ensco environmental services, inc.

PRELIMINARY SOIL AND GROUNDWATER INVESTIGATION

FOR

MONTEREY MECHANICAL COMPANY
8275 SAN LEANDRO STREET
OAKLAND, CALIFORNIA

Project No. 1731G
November 1989

Corporate Offices 41674 Christy Street, Fremont, CA 94538-3114 (415) 659-0404 Fax (415) 651-4677 Contr. Lic. No. 550205

ensco environmental services, inc.
a subsidiary of environmental system company

November 6, 1989

Monterey Mechanical Company
8275 San Leandro Avenue
Oakland, CA 94621

Attention: Mr. Carl Johnson

Subject: Preliminary Soil and Groundwater Investigation for
Monterey Mechanical Company
8275 San Leandro Avenue, Oakland, California
EES Project No. 1731G

Dear Mr. Johnson:

Ensco Environmental Services, Inc. (EES) is pleased to present this letter report detailing the results of our soil and groundwater investigation at the site noted above (Figure 1). The scope of work for the project included research of the groundwater downgradient direction at the California Regional Water Quality Control Board (RWQCB), drilling one exploratory boring, converting the boring to a groundwater monitoring well, collecting soil and groundwater samples, and sending the samples to a state-certified laboratory for analysis. This letter report presents the results of the investigation.

Background

Monterey Mechanical Company is a plumbing contractor that has occupied the present site for approximately 45 years. On March 24, 1988, H.G. Winter Company removed a 1,000-gallon underground gasoline tank. The same company also collected seven soil samples and one groundwater sample during the excavation and analyzed them for total petroleum hydrocarbons as gasoline (TPHG) and benzene, toluene, ethyl benzene, and xylenes (BTEX). Four soil samples and the groundwater sample were taken from the tank excavation, while the other three soil samples were taken along the product line and from under the dispenser. Appendix A contains information submitted to Monterey Mechanical from H.G. Winter Company on the following: (a) location of the former gasoline tank, (b) location of the samples taken, and (c) analytical results. The analytical results revealed TPHG and BTEX in the tank excavation vicinity. EES was contracted to determine the amount and extent, if any, of hydrocarbon contamination in the soil and groundwater within one boring near the tank excavation.

Field Investigation

Information contained in leaking underground fuel tank files at the RWQCB revealed the groundwater direction trending southwest. On September 19, 1989, EES installed one groundwater monitoring well (MW-1), under an approved permit, approximately 8 feet from

the tank excavation on the groundwater downgradient side (Figure 2). Subsurface utilities were located before the field work began.

Exploratory Borings, Soil Sampling

The exploratory boring was advanced with an EES Mobile B-53 drill rig using continuous flight, hollow-stem augers. Soil samples were collected above the water table for laboratory analysis at approximately 5, 6-1/2, and 10 feet below surface grade with a Modified California sampler equipped with clean brass liners. The soil samples were retained in the liner, sealed with foil, and placed in an ice-cooled chest for transport to a state-certified analytical laboratory. A chain-of-custody record accompanied the soil samples. Appendix B contains the EES soil sampling protocol.

Subsurface Conditions

Materials encountered during drilling included approximately 6 inches of asphalt and 6 inches of baserock overlying a clay layer which extended to approximately 10 feet. Groundwater was first encountered at approximately 10 feet in a 1-foot-thick silty sand layer. The boring was then advanced 15 feet encountering clay to 12.5 feet, silty sand to approximately 22 feet, and silty clay to 25 feet. Appendix C contains the well permit, geologic boring log, and well completion detail for MW-1. The drill cuttings were placed on and covered by plastic sheeting. The client is responsible for proper disposal of drilling cuttings. EES can assist the client as needed with the disposal at his request.

Groundwater Monitoring Well Construction

A groundwater monitoring well was constructed using the following methods: after the exploratory boring had been completed, 2-inch-diameter, Schedule 40 polyvinyl chloride (PVC) flush-joint threaded solid and slotted (screen) casing was set through the hollow-stem auger. The screened interval extended from a depth of 9 feet to 25 feet below the ground surface. The auger was then pulled out of the ground and the hole left open while No. 2/12 sand was poured down the annular space between the boring wall and the casing to 2 feet above the top of the slotted casing. An approximately 1-foot-thick bentonite seal was placed on top of the sand and the hole was then grouted to within 1 foot of the surface with neat cement. The top of the well was set in a pre-cast concrete vault box, which was surrounded by concrete and finished approximately flush with the grade. A locking plastic expansion cap and lock were then placed over the top of the 2-inch PVC pipe. The details of the well construction are presented in the Monitoring Well Detail form included as Appendix C.

Well Development, Groundwater Sampling

Following well construction, the well was developed by manually bailing six well volumes (approximately 18 gallons) of groundwater to: (a) remove residual silts and clays left from drilling; and (b) to improve hydraulic conductivity between the well and the natural formation. All water collected during well development was placed in a Department of Transportation-approved drum and left on-site. The drum should be properly disposed of by Monterey Mechanical. After development, at least 24 hours were allowed for the groundwater level to stabilize. A groundwater sample was collected on October 6, 1989 in accordance with EES's groundwater sampling protocol (Appendix D).

Laboratory Analysis

The samples were transported to Trace Analysis, an analytical laboratory certified by the State of California Department of Health Services. The soil samples were composited and analyzed for the presence of TPHG and BTEX. The groundwater sample was analyzed for TPHG and BTEX using the modified EPA Method 8020. The selected test methods are approved by the State of California Regional Water Quality Control Board and the U.S. Environmental Protection Agency.

Summary of Analytical Results

Laboratory analysis of the composited soil sample revealed concentrations of TPHG at 370 parts per billion (ppb), toluene at 6.9 ppb, ethyl benzene at 57 ppb, and xylenes at 130 ppb. Benzene was reported below the detection limit. Laboratory analysis of the groundwater sample revealed no detectable amounts of TPHG or BTEX. Laboratory reports and chain-of-custody records for the composited soil and groundwater sample results are located in Appendix E.

Reporting Requirements

Please note a copy of this report should be sent to the following agencies in a timely manner:

Alameda County Health Care Services
Department of Environmental Health
Hazardous Materials Division
80 Swan Way, Ste. 200
Oakland, California 94621-1439
Attention: Mr. Ariu Levi

California Regional Water Quality Control Board
San Francisco Bay Region
1111 Jackson Street, Room 6040
Oakland, California 94607-4913
Attention: Mr. Lester Feldman

Limitations

The discussion and recommendations presented in this report are based on the following:

1. The exploratory test boring drilled at the site.
2. The observations by field personnel.
3. The results of the laboratory analyses performed by a state-certified laboratory.
4. Our understanding of the regulations of the State of California and Alameda County and/or the City of Oakland.

It is possible that variations in the soil and groundwater conditions exit beyond the points explored in this investigation. Also, changes in the groundwater conditions could occur at sometime in the future due to variations in rainfall, temperature, regional water usage or other factors.

The chemical analytical data included in this report have been obtained from a state-certified laboratory. The analytical methods employed by the laboratory were in accordance with procedures suggested by the U.S. EPA and the State of California. EES is not responsible for laboratory errors in procedure or result reporting.

The service performed by Ensco Environmental Services, Inc. has been conducted in a manner consistent with the level of care and skill ordinarily exercised by members of our profession currently practicing under similar conditions in the Oakland area. No other warranty, expressed or implied, is made.

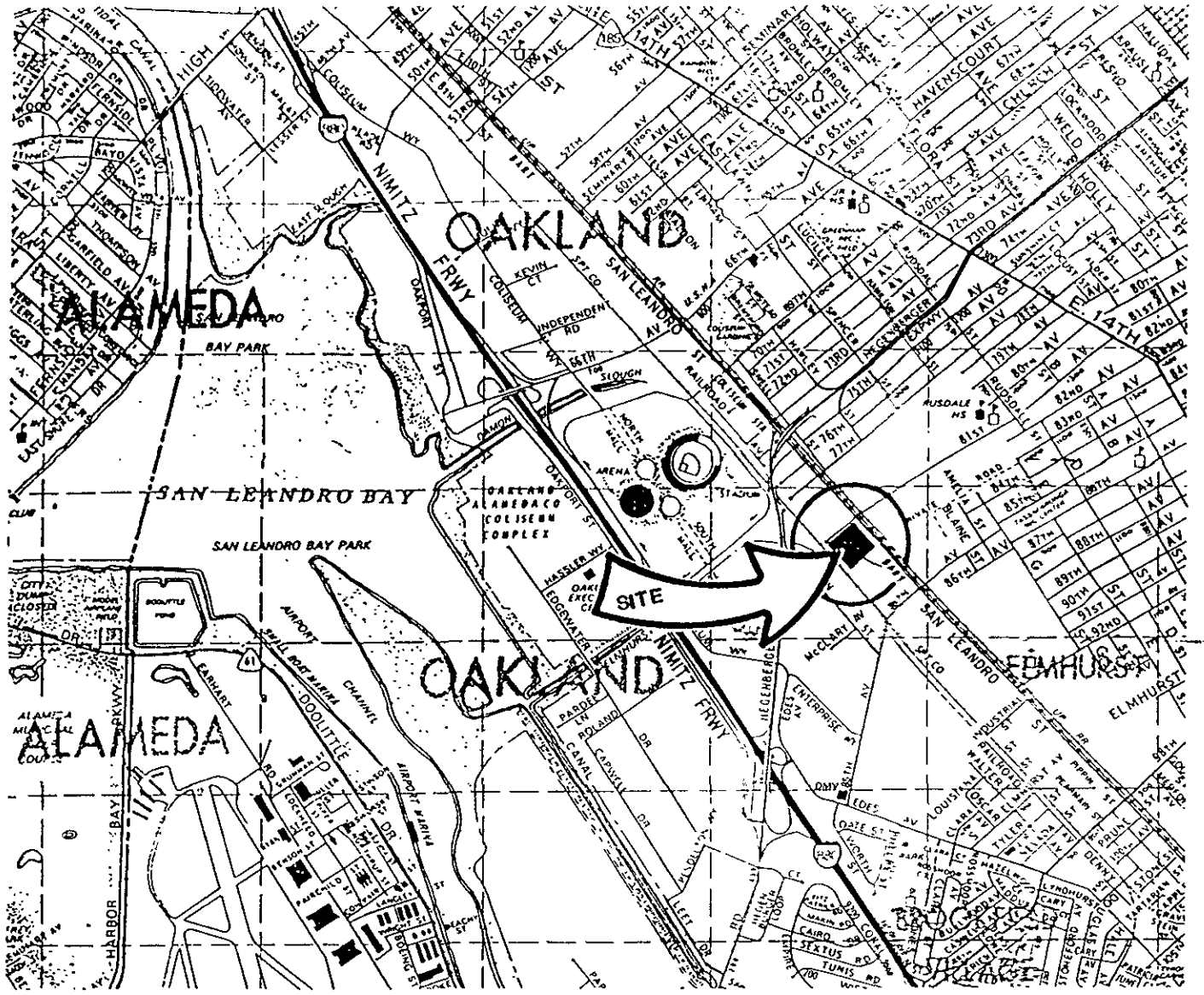
If you have any questions or require additional information, please call.

Sincerely,
Ensco Environmental Services, Inc.

Cynthia R. Virostko
Staff Geologist

Neil H. Zickefoose, C.E.G. 398
Senior Program Geologist

CRV/NHZ/sw
Enclosures



BASE: THOMAS BROS. GUIDE, 1987. ALAMEDA CO.

onsco environmental services, Inc.

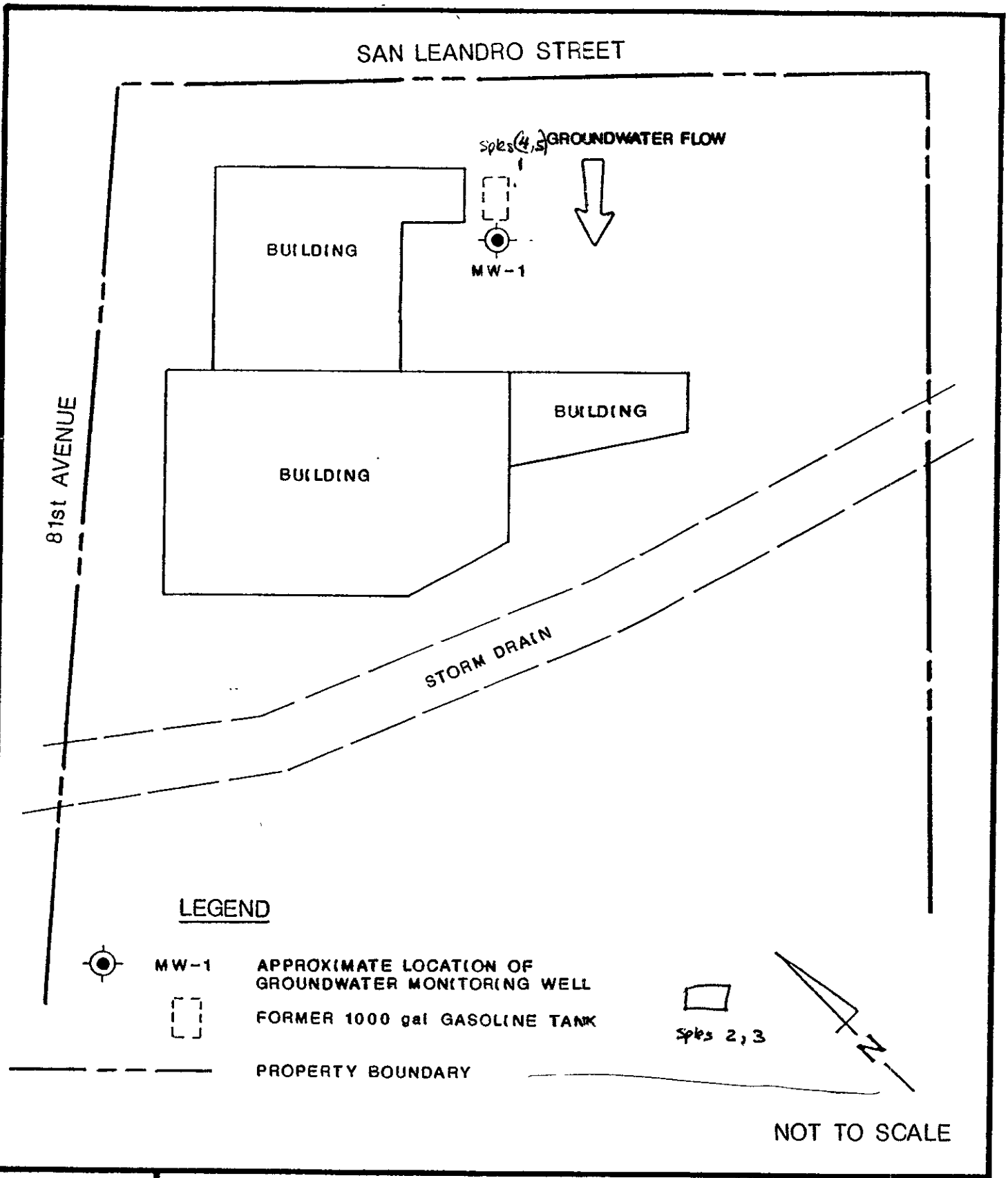
SITE LOCATION MAP

MONTEREY MECHANICAL COMPANY

8275 SAN LEANDRO STREET

OAKLAND, CALIFORNIA

REVIEWED BY:	APPROVED BY:
CRY	MHJ
JOB # 1731G	DRAWN BY J.C
DATE 9-12-89	DRAWING # FIG. 1



ensco environmental services, inc.

SITE PLAN

MONTEREY MECHANICAL COMPANY

8275 SAN LEANDRO STREET

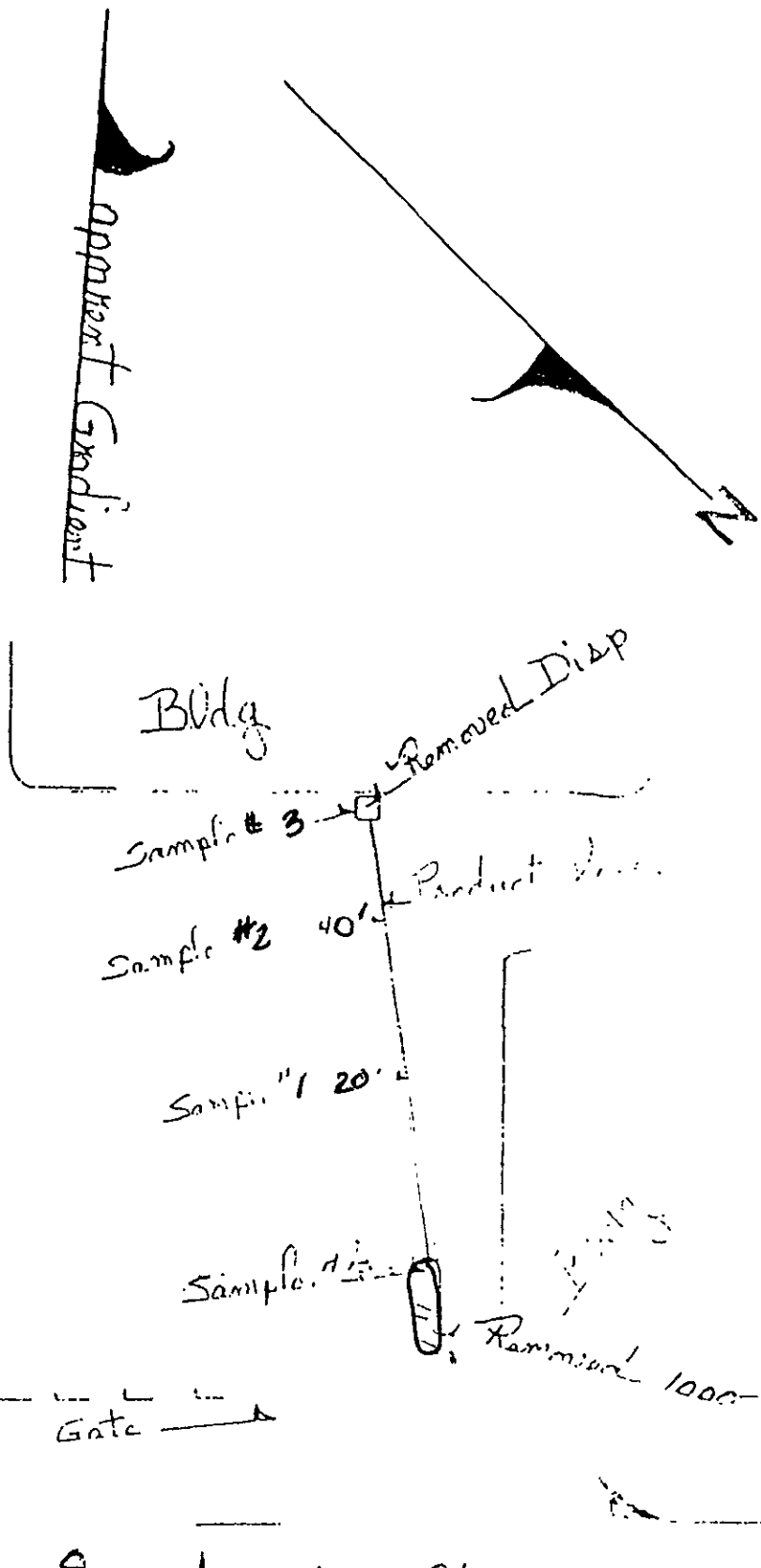
OAKLAND, CALIFORNIA

REVIEWED BY:	APPROVED BY:
	MHB
JOB #: 1731G	DRAWN BY: SLS
DATE: 9-15-89	DRAWING #: FIG. 2

APPENDIX A

H.G. WINTER COMPANY INFORMATION

H. G. Winter, Co.
General Engineering Contractor



SEQUOIA Analytical Laboratory
2549 Middlefield Road
Redwood City, CA 94063 • (415) 364-9222

H. G. Winter Co.
696-1 Kings Row
San Jose, CA 95112

Date Sampled: 03/24/88
Date Received: 03/31/88
Date Reported: 04/25/88

Project: Montery Mech,
San Leandro

TOTAL PETROLEUM FUEL HYDROCARBONS WITH BTX DISTINCTION

Sample Number	Sample Description
8032262	Water, #1

	Detection Limit ppb	Sample Results ppb
Low to Medium Boiling Point Hydrocarbons	50	8,400
Benzene	0.5	68
Toluene	0.5	48
Xylenes	0.5	5,000

Method of Analysis: EPA 5030/602/8015

SEQUOIA ANALYTICAL LABORATORY

Arthur G. Burton
Laboratory Director

SEQUOIA Analytical Laboratory
2549 Middlefield Road
Redwood City, CA 94063 • (415) 364-9222

H. G. Winter Co.
696-1 Kings Row
San Jose, CA 95112

Date Sampled: 03/24/88
Date Received: 03/31/88
Date Reported: 04/25/88

Project: Monterey Mech,
San Leandro

TOTAL PETROLEUM FUEL HYDROCARBONS WITH BTX DISTINCTION

Sample Number	Sample Description
8032263	Soil, #2

	Detection Limit ppm	Sample Results ppm
Low to Medium Boiling Point Hydrocarbons	1	4.6
Benzene	0.1	< 0.1
Toluene	0.1	< 0.1
Xylenes	0.1	0.17

Method of Analysis: EPA 5020/8015/8020

SEQUOIA ANALYTICAL LABORATORY

Arthur G. Burton
Laboratory Director

SEQUOIA Analytical Laboratory
2549 Middlefield Road
Redwood City, CA 94063 • (415) 364-9222

H. G. Winter Co.
696-1 Kings Row
San Jose, CA 95112

Date Sampled: 03/24/88
Date Received: 03/31/88
Date Reported: 04/25/88

Project: Monterey Mech,
San Leandro

TOTAL PETROLEUM FUEL HYDROCARBONS WITH BTX DISTINCTION

Sample Number	Sample Description
8032264	Soil, #3

	Detection Limit ppm	Sample Results ppm
Low to Medium Boiling Point Hydrocarbons	1	2.3
Benzene	0.1	< 0.1
Toluene	0.1	< 0.1
Xylenes	0.1	< 0.1

Method of Analysis: EPA 5020/8015/8020

SEQUOIA ANALYTICAL LABORATORY

Arthur G. Burton
Laboratory Director

SEQUOIA Analytical Laboratory
2549 Middlefield Road
Redwood City, CA 94063 • (415) 364-9222

H. G. Winter Co.
696-1 Kings Row
San Jose, CA 95112

Date Sampled: 03/24/88
Date Received: 03/31/88
Date Reported: 04/25/88

Project: Monterey Mech,
San Leandro

TOTAL PETROLEUM FUEL HYDROCARBONS WITH BTX DISTINCTION

Sample Number	Sample Description
8032265	Soil, #4

	Detection Limit ppm	Sample Results ppm
Low to Medium Boiling Point Hydrocarbons	1	4.1
Benzene	0.1	< 0.1
Toluene	0.1	< 0.1
Xylenes	0.1	< 0.1

Method of Analysis: EPA 5020/8015/8020

SEQUOIA ANALYTICAL LABORATORY

Arthur G. Burton
Laboratory Director

SEQUOIA Analytical Laboratory
2549 Middlefield Road
Redwood City, CA 94063 • (415) 364-9222

H. G. Winter Co.
696-1 Kings Row
San Jose, CA 95112

Date Sampled: 03/24/88
Date Received: 03/31/88
Date Reported: 04/25/88

Project: Monterey Mech,
San Leandro

TOTAL PETROLEUM FUEL HYDROCARBONS WITH BTX DISTINCTION

Sample Number	Sample Description
8032266	Soil, #5

	Detection Limit ppm	Sample Results ppm
Low to Medium Boiling Point Hydrocarbons	1	730
Benzene	0.1	1.6
Toluene	0.1	27
Xylenes	0.1	72

Method of Analysis: EPA 5020/8015/8020

SEQUOIA ANALYTICAL LABORATORY

Arthur G. Burton
Laboratory Director

[redacted]

696-1 Kings Row
San Jose, Ca. 95112
408-437-1775

CHAIN OF CUSTODY

Site Name & Address: Oakland — Monterey Meat, San Leandro

Samplers: Robert Cox Jim Williams

NO.	DATE	TIME	SOIL	WATER	SAMPLE LOC.	Type of container	ANALYSIS: Gas TPH G BTX&E	Diesel TPH D BTX&E	Waste Oil TPH G&D W Oil & grease BTX&E CL HC Metals		Other	Remarks
1	3/24/88	3:?? pm		X	Fuel tank	Glass Vials	X					
2	3/24/88	1:50 pm	X		Vent end	Brass sleeve	X					
3	3/24/88	1:?? pm	X		Fill end	Brass sleeve	X					
#4	3/24/88	3:30 PM	X		Fill end	Brass sleeve	X					Test tank
#5	3/24/88	3:35 PM	X		Gasline End	Brass, sleeve	X					[illegible]

Relinquished by: (Sign.)	Date/Time	Received by: (sign.)	Relinquished by: (Sign.)	Date/Time	Received by: (Sign.
Judy Cox	3/25/88/2:10pm	[illegible signature]			
Relinquished by: (Sign.)	**Date/Time**	**Received by: (sign.)**	**Relinquished by: (Sign.)**	**Date/Time**	**Received by: (Sign.**

Relinquished by: (Sign.)	Date/Time	Received for Laboratory by: (Sign.)	Date/Time	Inspector:

Testing Lab.
Acurex · Mt. View

SEQUOIA Analytical Laboratory
2549 Middlefield Road
Redwood City, CA 94063 • (415) 364-9222

H. G. Winter, Co.
696-1 Kings Row
San Jose, CA 95112

Date Sampled: 04/06/88
Date Received: 04/08/88
Date Reported: 05/12/88

Project: Monterey Mech., 8275
San Leandro, Oakland

TOTAL PETROLEUM FUEL HYDROCARBONS WITH BTX DISTINCTION

Sample Number	Sample Description
8040464	Soil, #1 20 feet from tank

	Detection Limit ppm	Sample Results ppm
Low to Medium Boiling Point Hydrocarbons	1	4.1
Benzene	0.1	< 0.1
Toluene	0.1	0.25
Xylenes	0.1	< 0.1
Ethylbenzene	0.1	0.16

Method of Analysis: EPA 5020/8015/8020

SEQUOIA ANALYTICAL LABORATORY

Arthur G. Burton
Laboratory Director

SEQUOIA Analytical Laboratory
2549 Middlefield Road
Redwood City, CA 94063 • (415) 364-9222

H. G. Winter, Co.
696-1 Kings Row
San Jose, CA 95112

Date Sampled: 04/06/88
Date Received: 04/08/88
Date Reported: 05/12/88

Project: Monterey Mech., 8275
San Leandro, Oakland

TOTAL PETROLEUM FUEL HYDROCARBONS WITH BTX DISTINCTION

Sample Number	Sample Description
8040465	Soil, #2 40 feet from tank

	Detection Limit ppm	Sample Results ppm
Low to Medium Boiling Point Hydrocarbons	1	11
Benzene	0.1	0.12
Toluene	0.1	0.90
Xylenes	0.1	1.3
Ethylbenzene	0.1	0.41

Method of Analysis: EPA 5020/8015/8020

SEQUOIA ANALYTICAL LABORATORY

Arthur G. Burton
Laboratory Director

A. G. Miller, Co.

696-1 Kings Row
San Jose, Ca. 95112
408-437-1775

CHAIN OF CUSTODY

Site Name & Address	Samplers	NO.	DATE	TIME	SOIL	WATER	SAMPLE LOC.	Type of container	ANALYSIS: Gas TPH G BTX&E	Diesel TPH D BTX&E	Waste Oil TPH G&D W Oil & grease BTX&E CL HC Metals			Other	Remarks
			4/6/88		X			Brass Sleeve							
			4/6/88		X			Brass Sleeve							
			4/6/88	12:??	X		Under Dispenser	Brass Sleeve							

Relinquished by: (Sign.)	Date/Time	Received by: (sign.)	Relinquished by: (Sign.)	Date/Time	Received by: (S:
[illegible]	4/7/88 12:10	[illegible]			
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Relinquished by: (Sign.)	Date/Time	Received for Laboratory by: (Sign.)	Date/Time	Inspector:	

Testing Lab.

SEQUOIA Analytical Laboratory
2549 Middlefield Road
Redwood City, CA 94063 • (415) 364-9222

H. G. Winter, Co.
696-1 Kings Row
San Jose, CA 95112

Date Sampled: 04/06/88
Date Received: 04/08/88
Date Reported: 05/12/88

Project: Monterey Mech., 8275
San Leandro, Oakland

TOTAL PETROLEUM FUEL HYDROCARBONS WITH BTX DISTINCTION

Sample Number	Sample Description
8040466	Soil, #3 Under Disp.

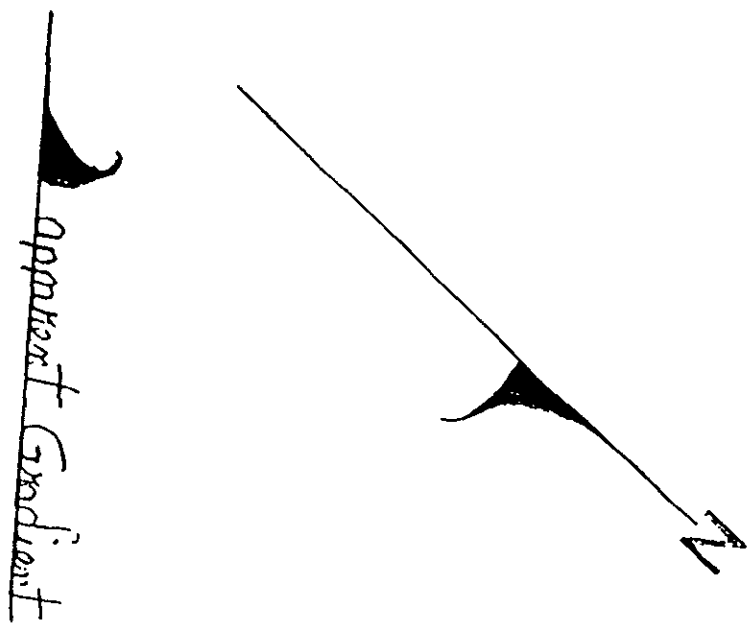
	Detection Limit ppm	Sample Results ppm
Low to Medium Boiling Point Hydrocarbons	1	3.5
Benzene	0.1	< 0.1
Toluene	0.1	0.45
Xylenes	0.1	< 0.1
Ethylbenzene	0.1	< 0.1

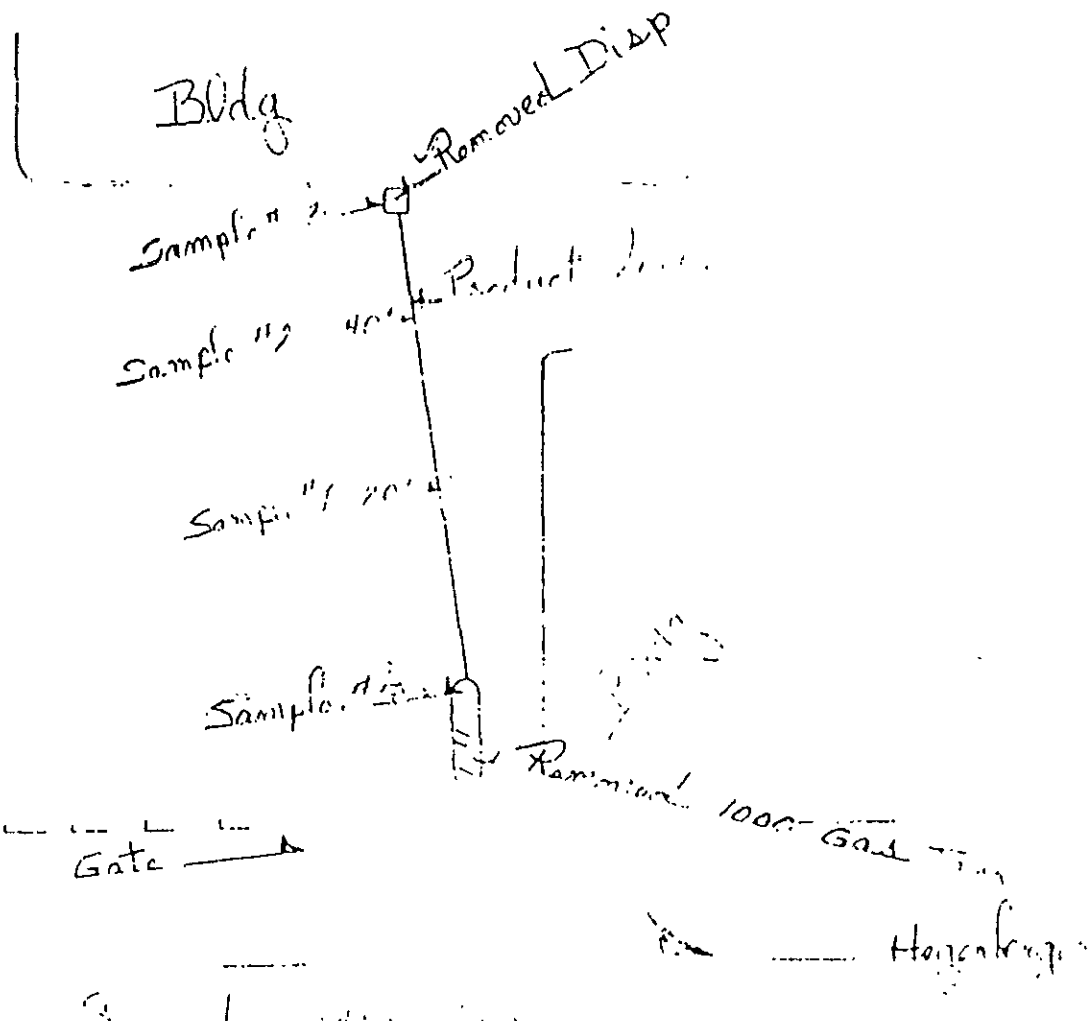
Method of Analysis: EPA 5020/8015/8020

SEQUOIA ANALYTICAL LABORATORY

Arthur G. Burton
Laboratory Director

H. G. WINTER, I. C.
General Engineering Contractor





APPENDIX B

SOIL SAMPLING PROTOCOL

ENSCO ENVIRONMENTAL SERVICES, INC.

SOIL SAMPLING PROTOCOL

SOIL SAMPLING PROTOCOL

I. SOIL SAMPLING BY DRILLING RIG

1) Review site proposal for boring locations and special instructions. Confirm boring locations in field with client. Have Underground Service Alert (USA) mark utilities in area prior to drilling.

2) Prior to initiating an exploratory boring, all equipment to be used during drilling and sampling operation is steam cleaned. Such equipment includes, but is not limited to, augers, bits, drilling rod, samplers, and brass sampler liners. Additionally, between sampling intervals, the sampler is thoroughly cleaned with a dilute trisodium phosphate solution and rinsed with clean tap water or distilled water.

3) Each exploratory boring is drilled with a truck-mounted drilling rig using either solid flight or hollow stem augers. The boring is advanced to the desired sampling depth and the sampler is lowered to the bottom of the hole. The sampler is driven a maximum of 18 inches into the undisturbed soils ahead of the auger by a 140-pound, rig-operated hammer falling 30 inches. The number of blows required to drive the sampler the final 12 inches is recorded on the boring log. When necessary, the sampler may be pushed by the drill rig hydraulics. In this case, the pressure exerted (in pounds per square inch) is recorded. After the sampler has penetrated the full depth, it is retrieved to the surface.

4) The samplers commonly used are either a California modified sampler (3 inch or 2.5 inch O.D.) or a standard penetrometer (2 inch O.D.). The standard penetrometer does not contain sample liners and is used to determine soil strength characteristics and visually characterize the subsurface materials. If samples are collected for laboratory analysis the

California modified sampler, equipped with brass liners, is used except when the analysis will include copper or zinc. In this instance, the sample should be taken with the standard penetrometer and placed in a labeled plastic bag.

Upon retrieval, the sampler is disassembled into its component parts. One or more of the liners is selected for chemical analysis. The ends of the selected liner(s) are sealed with aluminum foil or teflon tape, capped with plastic caps, labeled, logged on chain-of-custody forms and stored in a chilled ice chest for preservation in the field and during transport to the analytical laboratory. All labels are pre-written with indelible ink to minimize handling time.

5) Samples are checked for the presence of contamination in the field by the geologist. Any discoloration or odor is noted on the boring log. Each sample is classified in the field by a geologist using the Unified Soil Classification System and a Munsell soil color chart. In addition, samples may also be field-screened with a photo ionization detector (calibrated daily) or threshold limit value sniffer. In either case, the instrument probe is held adjacent to freshly crumbled soil and the stabilized reading value is recorded on the log. Other visual screening techniques include examination of the sample under hand-lens magnification as-well-as floating sheen inspection resulting from immersion in water.

6) Samples are held in the possession of Ensco Environmental Services personnel until transferred to the analytical laboratory. Transfer to the laboratory is accomplished with either delivery by Ensco Environmental Services personnel, pick-up by laboratory personnel, or transfer by a personal delivery service. Each transfer of responsibility is recorded on a chain-of-custody log that accompanies the sample.

APPENDIX C

WELL PERMIT, BORING LOGS AND WELL COMPLETION DETAIL

ALAMEDA COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
5997 PARKSIDE DRIVE • PLEASANTON, CALIFORNIA 94566 • (415) 484-2600

31 August 1989

Ensco Environmental Services, Inc.
41674 Christy Street
Fremont, CA 94538

Gentlemen:

Enclosed is Groundwater Protection Ordinance permit 89502 for a monitoring well construction project at 8275 San Leandro Avenue in Oakland for Monterey Mechanical Company.

Please note that permit condition A-2 requires that a well construction report be submitted after completion of the work. The report should include drilling and completion logs, location sketch, and permit number.

If you have any questions, please contact Wyman Hong or Craig Mayfield at 484-2600.

Very truly yours,

Mun J. Mar
General Manager

By J. Killingstad
J. Killingstad, Chief
Water Resources Engineering

WH:bkm
Enc.

ALAMEDA COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

5997 PARKSIDE DRIVE • PLEASANTON, CALIFORNIA 94566 • (415) 484-2600

GROUNDWATER PROTECTION ORDINANCE PERMIT APPLICATION

FOR APPLICANT TO COMPLETE

(1) LOCATION OF PROJECT 8275 San Leandro Ave. Oakland CA 94621

(2) CLIENT
Name Monterey Mechanical Company
Address same as above Phone 632-3178
City same as above Zip same

(3) APPLICANT
Name Ensco Environmental Services
Address 41674 Christy Str Phone 659-0404
City Fremont Zip 94538

(4) DESCRIPTION OF PROJECT
Water Well Construction X Geotechnical ___
Cathodic Protection ___ Well Destruction ___

(5) PROPOSED WATER WELL USE
Domestic ___ Industrial ___ Irrigation ___
Municipal ___ Monitoring X Other ___

(6) PROPOSED CONSTRUCTION
Drilling Method:
Mud Rotary ___ Air Rotary ___ Auger X
Cable ___ Other ___

WELL PROJECTS
Drill Hole Diameter 8 in. Depth(s) 25 ft.
Casing Diameter 2 in. Number
Surface Seal Depth 10 ft. of Wells 1
Driller's License No. 550205

GEOTECHNICAL PROJECTS
Number ___
Diameter ___ in. Maximum Depth ___ ft.

(7) ESTIMATED STARTING DATE 9/13/89
ESTIMATED COMPLETION DATE 9/13/89

(8) I hereby agree to comply with all requirements of this permit and Alameda County Ordinance No. 73-68.

APPLICANT'S SIGNATURE Cynthia R Kroutko Date 8/29/89

FOR OFFICE USE

PERMIT NUMBER 89502
LOCATION NUMBER ___

Approved Wyman Hong Date 30 Aug 89
Wyman Hong

PERMIT CONDITIONS

Circled Permit Requirements Apply

(A.) GENERAL
1. A permit application should be submitted so as to arrive at the Zone 7 office five days prior to proposed starting date.
2. Notify this office (484-2600) at least one day prior to starting work on permitted work and before placing well seals.
3. Submit to Zone 7 within 60 days after completion of permitted work the original Department of Water Resources Water Well Drillers Report or equivalent for well projects, or bore hole logs and location sketch for geotechnical projects. Permitted work is completed when the last surface seal is placed or the last boring is completed.
4. Permit is void if project not begun within 90 days of approval date.

(B.) WATER WELLS, INCLUDING PIEZOMETERS
1. Minimum surface seal thickness is two inches of cement grout placed by tremie, or equivalent.
2. Minimum seal depth is 50 feet for municipal and industrial wells or 20 feet for domestic, irrigation, and monitoring wells unless a lesser depth is specially approved.

C. GEOTECHNICAL. Backfill bore hole with compacted cuttings or heavy bentonite and upper two feet with compacted material.

D. CATHODIC. Fill hole above anode zone with concrete placed by tremie, or equivalent.

E. WELL DESTRUCTION. See attached.

Monitoring Well Detail

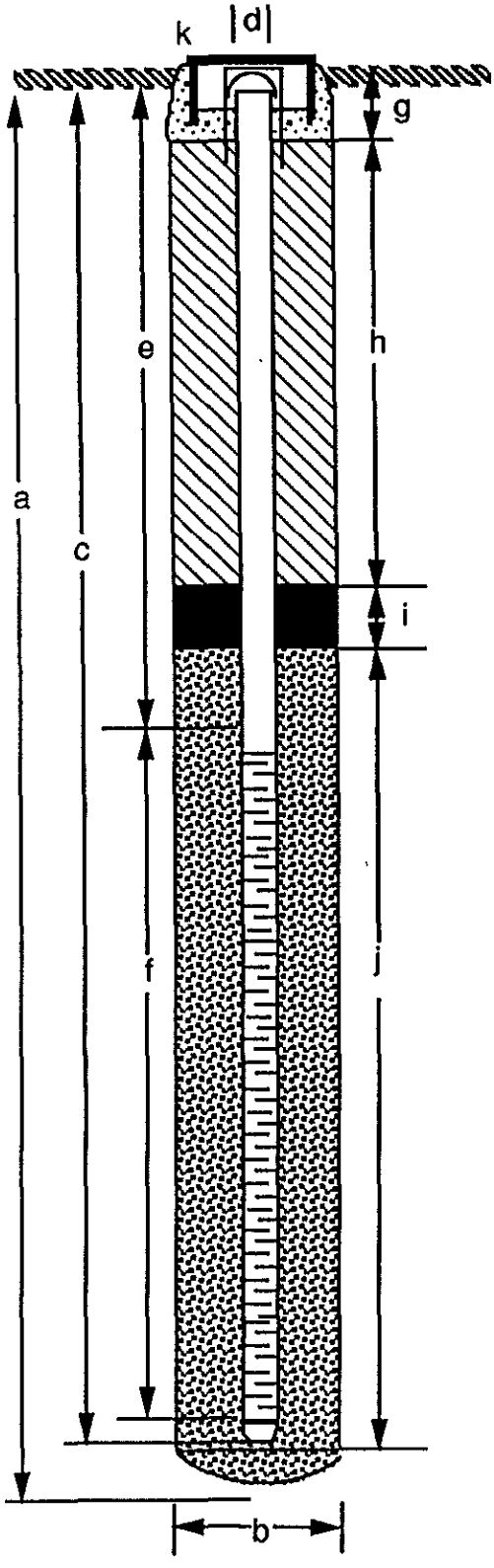
PROJECT NUMBER 1731G

BORING / WELL NO. MW-1

PROJECT NAME Monterey Mechanical

COUNTY Alameda

WELL PERMIT NO. 89502



EXPLORATORY BORING

a. Total Depth 25 ft.

b. Diameter 8 in.

Drilling method Hollow Stem Auger

WELL CONSTRUCTION

c. Casing length 25 ft.

Material PVC

d. Diameter 2 in.

e. Depth to top perforations 9 ft.

f. Perforated length 16 ft.

Perforated interval from 9 to 25 ft.

Perforation type Slotted

Perforation size 0.020 in.

g. Surface seal 1.0 ft.

Seal Material Concrete

h. Backfill 5.5 ft.

Backfill material Neat Cement

i. Seal 1.0 ft.

Seal Material Bentonite Sand

j. Gravel pack 17.5 ft.

Pack material #2/12 Sand

k. PVC locking cap, steel locking cover, pad lock, G-5 vault box

ensco environmental services, inc.

EXPLORATORY BORING LOG

ensco environmental services, inc.

PROJECT NAME: Monterey Mechanical
8275 San Leandro Street
Oakland, CA

BORING NO. MW-1

DATE DRILLED: 9/19/89

PROJECT NUMBER: 1731G

LOGGED BY: C.V.

DEPTH (ft.)	SAMPLE No	BLOWS/FOOT	UNIFIED SOIL CLASSIFICATION	SOIL DESCRIPTION	WATER LEVEL	OVA READING ppm
1				Asphalt 6", Baserock 6", gravelly sand, grading to a Sandy Clay, black (2.5Y 2/0), 5% coarse sand		
5	MW-1-1	12	CH	CLAY, black (2.5Y 2/0), stiff, high plasticity, moist		
7	MW-1-2	14		same as above, dark gray (2.5Y 4/0)		
8		11 (SP)		same as above, dark gray (5Y 4/1), mottled black (2.5Y 2/0), rootholes		
9				same as above, dark grayish brown (2.5Y 4/2)	▽	
10	MW-1-3	12	SM	SILTY SAND, olive brown (2.5Y 4/4), 20% silt, very fine to very coarse sand, trace fine gravel, medium dense, damp to wet		
12		8 (SP)	CH	CLAY, dark gray (5Y 4/1) mottled with black (2.5Y 2/0) and olive brown (2.5Y 4/4), trace coarse sand, high plasticity, stiff, damp on inside of sample, wet on outside of sample		
15		5 (SP)	SM	SILTY SAND, dark gray (5Y 4/1), 20-25% silt, very fine to fine sand, loose, upper 4" saturated (flowing), wet below saturated zone		

REVIEWED BY R.G./C.E.G.

EXPLORATORY BORING LOG

ensco environmental services, inc.

PROJECT NAME: Monterey Mechanical
8275 San Leandro Street
Oakland, CA

BORING NO. MW-1

DATE DRILLED: 9/19/89

PROJECT NUMBER: 1731G

LOGGED BY: C.V.

DEPTH (ft.)	SAMPLE No	BLOWS/FOOT	UNIFIED SOIL CLASSIFICATION	SOIL DESCRIPTION	WATER LEVEL	OVA READING ppm
22						
23						
24						
25		13 (SP)	CL	SILTY CLAY, dark greenish gray (5GY 4/1) , 30 to 35% silt, some very fine to medium sand on outside of sample, stiff, damp on inside of sample, wet on outside of sample		
26				Bottom of Boring = 25 feet		
27						
28						
29						
30				**Note:** (SP) Standard Penetration Sampler		
31						
32						
33						
34						
35						
36						
37						
38						
39						
40						
41						
42						

REVIEWED BY R.G./C.E.G.

APPENDIX D

GROUNDWATER SAMPLING PROTOCOL

ENSCO ENVIRONMENTAL SERVICES, INC.

GROUNDWATER SAMPLING PROTOCOL

GROUNDWATER SAMPLING PROTOCOL

Sampling of groundwater is performed by Ensco Environmental Services, Inc. (EES) sampling technicians. Summarized field sampling procedures are as follows:

1. Measurements of liquid surface in the well and depth of monitoring well.

2. Field check for presence of floating product.

3. Purge well prior to collecting samples.

4. Monitor groundwater for temperature, pH, and specific conductance during purging.

5. Collect samples using Environmental Protection Agency (EPA) approved sample collection devices, i.e., teflon or stainless steel bailers or pumps.

6. Transfer samples into laboratory-supplied EPA-approved containers.

7. Label samples and log onto chain-of-custody form.

8. Store samples in a chilled ice chest for shipment to a state-certified analytical laboratory.

Equipment Cleaning

All water samples are placed in precleaned laboratory-supplied bottles. Sample bottles and caps remain sealed until actual usage at the site. All equipment which comes in contact with the well or groundwater is thoroughly cleaned with a trisodium phosphate (TSP) solution and rinsed with deionized or distilled water before use at the site. This cleaning procedure is followed between each well sampled. Wells are sampled in approximate order of increasing contamination. If a teflon cord is used, the cord is cleaned. If a nylon or cotton cord is used, a new cord is used in each well All equipment blanks are collected prior to sampling. The blanks are analyzed periodically to ensure proper cleaning.

Water Level Measurements

Depth to groundwater is measured in each well using a sealed sampling tape or scaled electric sounder prior to purging or sampling. If the well is known or suspected of containing free-phase petroleum hydrocarbons, an optical interface probe is used to measure the hydrocarbon thickness and groundwater level. Measurements are collected and recorded to the nearest 0.01 foot.

Bailer Sheen Check

If no measurable free-phase petroleum hydrocarbons are detected, a clear acrylic bailer is used to determine the presence of a sheen. Any observed film as well as odor and color of the water is recorded.

Groundwater Sampling

Prior to groundwater sampling, each well is purged of "standing" groundwater. Either a bailer, hand pump, or submersible pump is used to purge the well. The amount of purging is dependent on the well yield. In a high yield formation, samples will be collected when normal field measurement, including temperature, pH, and specific conductance stabilize, provided a minimum of three well-casing volumes of water have been removed. Field measurements will be taken after purging each well volume. In low yield formations, the well is purged such that the "standing" water is removed and the well is allowed to recharge. (Normal field measurements will be periodically recorded during the purging process.) In situations where recovery to 80% of static water level is estimated, or observed to exceed a two hour duration, a sample will be collected when sufficient volume is available for a sample for each parameter. At no time will the well be purged dry so that the recharge rate causes the formation water to cascade into the well.

In wells where free-phase hydrocarbons are detected, the free-phase portion will be bailed from the well and the volume removed recorded. A groundwater sample will be collected if bailing reduces the amount of free-phase hydrocarbons to the point where they are not present in the well. Well sampling will be conducted using one of the aforementioned methods depending on the formation yield. However, if free-phase hydrocarbons persist throughout bailing, then groundwater samples will not be collected.

Groundwater sample containers are labeled with a unique sample number, location, product name and number, and date of collection. All samples are logged into a chain-of-custody form and placed in a chilled ice chest for shipment to a laboratory certified by the State of California Department of Health Services.

APPENDIX E

LABORATORY REPORTS
AND
CHAIN-OF-CUSTODY RECORDS

Trace Analysis Laboratory, Inc.
3423 Investment Boulevard #8 • Hayward, California 94545 *(415) 783-6960*

TAL

DATE: 10/4/89

LOG NO.: 7861

DATE SAMPLED: 9/19/89

DATE RECEIVED: 9/20/89

CUSTOMER: ENSCO Environmental Services Inc.

REQUESTER: Cyndi Virostko

PROJECT: No. 17316, Monterey Mechanical

Method and Constituent	Units	Sample Type: Soil Composite of MW-1-1,MW-1-2,MW-1-3 Concentration	Detection Limit
DHS Method:			
Total Petroleum Hydrocarbons as Gasoline	ug/kg	370	100
Modified EPA Method 8020:			
Benzene	ug/kg	< 7	7
Toluene	ug/kg	6.9	6
Xylenes	ug/kg	130	20
Ethyl Benzene	ug/kg	57	8

Dan Farah

Dan Farah, Ph.D.
Supervisory Chemist

DF:sam

CHAIN OF CUSTODY RECORD

PROJECT NO	PROJECT NAME
1731G	Monterey Mechanical

SAMPLERS (Signature): Cyndi Virostko

NO.	DATE	TIME	STATION AND LOCATION	TPHG	BTEX
MW-1-1	9/19/89	8:45 am	COMPOSITE	X	X
MW-1-2	9/19/89	8:51 am		X	X
MW-1-3	9/19/89	9:15 am		X	X

TEST REQUESTED

P.O. # 15281

LAB: Trace Analysis

TURN AROUND TIME

REMARKS: Use methods for BTEX and TPHG using purge and trap. Also composite all three samples together for one analysis.

RELINQUISHED BY:	DATE: TIME:	RECEIVED BY:
Cyndi Virostko		
RELINQUISHED BY:	DATE: 9/20/89 TIME: 11:01 AM	RECEIVED BY: Corrine Dellenbach

RELINQUISHED BY:	DATE: TIME:	RECEIVED BY:
RELINQUISHED BY:	DATE: TIME:	RECEIVED BY:

REMARKS:

REPORT TO: Cyndi Virostko

ensco environmental services, Inc.
41674 Christy Street
Fremont, C.A. 94538-3114
(415) 659-0404
Fax (415) 651-4677
Contr. Lic. No. 550205

FORM DATED 5-30 89

Trace Analysis Laboratory, Inc.
3423 Investment Boulevard, #8 • Hayward, California 94545 *(415) 783-6960*

TAL

DATE: 10/16/89

LOG NO.: 7922

DATE SAMPLED: 10/6/89

DATE RECEIVED: 10/9/89

CUSTOMER: ENSCO Environmental Services, Inc.

REQUESTER: Cyndi Virostko

PROJECT: No. 1731G, Monterey Mechanical

		Sample Type: Water	
		MW-1	
Method and Constituent	Units	Concentration	Detection Limit
DHS Method:			
Total Petroleum Hydrocarbons as Gasoline	ug/l	< 2	2
Modified EPA Method 8020:			
Benzene	ug/l	< 0.1	0.1
Toluene	ug/l	< 0.2	0.2
Xylenes	ug/l	< 0.4	0.4
Ethyl Benzene	ug/l	< 0.1	0.1

Stephen D. Boyle
Supervisory Chemist

SDB:slr

CHAIN OF CUSTODY RECORD

PROJECT NO	PROJECT NAME
1731G	Monterey Mechanical

SAMPLERS (Signature): John Monroe

NO.	DATE	TIME	STATION AND LOCATION	TPHG	BTEX
BB-1	10/6/89	9:37	2 pres VOA	X	X
MW-1	↓	10:08	"		

TEST REQUESTED

P.O. # 15431

LAB Trace Analysis

TURN AROUND TIME Normal

REMARKS

← Hold for Request

use purge + trap method

RELINQUISHED BY:	DATE:	TIME:	RECEIVED BY:
	10/9/89	11:05	Corrine Deelen for TA
RELINQUISHED BY:	DATE:	TIME:	RECEIVED BY:

RELINQUISHED BY:	DATE:	TIME:	RECEIVED BY:
RELINQUISHED BY:	DATE:	TIME:	RECEIVED BY:

REMARKS:

REPORT TO: Cyndi Virostko

FORM DATED 5-30-89

ensco environmental services, inc.
41674 Christy Street
Fremont, C.A. 94538-3114
(415) 659-0404
Fax (415) 651-4677
Conv. Lic No 550205