLING AND
INSTALLATION OF ONE
GROUNDWATER
MONITORING WELL*

*LOCATED IN THE VICINITY OF
FORMER 2,000 GALLON GASOLINE
UNDERGROUND STORAGE TANKS*

*U.S. COAST GUARD
GOVERNMENT ISLAND
ALAMEDA, CALIFORNIA*

PROJECT NO. 582-34006

FEBRUARY 1993

**WORKPLAN FOR DRILLING AND INSTALLATION
OF ONE MONITORING WELL**

**LOCATED IN THE VICINITY OF FORMER 2,000 GALLON
GASOLINE UNDERGROUND STORAGE TANKS
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

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PROPOSED GROUNDWATER SAMPLING	4
PROPOSED LABORATORY ANALYSIS	5
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Introduction

The concrete pad where one groundwater monitoring well is to be installed is located near the swimming pool on Government Island, Alameda, California (See Figure 1, Vicinity Map, and Figure 2, Site Plan).

This workplan for the drilling and installation of one groundwater monitoring well includes the following:

- 1) Completion of a Site Safety Plan
- 2) Installation of one groundwater monitoring well to an approximate depth of 25 feet
- 3) Purging and sampling of the proposed monitoring well
- 4) Preparation/issue of report summarizing field activities, procedures, and findings
- 5) Quarterly monitoring (four only) of the monitoring well
- 6) 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 Tasks", 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

On December 30, 1988, two 2,000 gallon steel underground gasoline storage tanks were closed near the swimming pool at the U.S. Coast Guard Alameda Island Support Center. The tanks appeared to be old and showed some corrosion, but no holes were detected. The tanks were surrounded with sand and native material of bay mud. There was a petroleum hydrocarbon odor detected in soils surrounding the fuel tanks and therefore, approximately 30 yards of soil was removed from the tank excavation, placed on plastic, and covered. Soils samples were collected from each end of each tank and surrounding side walls to define vertical and lateral extent of any hydrocarbons. Two separate stock piles were made, one large pile being below tank grade and the other small pile above grade. Both soil stock piles emitted hydrocarbon odors and composite soil samples were collected from each soil stock pile as indicated in the previous sentence.

Soil samples were analyzed by Superior Analytical Laboratories, a state certified testing laboratory. All soil samples collected were analyzed for Total Petroleum Hydrocarbons (TPH) and Benzene, Toluene, Ethyl Benzene, and Xylene (BTEX) using Environmental Protection Agency Methods 8015 and 8020, respectively. Pea-gravel was used to backfill and compact the excavations to grade. A concrete and asphalt finish was applied to the surface of the 2,000 gallon fiberglass tank excavation.

Soil samples collected under the fuel tanks showed non-detectable levels or insignificant traces of TPH and BTEX. Soil samples collected from the excavations walls and analyzed for TPH and BTEX also showed non-detectable levels. Thus, the vertical and lateral extent hydrocarbons in soil has been defined in the excavation and those soils have been removed for treatment or disposal.

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 drilling one groundwater monitoring well through backfilled soils atop a concrete pad near the swimming pool on the U.S. Coast Guard Base (See Figure 3, Proposed Monitoring Well Location Map). The monitoring well is 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 one 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 groundwater monitoring well and sampling program is to confirm that the shallow groundwater in this area was impacted by the two 2,000 gallon gasoline UST's.

The original boring 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 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.

Soil cuttings 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 well 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 4, 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 well has been developed and recharged for at least 48 hours, groundwater depth measurements will be taken. The water levels will be determined by lowering an electronic probe into the well. When the probe comes in contact with the water surface, an indicator light is lit. The depth to groundwater is then recorded from the probe cord.

Proposed Groundwater Sampling

Prior to purging the well 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 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 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 wear 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

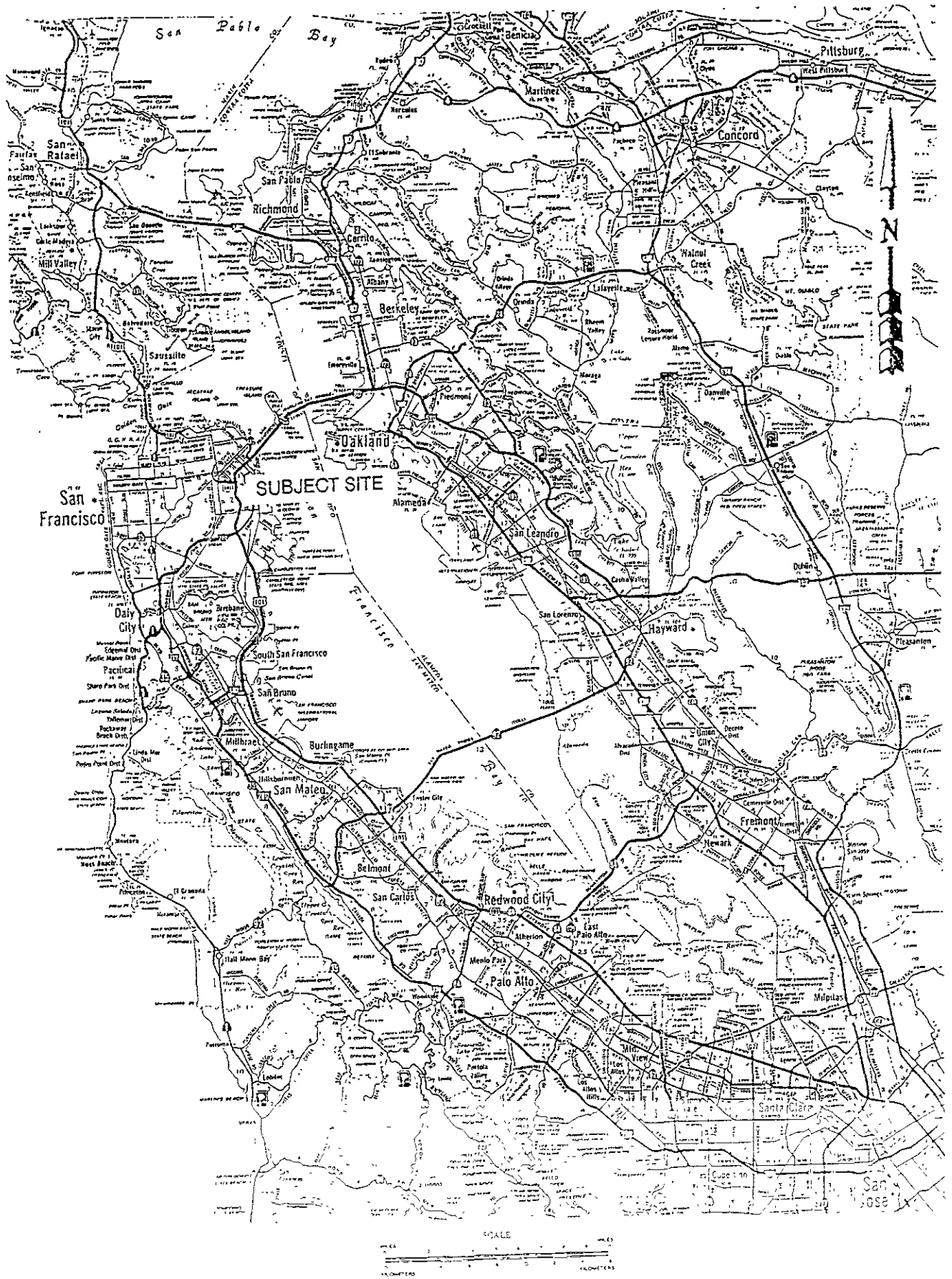


FIGURE 1, VICINITY MAP

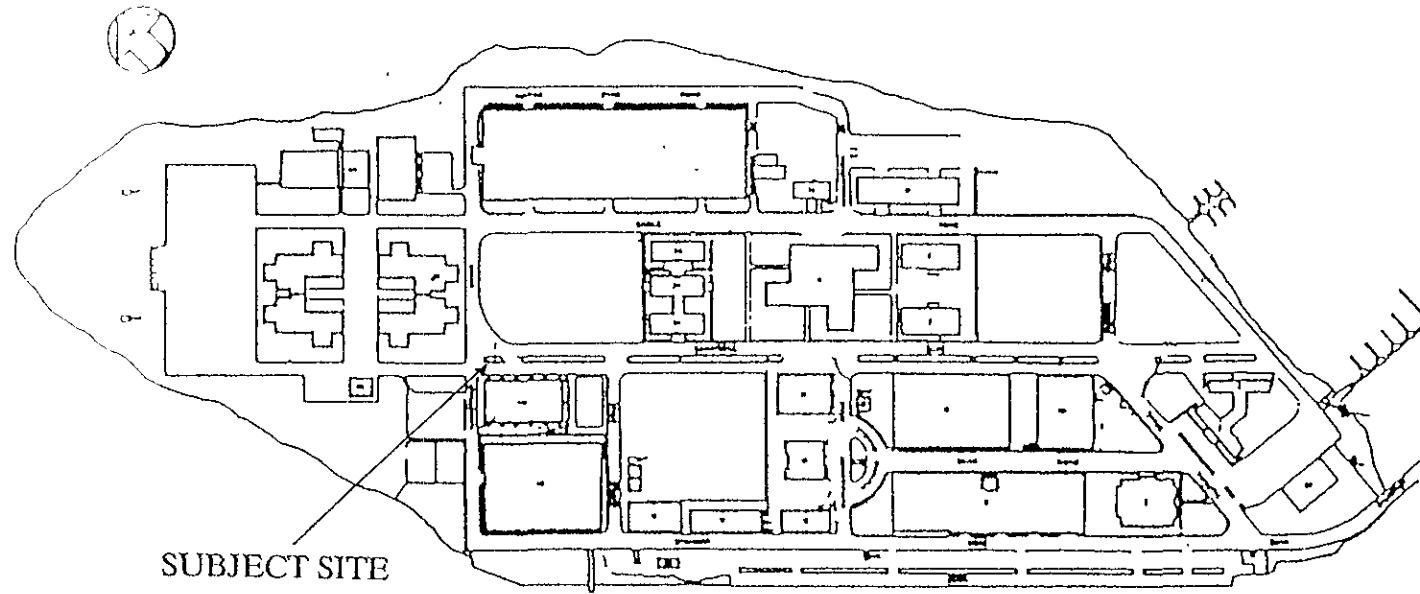
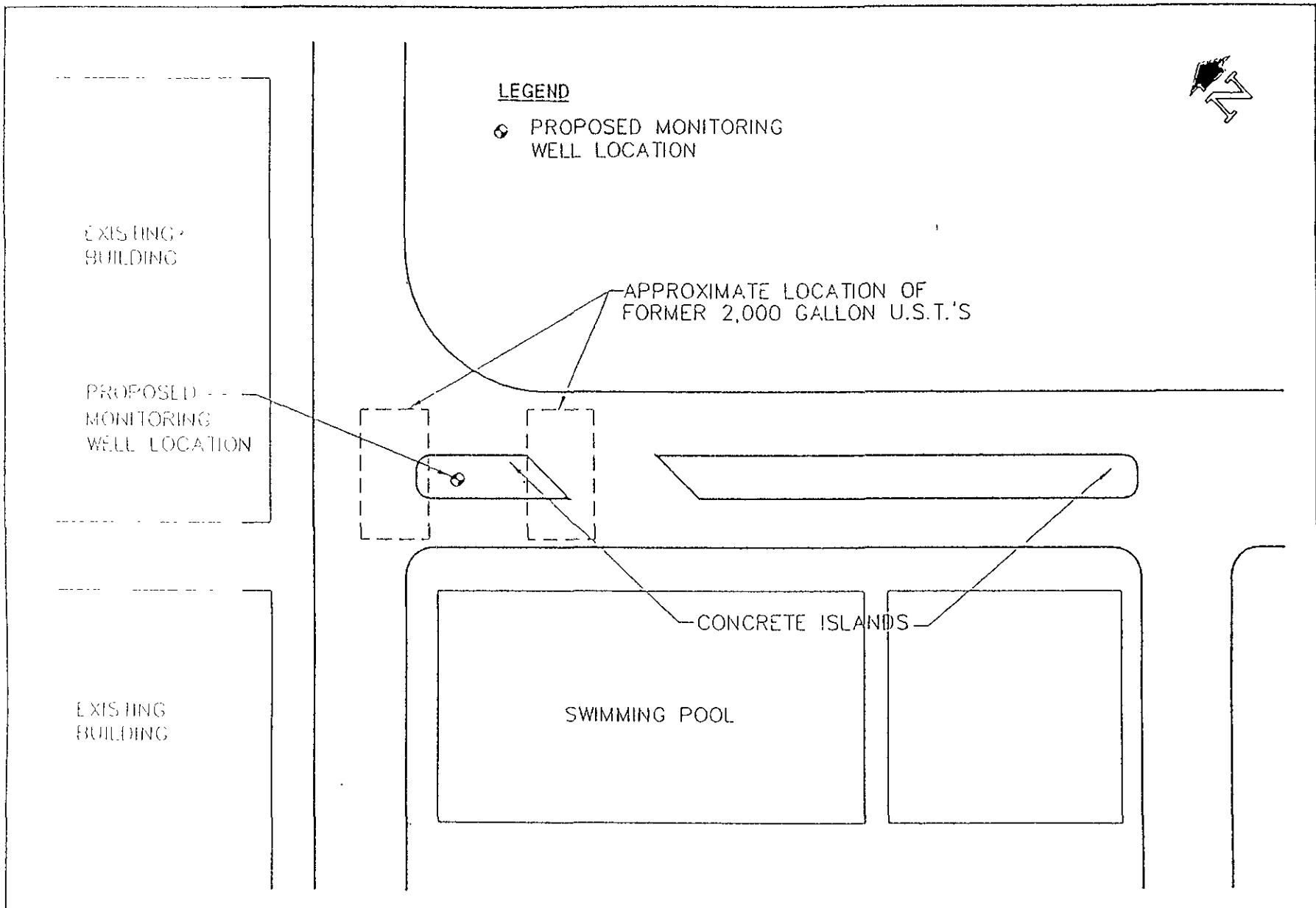


FIGURE 2, SITE PLAN



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

PROJECT NAME:	UNITED STATES COAST GUARD ALAMEDA, CALIFORNIA	DRAWN BY:	DATE:	APPROVED BY:
TITLE:	FIGURE 3 PROPOSED MONITORING WELL LOCATION MAP	B BRITTON	01/29/93	K OLIVER
		SCALE:	PROJECT NO.:582-34006	DRAWING NO.:
		NONE	E:\CG\CG-3	

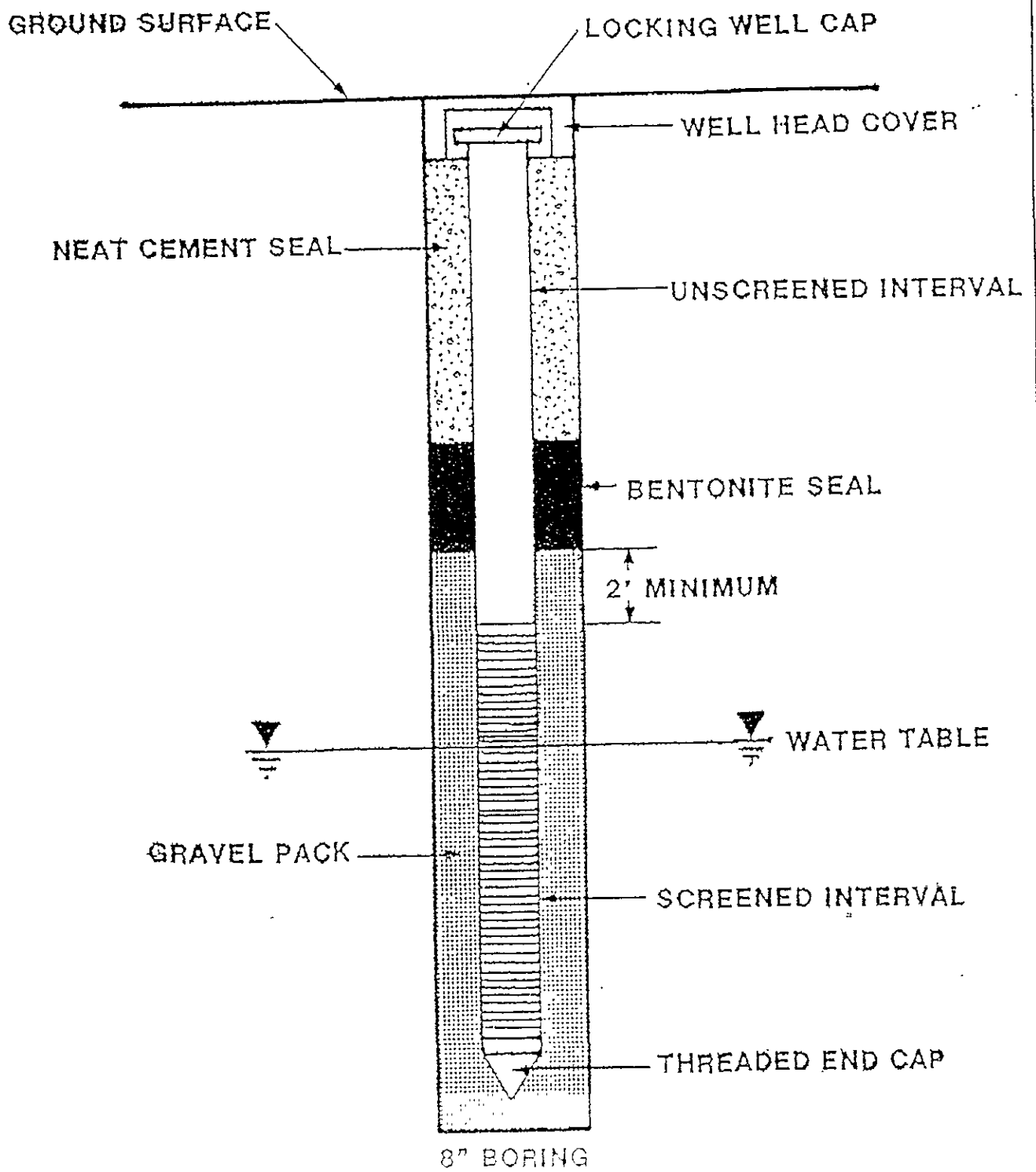


FIGURE 4. TYPICAL MONITORING WELL CONSTRUCTION DESIGN

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 the requirements 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., STE 345, LAFAYETTE, CA Tel: (510) 284-3070
94549
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.

4.0 TASK ANALYSIS:

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

General Description of Work to be Accomplished: DRILLING OF ONE SOIL BORING TO AN APPROXIMATE DEPTH OF 25 FEET AND CONVERT IT INTO A MONITORING WELL.

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

Task to Be Performed: _____

Hazard Risk: _____ Unknown _____ High _____ Moderate _____ Low

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

6.0 PERSONAL PROTECTIVE EQUIPMENT:

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

- 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): _____

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
- Photoionization Detector (MIU/TIP)
- 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) 465-0810

-Satellite Paging (800) 869-2337 ID Ext 5125

National Poison Control Center (800) 492-2114

Chemical Mfg. Association

-Chemical Referral Center (800) 252-8200

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.

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

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

TR#	NORTHING	EASTING	DESCRIPTION	ELEVATION
1	2111410.532	6056664.527	MW-1EX	13.550
2	2111395.763	6056723.711	MW-2EX	13.470
3	2111328.645	6056726.726	MW-3EX	13.150
4	2111353.267	6056655.647	MW-4EX	13.070
5	2111431.333	6056637.847	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	15.025
26	2112153.950	6053715.746	COR SP PAD	15.280
302	2112305.388	6055614.336	CG-2	14.550
303	2112580.564	6055810.558	CG-3	13.350
304	2111731.440	6056041.043	CG-4	12.550
305	2111097.810	6056076.113	CG-5	12.570

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



RECEIVED
CEU-SANLARO
NOV 17 1992
RAFAT A. SAHID, 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()

Mr. Christopher Lutton
RE: U.S. Coast Guard Support Center
November 13, 1992
Page 2 of 3

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

- o 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.
- o Status of ground water contamination characterization
- o Interpretation of results: free and dissolved product plume definition maps for each target component, geologic cross sections, etc.
- o 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.

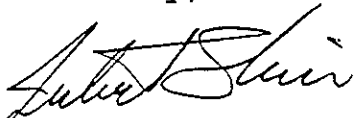
All reports and proposals must be submitted under seal of a California-Registered Geologist, -Certified Engineering Geologist, or -Registered Civil Engineer. Please include a statement of qualifications for each lead professional involved with this project.

Mr. Christopher Lutton
RE: U.S. Coast Guard Support Center
November 13, 1992
Page 3 of 3

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:

- o 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.
- o 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.
- o 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,

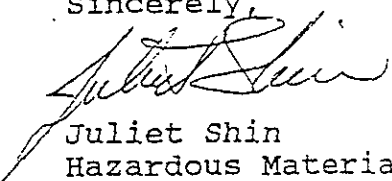
Mr. Christopher Lutton, LJG
Re: U.S. Coast Guard Support Center
February 25, 1993
Page 2 of 2

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.

- o 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.

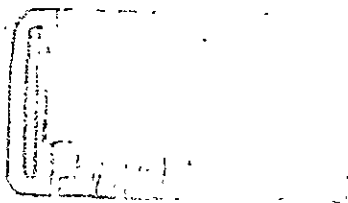
Sincerely,


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,

A handwritten signature in cursive script, appearing to read "Juliet Shin".

Juliet Shin
Hazardous Materials Specialist

Re: U.S. Coast Guard
Support Center
March 3, 1993
Page 2 of 2

cc: Richard Hiett, RWQCB

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

Edgar Howell-File(JS)