Applied GeoSystems 43255 Mission Blvd. Suite B Fremont, CA 94539 (415) 651-1906

REPORT
SUBSURFACE ENVIRONMENTAL INVESTIGATION
SOIL BORING AND
MONITORING WELL INSTALLATION
at
Former UNOCAL Station #5847
Windfeldt and East Avenue
Hayward, California

AGS Job No. 86109-1

Report prepared for

UNOCAL
2175 N. California Blvd.
Walnut Creek, California 94596

by

Glenn R. Dembroff
Project Geologist

Michael N. Clark
C.E.G. 1264

November 19, 1986

Applied GeoSystems 43255 Mission Blvd. Suite B Fremont, CA 94539 (415) 651-1906

November 19, 1986
86109-1

Mr. Paul Yamamoto
UNOCAL
2175 N. California Blvd.
Suite 650
Walnut Creek, California 94596

Subject: Transmittal of Report No. 86109-1, Subsurface Environmental Investigation, Soil Boring and Monitoring Well Installation at former UNOCAL station #5847, Hayward, California

Dear Mr. Yamamoto:

This report presents the results of our limited environmental investigation at the above-referenced site. The investigation included the drilling of four boreholes and the construction of two two-inch diameter monitoring wells.

Due to adverse conditions at the site, we were unable to drill four borings to ground water. Four boring attempts were terminated due to refusal prior to reaching ground water. We feel that the refusal may be due to slabs of asphalt and concrete used as backfill after the tanks and piping were removed from the site prior to this investigation.

Laboratory analyses of soils analyzed from the borings at the site show non-detectable to very low concentrations of total hydrocarbons. The water analyses show low aromatic hydrocarbon (BETX) concentrations. Although the benzene level in water collected from MW-1 is above Environmental Protection Agency recommended maximum concentrations for drinking water, it is our understanding, based on conversations with personnel from the Alameda County of Public Works and the East Bay Municipal Water District, that the shallow aquifers in the vicinity of the site are not used as a drinking water source.

Because some product odor was detected in soil samples from the borings and the water samples collected from the wells, we recommend that the water of MW-1 and MW-2 be subjectively monitored monthly to assess possible changes in hydrocarbon concentration. We further recommend that this monitoring be conducted for a period of six months to evaluate possible contaminant trends. At the end of the six month period, the wells should be purged and resampled and analyzed for total

hydrocarbon and hydrocarbon constituent levels. If levels are found to be comparable to the analytical results presented in this study, we recommend that the wells be destroyed in accordance with County and State well destruction standards. Because it is our understanding that underground storage tanks and product pipelines have been removed from the site, long term monitoring of the water at the site is probably not warranted.

Applied GeoSystems can conduct the monthly subjective analyses which would include field examination of water samples. A relatively undisturbed water sample collected at the air/water interface in each well will be examined for evidence of floating product, petroleum odor, sheen, and emulsion. Water samples will be collected for laboratory analysis after six months. The wells will be purged of approximately three to four well volumes before collecting the laboratory samples and the sample will be collected from below the air/water interface in the well in order to be representative of the formation water. These samples will be analyzed by EPA method 602 for total hydrocarbons and aromatic hydrocarbons. The information obtained from the six-month sample may show a trend for the ground water quality at the site.

The source of the hydrocarbon contamination found in the soil borings and well at the site may be surface spillage. The future subjective and laboratory analyses recommended in this report should supply data to evaluate whether or not the source of product contamination has been removed.

Because of difficulty in borehole drilling due to subsurface debris, it is possible that the backfilling of tank pit cavities and product line trenches was not performed with engineered control for compaction. Compaction studies may be warranted at the site prior to any future construction.

We recommend that UNOCAL submit a copy of this report to Ms. Suzanne Larson, Hazardous Materials Specialist of the Hayward Fire Department, 22300 Foothill Boulevard, Hayward, CA 94541. If you have any questions regarding the content of this report, please do not hesitate to call.

Sincerely,
Applied GeoSystems

Glenn R. Dembroff
Project Geologist

REPORT
SUBSURFACE ENVIRONMENTAL INVESTIGATION
SOIL BORING AND MONITORING WELL INSTALLATION
at Former UNOCAL Station #5847
Hayward, California
for: UNOCAL

INTRODUCTION

The following report describes the work performed to drill four soil borings and install two ground water monitoring wells near underground storage tanks at the former UNOCAL Service Station located on the corner of Windfeldt and East Avenue, Hayward, California. UNOCAL contracted Applied GeoSystems to evaluate potential subsurface soil and ground water hydrocarbon contamination at the site. The investigation was requested by UNOCAL to evaluate hydrocarbon contamination for a possible real estate sale. This report describes the work elements conducted during the investigation, presents our interpretations of the data collected, and presents recommendations for future work.

SITE DESCRIPTION

The former UNOCAL service station is located on the southeast corner of Windfeldt and East Avenue in Hayward as shown on the Site Vicinity Map, Plate P-1. Two 10,000 gallon underground motor fuel storage tanks and one 300 gallon waste oil tank were buried at the site. The two motor fuel tanks were located in a cluster near the northwest corner of the property and the waste oil tank was located on the northern side of the site. The tanks and associated piping were removed from the site prior to Applied GeoSystems' involvement. The structures at the site were removed prior to this investigation and the site is presently a vacant lot covered with soil. No asphalt or concrete pads were present. The Generalized Site Plan, Plate P-2, shows the former service station property and approximate locations of removed facilities.

FIELD WORK

A geologist from Applied GeoSystems observed soil boring drilling and well construction on November 6, 1986. Four borings were drilled with a Mobile B-61 truck-mounted drill rig operated by Datum Exploration, Inc. of Pittsburg, California. Steam-cleaned, 8-inch diameter, continuous flight hollow-stem augers were used to drill boring B-1 to 15 feet 4 inches, boring B-2 to 37 feet,

boring B-4 to 22 feet, and boring B-6 to 41 feet. Borings B-3 and B-5 were terminated at shallow depths due to refusal and were abandoned. Ground water was encountered in borings B-2 and B-6. Depth to ground water in boring B-2 was approximately 21 feet 6 inches after drilling and later rose to 21 feet 4 inches. Monitoring well MW-1 was then installed in boring B-2. Ground water was encountered at approximately 33 feet in boring B-6 after drilling and later rose to 23 feet 2 inches. Monitoring well MW-2 was installed in boring B-6. Ground water was not encountered in borings B-1 or B-4 prior to the depth of refusal. Locations of the borings and monitoring wells at the site are shown on the Generalized Site Plan.

The inferred downgradient direction of ground water flow from the two-tank cluster is to the east-northeast. The gradient was inferred from the local topographic slope that was observed in the general vicinity of the site. Boring B-2 (MW-1) was drilled near the lowest elevation on the lot, downgradient from the two tank cluster. Boring B-6 (MW-2) was drilled downgradient from the waste oil tank. Due to the presence of subsurface debris at the site, we were unable to drill an upgradient well.

Drilling was terminated due to refusal on four occasions by encountering large fragments of concrete, metal objects, and other hard, discarded materials. Upon refusal, the drilling rig was moved approximately five feet and the boring retried.

Soil samples were collected from the boreholes with a modified California split spoon sampler. Descriptions of earth materials encountered in borings B-1, B-2, B-4, and B-6 are presented on the Boring Logs, Plates P-4 through P-9. Plate P-3 gives a summary of the Unified Soils Classification System used to identify the soils. The earth materials encountered at this site consist of silt with some sand and clay. Drilling was terminated due to refusal in borings B-1 and B-4, as well as in two additional boring attempts. Termination was caused by the presence of concrete and asphalt slabs in the subsurface. The presence of these pieces of asphalt and concrete may be due to the backfilling the tank pits and product line trenches with on-site construction materials during station destruction prior to this investigation.

Soil cuttings excavated from the borings were subjectively analyzed as having small concentrations of hydrocarbon contamination and were used to backfill boreholes not used for monitoring well construction. Cuttings, from boreholes used for

monitorng well construction, were spread on the site. Laboratory analyses show hydrocarbon levels in the soil to be less than 5 parts per million. Because of the minor volume of soil and low levels of contamination, no permits for aeration were necessary according to the Bay Area Regional Air Quality Control Board guidelines.

SOIL SAMPLING PROCEDURE

Two soil samples were collected and described from boring B-1, seven from boring B-2, four from boring B-4, and eight from boring B-6 during drilling. These samples, labeled as indicated on the Boring Logs, were collected at five-foot intervals from the ground surface to total depth. Soil samples were collected by advancing the boring to a point immediately above the sampling depth and then driving a modified California split spoon sampler (2-1/2 inch inside diameter) into the soil through the hollow center of the auger. The sampler was driven 12 inches with a standard 140 pound hammer repeatedly dropped 30 inches. The number of blows to drive the sampler each six inches was counted and recorded to evaluate the relative consistency of soil materials.

The samples were removed from the sampler, immediately sealed in their brass sleeves with aluminum foil, plastic caps, and air-tight tape, and were labeled and placed in iced storage. The samples were delivered to Applied GeoSystems' laboratory for analytical testing. The Chain-of-Custody form for samples tested is included in the Appendix of this report.

MONITORING WELL CONSTRUCTION AND BOREHOLE DESTRUCTION

Two ground water monitoring wells were constructed at the site in soil borings B-2 and B-6. The wells, MW-1 and MW-2, were completed with two-inch inside diameter (I.D.) polyvinyl chloride (PVC) casing. The casing consists of 0.020-inch machine-slotted PVC set from the total depth of the wells to approximately five feet above the water table. Blank PVC casing was set from the top of the screened casing to the surface. All casing joints are threaded and no glues, chemical cements, or solvents were used to join casing sections. The top of the casing is covered with a slip cap and the bottom has a threaded end plug.

The annular space of the wells were backfilled with #3 Monterey sand from total depth to approximately two feet above the screened casing. A bentonite plug of approximately one to two feet was placed above the sand as a seal against cement entering

the sand pack, and the remaining annulus was backfilled with neat cement to grade. Graphic representation of the well constructions is shown on the right margin of the Boring Log.

A cast-iron utility box was placed over each well head and concreted into place flush with the surrounding surface grade. The utility box has a water-tight threaded seal to protect against surface water infiltration and requires a specially-designed spanner wrench to open that reduces the possibility of well vandalism or accidental disturbance.

WATER SAMPLING PROCEDURE

Subjective water samples were collected from the two monitoring wells by gently lowering a teflon bailer approximately halfway through the air/water interface. The sample was retrieved and inspected for floating product, sheen, emulsion, and product odor. No subjective evidence of floating product, sheen, emulsion, or product odor was detected in the sample.

The wells were developed by air- and water-jetting and purged by pumping approximately five well volumes of liquid. Following the purge period, and after well recovery to static water level, water samples were collected using a laboratory-cleaned teflon bailer. The bailer was lowered through the air/water interface

in order to retrieve a sample representative of the formation water.

The samples were transferred to clean finger vials, made acidic by adding hydrochloric acid, immediately sealed with a teflon-lined cap, and placed in iced storage for transport to the analytical laboratory for testing. The Chain-of-Custody form for the water sample is included in the Appendix of this report.

ANALYTICAL RESULTS

Seven soil samples (S-15-B2, S-20-B2, S-10B4, S-20-B4, S-15-B6, S-25-B6, and S-30-B6) were analyzed for total volatile hydrocarbons (TVH) using gas chromatography with flame ionization detection. No soil sample was retrieved from boring B-1 because it was terminated, due to refusal, above the 15-foot depth. Subjective analysis of the B-1 drill cuttings showed no product odor associated with the borehole.

Because boring B-6 was drilled in close proximity to the location of the waste oil tank, soil samples from this boring were analyzed for total volatile hydrocarbons (TVH) and total purgeable hydrocarbons (TPH), high boiling point hydrocarbons. Two water samples were analyzed for purgeable hydrocarbons using gas chromatography with photo- and flame ionization detection

(EPA Method 602). The results of the chemical analyses are presented in Table 1 and in the Appendix of this report.

TABLE 1
RESULTS OF CHEMICAL ANALYSES
OF SOIL AND WATER SAMPLES
UNOCAL Station
Hayward, California

Soil:

Identifier	TVH	TPH
S-15-B2	0.4	-
S-20-B2	ND	-
S-10-B4	3.11	-
S-20-B4	ND	-
S-15-B6	0.2	ND
S-25-B6	0.2	ND
S-30-B6	ND	ND

Water:

Identifier	THC	B	T	E	X
W-30-MW1	1.378	0.014	0.007	0.102	0.352
W-32-MW2	0.084	ND	0.003	0.002	0.013

Results in milligrams/liter (mg/L) = parts per million (ppm)
TVH: Total volatile hydrocarbons
TPH: Total purgeable hydrocarbons (high boiling point)
ND = Non-detectable
Detection limits: 0.1 ppm (TVH in soil)
5.0 ppm (TPH in soil)
0.001 ppm (water)

The laboratory results show that the soil samples collected from the borings contain very low total hydrocarbon contamination. The

laboratory analysis of water from MW-1 found low concentrations of total hydrocarbons and hydrocarbon constituents. Water analyzed from MW-2 showed non-detectable levels of benzene and very low levels of total hydrocarbons and hydrocarbon constituents.

CONCLUSIONS AND RECOMMENDATIONS

Laboratory analyses of soils analyzed from the borings at the site show non-detectable to very low concentrations of total hydrocarbons. The water analyses show low aromatic hydrocarbon (BETX) concentrations. The benzene level in water collected from MW-1 is above Environmental Protection Agency recommended maximum concentrations for drinking water. However, it is our understanding, based on conversations with personnel from the Alameda County Department of Public Works and the East Bay Municipal Water District, that the shallow aquifers in the vicinity of the site are not used as a drinking water source. Because drinking water is imported in the vicinity of the site, we feel that the level of benzene contamination would not pose a significant threat to ground water resources.

Because some product odor was detected in soil samples from the borings and water from monitoring wells were found to be

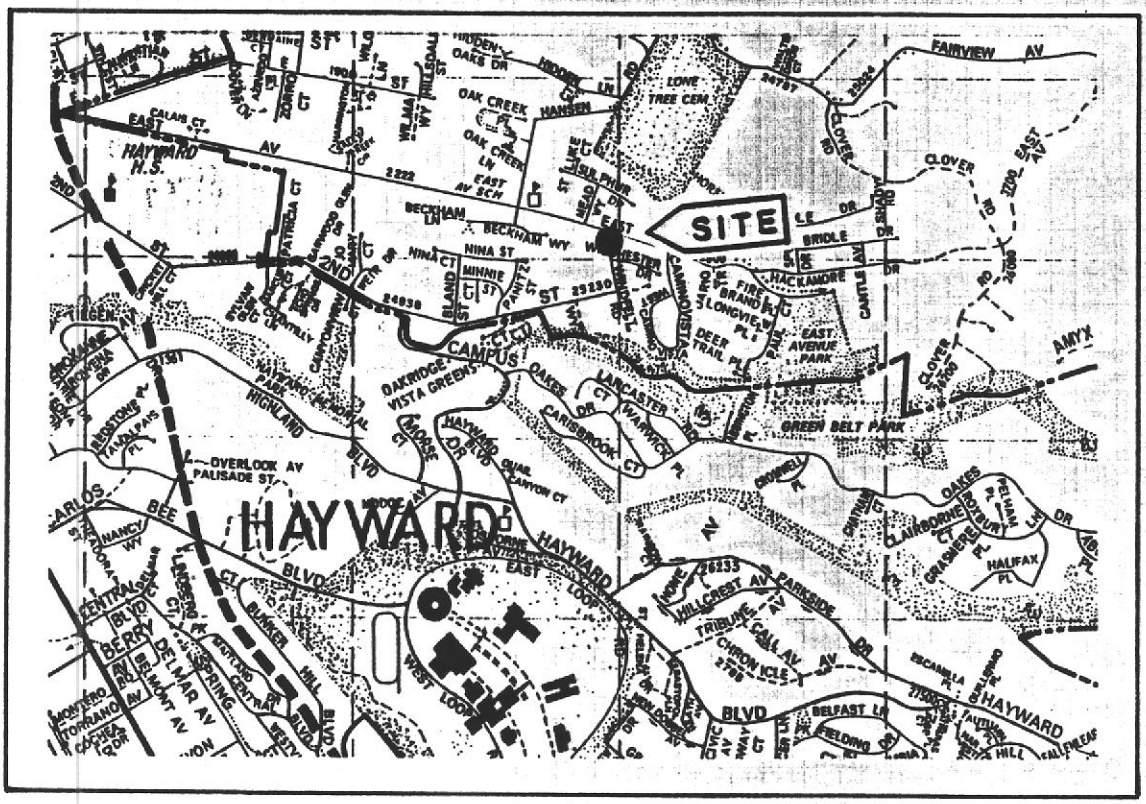
collected from below the air/water interface in the well in order to be representative of the formation water. These samples will be analyzed by EPA method 602 for total hydrocarbons and aromatic hydrocarbons. The information obtained from the six-month sample may show a trend for the ground water quality at the site.

The source of the hydrocarbon contamination found in the soil borings and well at the site may be surface spillage. The future subjective and laboratory analyses recommended in this report should supply data to evaluate whether or not the source of product contamination has been removed.

Because of the difficulty in borehole drilling due to subsurface debris, it is possible that the backfilling of tank pit cavities and product line trenches was not performed with engineered control for compaction. Compaction studies may be warranted at the site prior to future construction.

LIMITATIONS

This report was prepared in accordance with generally accepted standards of environmental geological practice in California at the time this investigation was performed. Evaluation of geologic conditions at the site for the purpose of this investigation is made from a limited number of observation points. Subsurface conditions may vary away from the data points available. Additional work, including further subsurface investigation, can reduce the inherent uncertainties associated with this type of investigation.



Approximate Scale

1/4 0 1/2 1

MILES

N

Source: Thomas Bros. Maps, Alameda Co., 1985

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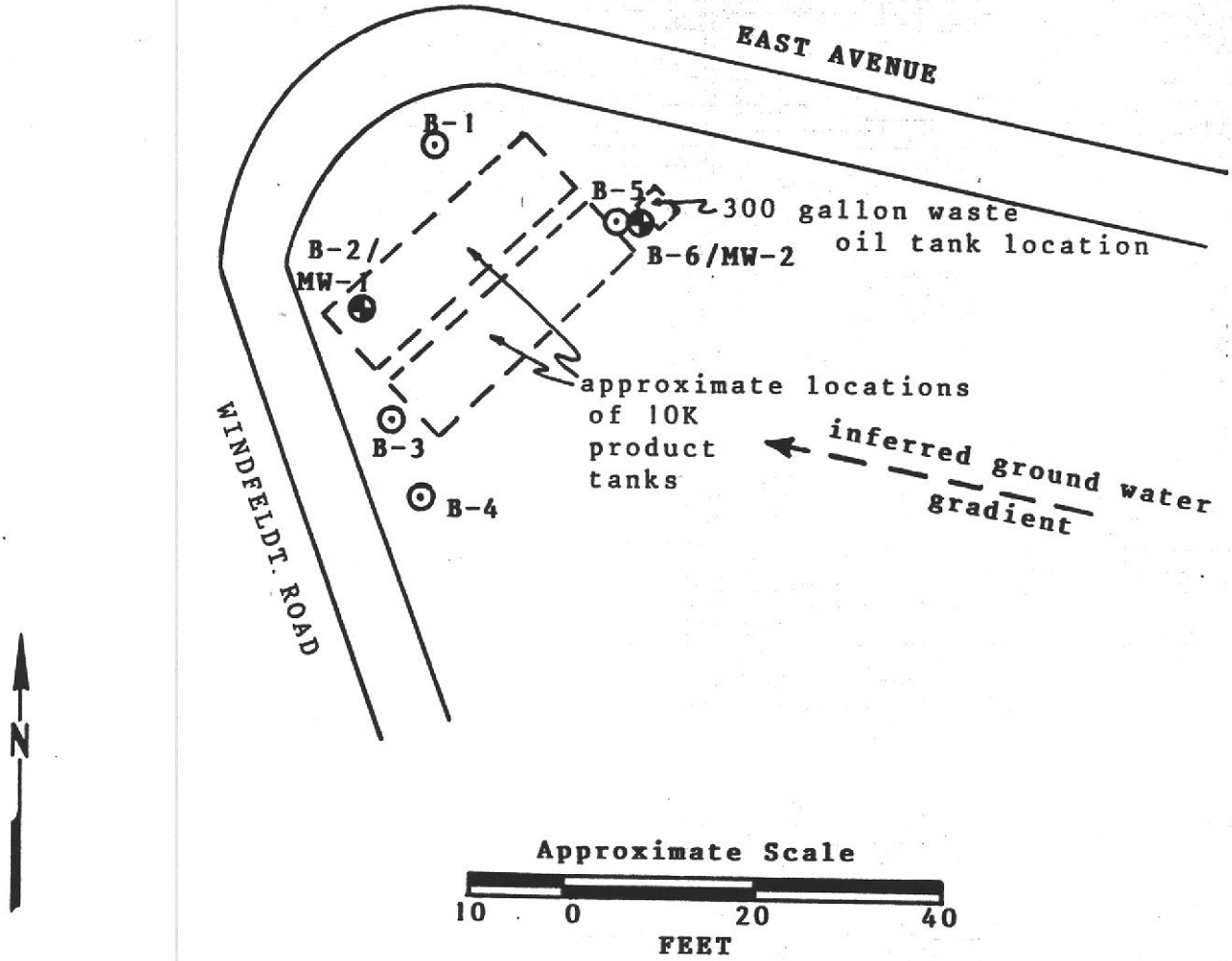
SITE VICINITY MAP

Former UNOCAL Station #5847

Hayward, California

PLATE

P-1



Source: UNOCAL Corp.

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GENERALIZED SITE PLAN

Former UNOCAL Station #5847
Hayward, California

PLATE

P-2

UNIFIED SOIL CLASSIFICATION SYSTEM

MAJOR DIVISIONS				TYPICAL NAMES
COARSE GRAINED SOILS (MORE THAN HALF IS LARGER THAN #200 SIEVE)	GRAVELS (MORE THAN HALF COARSE FRACTION IS LARGER THAN NO. 4 SIEVE SIZE)	CLEAN GRAVELS WITH LITTLE OR NO FINES	GW	WELL GRADED GRAVELS, GRAVEL - SAND MIXTURES
			GP	POORLY GRADED GRAVELS, GRAVEL - SAND MIXTURES
		GRAVELS WITH OVER 12% FINES	GM	SILTY GRAVELS, POORLY GRADED GRAVEL - SAND - SILT MIXTURES
			GC	CLAYEY GRAVELS, POORLY GRADED GRAVEL - SAND - CLAY MIXTURES
	SANDS (MORE THAN HALF COARSE FRACTION IS SMALLER THAN NO. 4 SIEVE SIZE)	CLEAN SANDS WITH LITTLE OR NO FINES	SW	WELL GRADED SANDS, GRAVELLY SANDS
			SP	POORLY GRADED SANDS, GRAVELLY SANDS
		SANDS WITH OVER 12% FINES	SM	SILTY SANDS, POORLY GRADED SAND - SILT MIXTURES
			SC	CLAYEY SANDS, POORLY GRADED SAND - CLAY MIXTURES
FINE GRAINED SOILS (MORE THAN HALF IS SMALLER THAN #200 SIEVE)	SILTS AND CLAYS (LIQUID LIMIT LESS THAN 50)		ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS, OR CLAYEY SILTS WITH SLIGHT PLASTICITY
			CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
			OL	ORGANIC CLAYS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS (LIQUID LIMIT GREATER THAN 50)		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS, ELASTIC SILTS
			CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
			OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS			PT	PEAT AND OTHER HIGHLY ORGANIC SOILS

Depth through which sampler is driven

Relatively undisturbed sample (Calif. Modified Sampler)

Disturbed sample

Bag or grab sample

Ground water level observed in boring

I-2 Sample No.

Sand pack

Bentonite annular seal

Neat cement annular seal

PVC blank

Machine-slotted PVC

BLOW/FT. REPERSENTS THE NUMBER OF BLOWS OF A 140-POUND HAMMER FALLING 30 INCHES TO DRIVE THE SAMPLER THROUGH THE LAST 12 INCHES OF AN 18 INCH PENETRATION.

LINES SEPARATING UNITS ON THE LOG REPRESENT APPROXIMATE BOUNDRIES ONLY. ACTUAL BOUNDRIES MAY BE GRADUAL. LOGS REPRESENT SUBSURFACE CONDITIONS AT THE BORING LOCATION AT THE TIME OF DRILLING ONLY.

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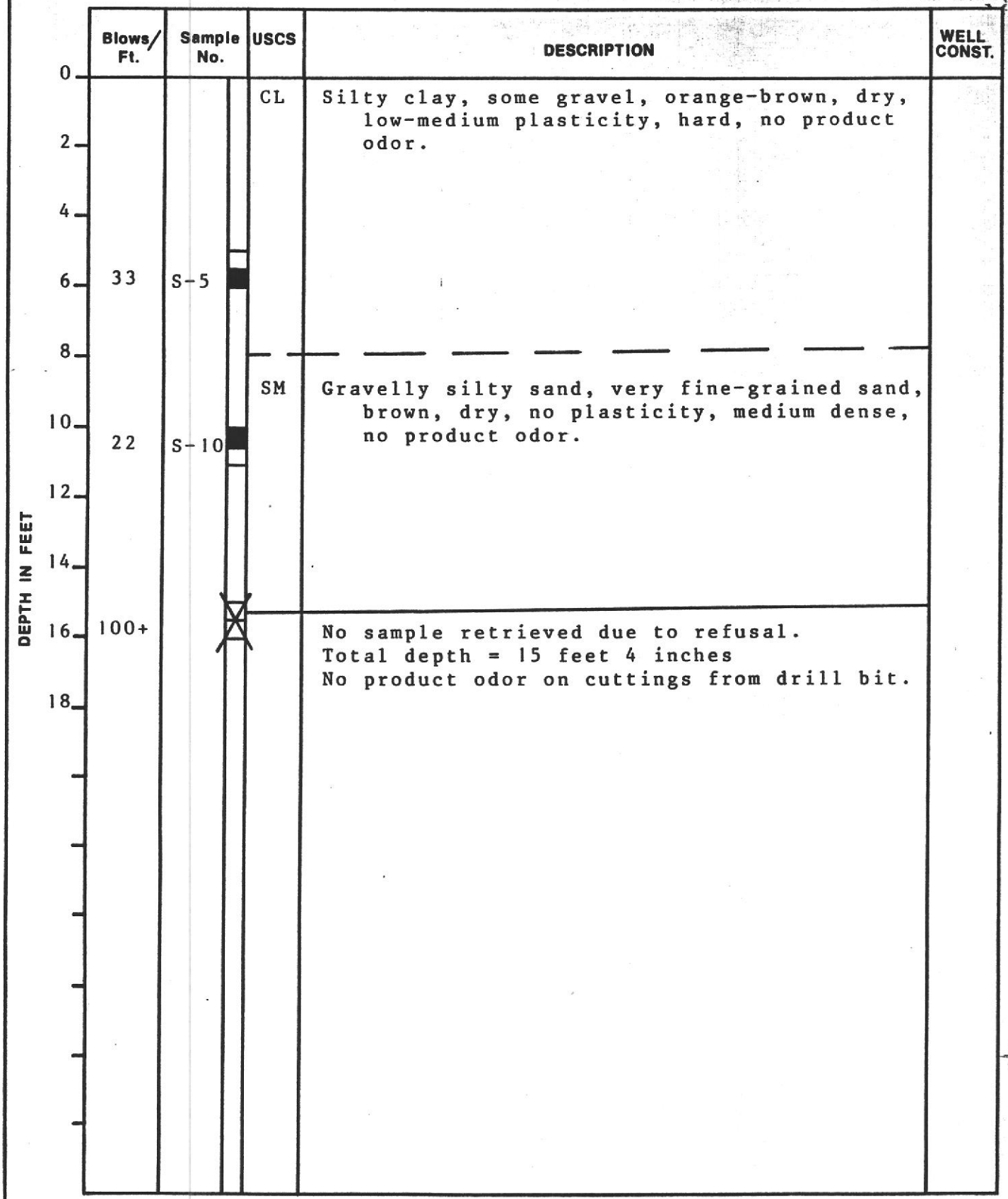
UNIFIED SOIL CLASSIFICATION SYSTEM AND SYMBOL KEY
Former UNOCAL Station #5847
Hayward, California

PLATE
P-3



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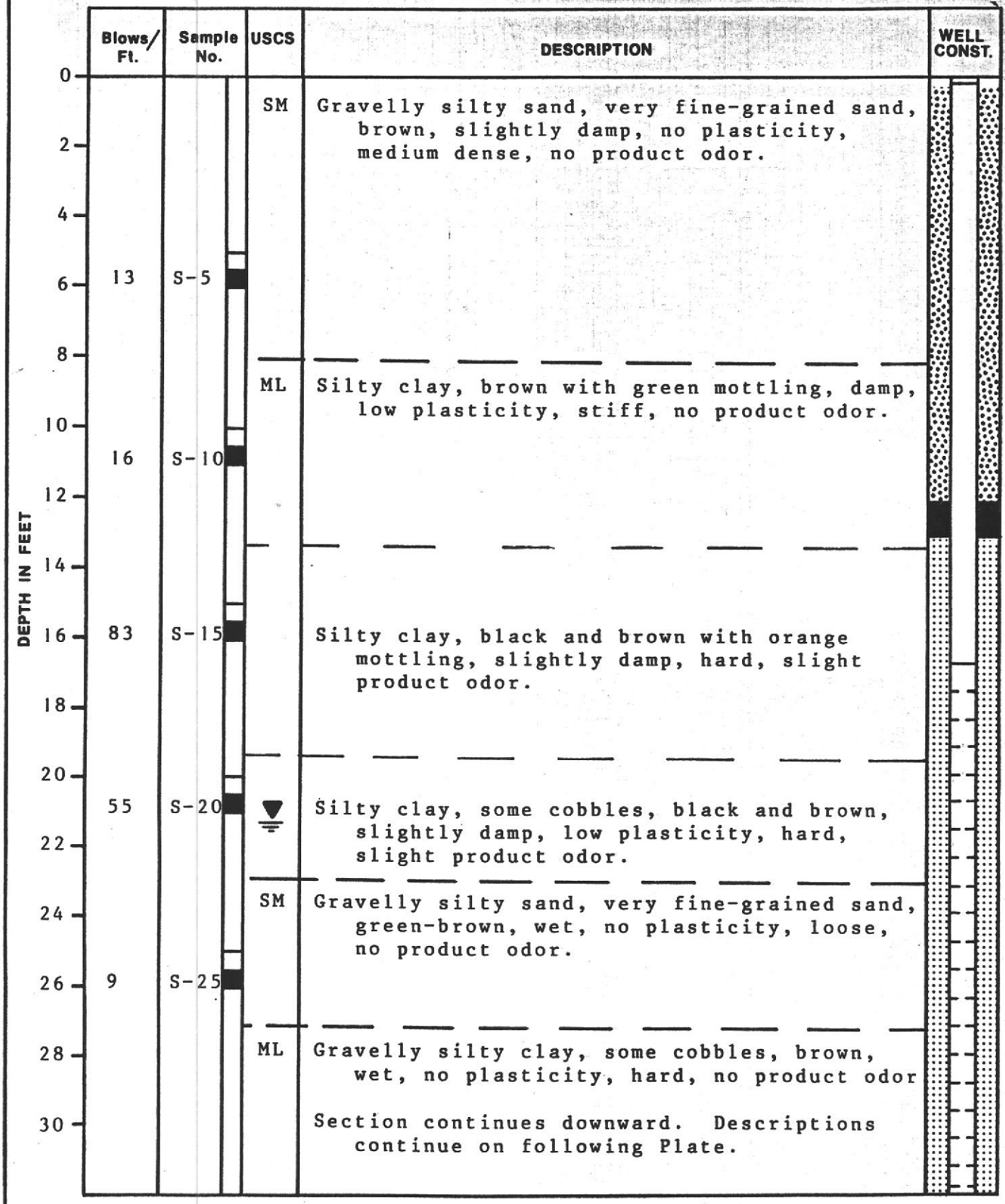
PROJECT NO. 86109-1

LOG OF BORING B-1

Former UNOCAL Station #5847
Hayward, California

PLATE

P-4



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LOG OF BORING B-2/MW-1

Former UNOCAL Station #5847
Hayward, California

PLATE P-5

PROJECT NO. 86109-1

DEPTH IN FEET	Blows/ Ft.	Sample No.	USCS	DESCRIPTION	WELL CONST.
30	100+		ML	Gravelly silty clay, some cobbles, brown, wet, no plasticity, hard, no product odor	
32	63	S-30			
34					
36	100+	S-35		Gravelly sandy clay	
40				Total depth = 37 feet. Boring terminated at sufficient depth for monitoring well construction.	

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LOG OF BORING B-2/MW-1

Former UNOCAL Station #5847
Hayward, California

PLATE P-6

PROJECT NO. 86109-1

DEPTH IN FEET	Blows/ Ft.	Sample No.	USCS	DESCRIPTION	WELL CONST.
0			ML	Gravelly silt, orange-brown, dry, no plasticity, hard, slight to moderate product odor.	
2					
4					
6	77	S-5			
8					
10	100+	S-10		Gravelly silt, some cobbles, moderate product odor.	
12					
14					
16	57	S-15		Gravelly silt, slight product odor.	
18					
20	100+	S-20		Gravelly silt, moist, no product odor.	
22				Total depth = 22 feet. Boring terminated due to refusal. No ground water encountered.	

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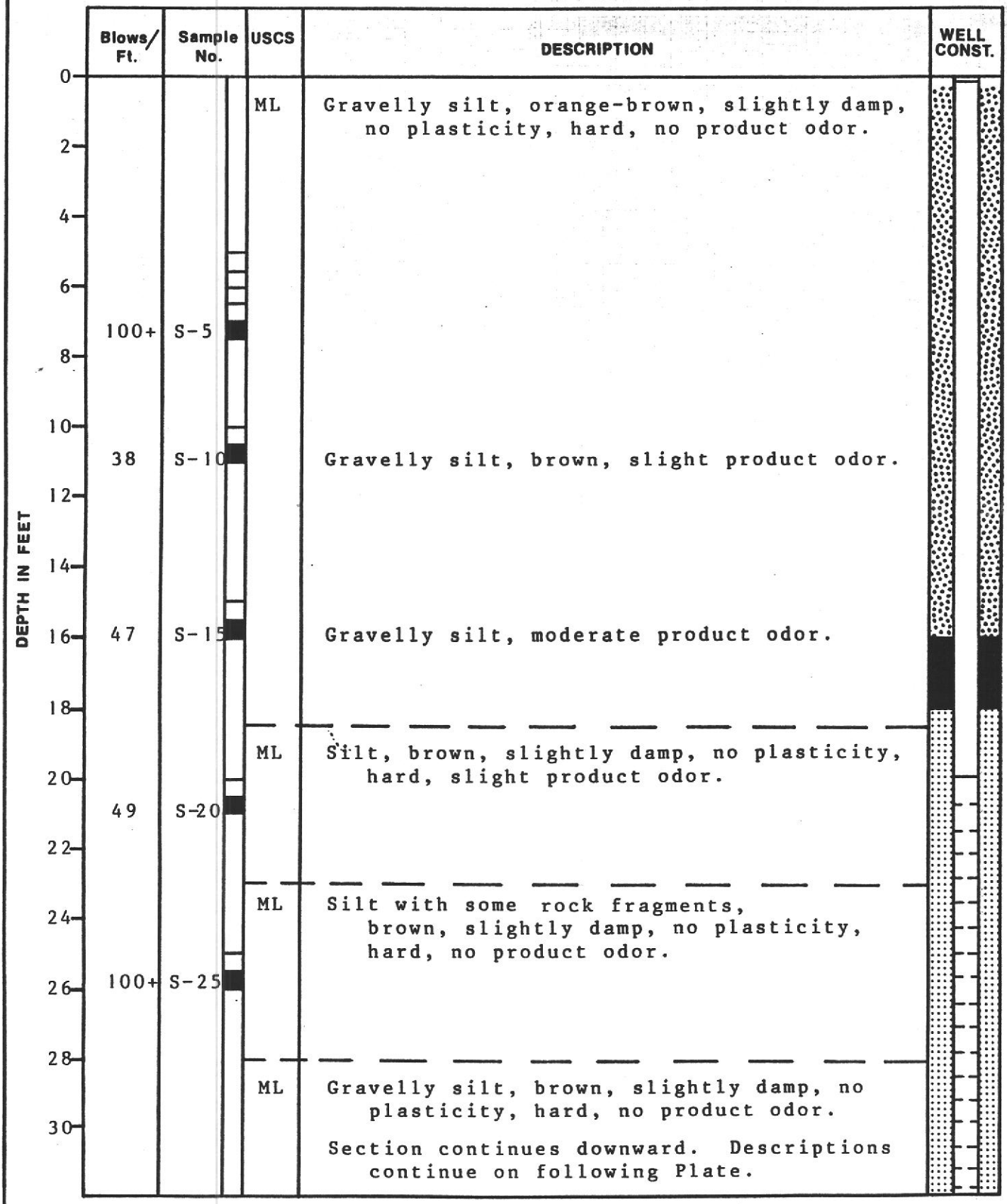
LOG OF BORING B-4

Former UNOCAL Station #5847
Hayward, California

PLATE P-7

PROJECT NO. 86109-1



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PROJECT NO. 86109-1

LOG OF BORING B-6/MW-2

Former UNOCAL Station #5847
Hayward, California

PLATE

P-8

DEPTH IN FEET	Blows/ Ft.	Sample No.	USCS	DESCRIPTION	WELL CONST.
30	94	S-30	ML	Gravelly silt, brown, slightly damp, no plasticity, hard, no product odor.	
32					
34			CL	Gravelly clayey silt, brown-black, moist, low to medium plasticity, hard, no product odor.	
36	100+	S-35			
38					
40			ML	Silt with rock fragments, brown-black, very moist, no plasticity, hard, no product odor.	
42				Total depth = 41 feet. Boring terminated at sufficient depth for monitoring well construction.	

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LOG OF BORING B-6/MW-2

Former UNOCAL Station #5847
Hayward, California

PLATE P-9

PROJECT NO. 86109-1

APPENDIX

CHAIN OF CUSTODY RECORD

Applied GeoSystems
43255 Mission Blvd. Suite B Fremont, CA 94539 (415) 651-

SAMPLER (signature):

Phone: (415) 551-1906

LABORATORY: Applied GeoSystems

TURNAROUND TIME: 24 hrs.

Attention: Tia Tran

Phone No. (415) 551-1906

SHIPPING INFORMATION:

Shipper

Address

Date Shipped

Service Used

Airbill No. Cooler No.

Relinquished by: (signatures)	Received by: (signatures)	Date	Time
	Received for laboratory by:	11-11-86	10:00

LABORATORY SHOULD SIGN UPON RECEIPT AND RETURN A COPY OF THIS FORM WITH THE LABORATORY RESULTS

Sample No.	Site Identification	Date Sampled	Analyses Requested	Sample Condition Upon Receipt
W-30-MW1	86109-1	11-10-86	THC + BTEX	ICED
W-30-MW2	86109-1	11-10-86	THC + BTEX	ICED

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RECORD OF ANALYSIS

Date 11-17-86

Applied GeoSystems
43255 Mission Blvd.
Fremont, CA. 94539

Attention: Glenn R. Dembroff

Date Received: 11-11-86
Date Analyzed: 11-11-86

Laboratory# 8611W017

Procedure:

The water samples referenced on the attached Chain-of-Custody were analyzed for the presence and concentration of Benzene, Ethyl-Benzene, Toluene, and Xylenes (BETX) and for Total Hydrocarbons (THC) by EPA method 602. The samples were concentrated on a Tekmar LSC-2 and ALS automatic sampler prior to injection into a 5890 Hewlett Packard gas chromatograph fitted with a Photo-Ionization detector (PID) and a Flame Ionization detector (FID). The limit of detection for these samples is 0.001 milligrams/liter (parts per million = ppm).

The results are presented in the table below:

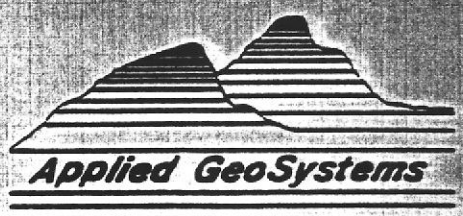
SAMPLE	SITE	BENZENE	ETHYL BENZENE	TOLUENE	TOTAL XYLENES	THC
W-30-MW1	86109-1	0.014	0.102	0.007	0.352	1.378
W-32-MW2	86109-1	ND	0.002	0.003	0.013	0.084

Results in milligrams/liter (parts per million = ppm).
ND=Non Detectable - Less than 0.001 milligrams/liter (ppm).

Tia Tran, Chemist

Applied GeoSystems is a State of California, Department of Health Services Certified Hazardous Waste Testing Laboratory. Certification No. 153.

CHAIN OF CUSTODY RECORD



43255 Mission Blvd. Suite B Fremont, CA 94539 (415) 651

SAMPLER (signature):

Phone: (415) 651-1906

LABORATORY: APPLIED GEO SYSTEMS

TURNAROUND TIME: 24 hrs

Attention: TIA TRAN

Phone No. (415) 651-1906

SHIPPING INFORMATION:

Shipper

Address

Date Shipped

Service Used

Airbill No. Cooler No.

Relinquished by: (signatures)	Received by: (signatures)	Date	Tim
	Received for laboratory by:	11-11-86	10:3

LABORATORY SHOULD SIGN UPON RECEIPT AND RETURN A COPY OF THIS FORM WITH THE LABORATORY RESULTS

Sample No.	Site Identification	Date Sampled	Analyses Requested	Sample Condition Upon Receipt
S-15-B2	86109-1	11-6-86	THC	ICED
S-20-B2	86109-1	11-6-86	THC	ICED
S-10-B4	86109-1	11-7-86	THC	ICED
S-20-B4	86109-1	11-7-86	THC	ICED

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RECORD OF ANALYSIS

Date 11-17-86

Applied GeoSystems
43255 Mission Blvd.
Fremont, CA. 94539

Attention: Glenn R. Dembroff

Date Received: 11-11-86
Date Analyzed: 11-11-86

Laboratory# 8611S019

Procedure:

The soil samples referenced on the attached Chain-of-Custody were analyzed for Total Hydrocarbons (THC) by EPA method 8020. The samples were concentrated on a Tekmar LSC-2 and ALS automatic sampler prior to injection into a 5890 Hewlett Packard gas chromatograph fitted with a Flame Ionization detector (FID). The limit of detection for these sample is 0.1 milligrams/kilogram (parts per million = ppm).

The results are presented in the table below:

SAMPLE	SITE	TOTAL HYDROCARBONS
S-15-B2	86109-1	0.4
S-20-B2	86109-1	ND
S-10-B4	86109-1	3.1
S-20-B4	86109-1	ND
S-15-B6	86109-1	0.2
S-25-B6	86109-1	0.2
S-30-B6	86109-1	ND

Results in milligrams/kilogram (parts per million = ppm).
ND=Non Detectable - Less than 0.1 milligrams/kilogram (ppm).

Tia Tran, Chemist

Applied GeoSystems is a State of California, Department of Health Services Certified Hazardous Waste Testing Laboratory.
Certification No. 153.

CHAIN OF CUSTODY RECORD

Applied GeoSystems
43255 Mission Blvd. Suite B Fremont, CA 94539 (415) 651-1

SAMPLER (signature):

Phone: (415) 651-1906

LABORATORY: APPLIED GEOSYSTEMS

TURNAROUND TIME: 24 hrs

Attention: TIA TRAN

Phone No. (415) 651-1906

SHIPPING INFORMATION:

Shipper

Address

Date Shipped

Service Used

Airbill No. Cooler No.

Relinquished by: (signatures)	Received by: (signatures)	Date	Time
	Received for laboratory by:	11-11-86	10:00

LABORATORY SHOULD SIGN UPON RECEIPT AND RETURN A COPY OF THIS FORM WITH THE LABORATORY RESULTS

Sample No.	Site Identification	Date Sampled	Analyses Requested	Sample Condition Upon Receipt
S-15-B6	86109-1	11-7-86	THC AND WASTE OIL	ICED
S-25-BL	86109-1	11-7-86	THC AND WASTE OIL	ICED
S-30-B6	86109-1	11-7-86	THC AND WASTE OIL	ICED

Applied GeoSystems 43255 Mission Blvd. Suite B Fremont, CA 94539 (415) 651-1906

RECORD OF ANALYSIS

Date 11-19-86

Applied GeoSystems
43255 Mission Blvd.
Fremont, CA. 94539

Attention: Glenn R. Dembroff

Date Received: 11-11-86
Date Analyzed: 11-11-86

Laboratory# 8611DS01

Procedure

The soil samples were analyzed according to the procedure in Guideline for Addressing Fuel Leaks, September 1985, by California Regional water Quuality control Board, for high boiling point hydrocarbon. This procedure use EPA method 3550 for soil extraction. The samples were injection into a 5890 Hewlett Packard gas chromatograph fitted with a Flame Ionization detector (FID). The limit of detection for these samples is 5 milligrams/kilogram (parts per million = ppm).

The results are presented in the table below:

SAMPLE	SITE	TOTAL HYDROCARBONS
S-15-B6	86109-1	ND
S-25-B6	86109-1	ND
S-30-B6	86109-1	ND

Results in milligrams/kilogram (parts per million = ppm).
ND=Non Detectable - Less than 5 milligrams/kilogram (ppm).

Tia Tran, Chemist

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