

Unocal Refining & Marketing Division
Unocal Corporation
2000 Crow Canyon Place, Suite 400
P.O. Box 5155
San Ramon, California 94583
Telephone (510) 867-0760

5510 0746

UNOCAL 76

SEP 10 1992

September 3, 1992

Mr. Thomas Peacock
Department of Environmental Health
Hazardous Materials Division
80 Swan Way, Room 200
Oakland, CA 94621

Northern Division

Unocal Service Station #5760
376 Lewelling Blvd.
San Lorenzo, California

Dear Mr. Peacock,

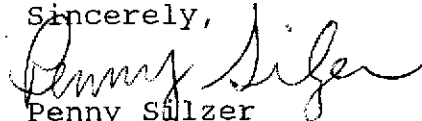
As requested in your letter dated July 1, 1992, enclosed please find the "Well Installation" report prepared by Woodward-Clyde for the installation of U-1 and laboratory data for soil samples collected during the tank replacement of 1987.

Based on information in the "Well Installation" report, it does not appear that soil samples were collected for laboratory analyses during installation of U-1. Soil samples were collected every five feet for the purpose of determining subsurface characteristics as shown on the well log/well construction diagram.

Soil samples were collected for analyses during the tank replacement by GeoTest/GeoResearch from Fresno, California. A map showing sample locations and a copy of the chain of custody record has been included along with the laboratory data sheets in the attached GeoTest package.

Also enclosed, please find our work plan for the next phase of work. If you have any questions, please call me, (510) 277-2320.

Sincerely,



Penny Silzer
Sr. Environmental Geologist
Unocal Corporation

Attachments

cc: R. E. Bock (w/o)
David Vossler - GSI (w/o)
Richard Hiatt - RWQCB



62
gettler — ryan inc.

general contractors

April 12, 1988

Mr. Greg Zentner
Regional Water Quality Control Board
San Francisco Bay Region
1111 Jackson Street, Room 6040
Oakland, California 94607

CALIFORNIA REGIONAL WATER

APR 15 1988

QUALITY CONTROL BOARD

Reference: Unocal Service Station #5760
376 Lewelling Boulevard
San Lorenzo, California

Gentlemen:

As requested by Mr. Tim Ross of Unocal, Gettler-Ryan Inc. is forwarding a copy of the March 25, 1988 report issued by Woodward-Clyde Consultants documenting the findings of the recent soil and groundwater investigation at the referenced location. A work plan is currently being prepared to define the extent of the contamination encountered during the preliminary investigation.

Please do not hesitate to call should you have any question or comment.

John P. Werfal

JPW/ns

enclosure

cc: Mr. Tim Ross, Unocal
Mr. Larry Seto, Alameda County Health Department

500 12th Street
Suite 100
Oakland, CA 94607-4014
(415) 893-3600

Woodward-Clyde Consultants

March 25, 1988
8820011A-0015

Gettler-Ryan Inc.
1992 National Avenue
Hayward, California 94545

Attention: Mr. Jeff Ryan

Subject: Well Installation
Unocal Service Station
376 Lewelling Boulevard (at Usher)
San Lorenzo, California

On February 1, 1988 a Woodward-Clyde Consultants (WCC) geologist observed Gettler-Ryan Inc. advance one soil boring, which was subsequently converted into a ground water monitoring well, at the Unocal Service Station at 376 Lewelling Boulevard in San Lorenzo, California (Figure 1). The boring was advanced to explore the shallow subsurface soil and ground water for evidence of petroleum products adjacent to, and approximately down-ground water gradient of, the newly installed subsurface fuel storage tank complex. The boring was located by Unocal as shown on Figure 2. While drilling, a WCC geologist collected soil samples and prepared a log showing materials encountered using the Unified Soils Classification System. The boring was converted into a monitoring well using standard geotechnical methods. The ground water monitoring well was subsequently developed and a ground water sample was collected from the well under the direction of Gettler-Ryan Inc. The ground water sample was analyzed by I.T. Corporation's environmental laboratory in Santa Clara, California for benzene, toluene, ethyl benzene, xylenes (BTEX) and low boiling point hydrocarbons (gasoline). The results of the soil boring, ground water monitoring well construction, and ground water sample analyses are summarized below.



FIELD PROCEDURE

Soil Boring

One soil boring was advanced on February 1, 1988 on the approximate down-ground water gradient side of the newly installed subsurface fuel storage tank complex at a location specified by Unocal as shown on Figure 2. The boring was advanced using a truck-mounted CME-55 drilling rig with 8-inch diameter hollow-stem, continuous flight augers. A WCC geologist observed the drilling and prepared a log for the boring. The boring log is attached in Appendix A.

The boring was advanced to a depth of 30.5 feet below ground surface. Ground water was encountered at approximately 18 feet. Drilling was stopped after advancing the boring through five feet of clay, which was found beneath water-bearing sand (See Appendix A).

Soil Sampling

Soil samples were collected at five-foot depth intervals by advancing a modified California sampler through the hollow stem of the auger. The sampler was either pushed into the soil using the hydraulic system of the rig or driven a maximum of 18 inches, using a 140-pound hammer with a 30-inch drop. The number of blows required to drive the sampler are shown on the boring log. The soil samples were described by a WCC geologist using the Unified Soils Classification System. The descriptions are shown on the boring log presented in Appendix A.

Monitoring Well Construction

Following completion of the boring, a ground water monitoring well (Well U-1) was constructed within the borehole. To complete this task, 3-inch diameter, schedule 40, flush-threaded PVC well casing, with a slip-type cap on the bottom, was placed down the hollow-stem of the auger. The casing consisted of a 20-foot section of 0.020-inch slotted screen on bottom with 10 feet of blank casing on top. All of the augers were then pulled from the boring and #12/20 Monterey sand was poured into the annulus between the

borehole wall and the well casing. The sand pack was installed to a depth of about 7 feet. Approximately 1.5 feet of bentonite pellets were poured on top of the sand pack to provide a seal. The annulus was then sealed to a depth of about 0.5 foot with cement grout, a locking lid was placed over the well, and a christy box was placed over the locking lid.

RESULTS

Soil Description

The site is predominantly underlain by sandy soils with clay interbeds to a depth of 30.5 feet, the maximum depth of investigation at this site. Dominantly fine- to medium-grained sand with interbedded clayey sand and clayey silt was encountered to a depth of approximately 23.5 feet. Clay and silty clay was encountered from 23.5 to 30.5 feet.

A strong hydrocarbon odor was noted and free product was observed on the sampler when sample 4 was recovered from 19 to 20.5 feet; Sample 4 was the first sample recovered from below the top of ground water. The cuttings and samples from 20.5 feet to the total depth of the boring emitted a weak hydrocarbon odor.

Laboratory Analysis

One water sample was collected after the well was developed under the direction of Gettler-Ryan Inc. The sample was analyzed by I.T. Corporation's environmental laboratory for low boiling point hydrocarbons (gasoline) and benzene, toluene, ethyl benzene, and xylenes (BTEX). The analytical results are summarized in Table 1. The I.T. Corporation analytical report is provided in the appendix of this report.

Concentrations of hydrocarbons were detected in the groundwater sample from the monitoring well. Gasoline was detected at a concentration of 93,000 $\mu\text{g/L}$, benzene at 3600 $\mu\text{g/L}$, toluene at 11,000 $\mu\text{g/L}$, and combined ethyl benzene and xylenes at 20,000 $\mu\text{g/L}$.

SUMMARY

The results of this investigation are summarized below:

- The site is underlain by predominantly fine- to medium-grained sand with interbedded clayey sand and clayey silt to 23.5 feet. Clay and silty clay occurs from approximately 23.5 feet to 30.5 feet, the maximum depth of investigation.
- Ground water was encountered at approximately 18 feet below surface grade.
- Chemical analysis of the ground water sample from Well U-1, using EPA methods 8015, 8020, and 5050, detected gasoline at a concentration of 93,000 $\mu\text{g/L}$, benzene at 3600 $\mu\text{g/L}$, toluene at 11,000 $\mu\text{g/L}$, and combined ethyl benzene and xylenes at 20,000 $\mu\text{g/L}$.

We appreciate the opportunity to provide consulting services on this project. Please call if we can be of additional assistance.

Sincerely,

WOODWARD-CLYDE CONSULTANTS

Helen Nicholls
for
O. Glenn Heyman
Senior Staff Geologist

Michael S. Bonkowski
Michael S. Bonkowski
Senior Project Geologist
CEG 1329

DGH:bd
8820011AL/CON

ATTACHMENTS

Table 1 - Summary of the Laboratory Analysis of the Water Sample from the Unocal Service Station at 376 Lewelling Boulevard, San Lorenzo, California.

Figure 1 - Location of the Unocal Service Station at 376 Lewelling Boulevard, San Lorenzo, California.

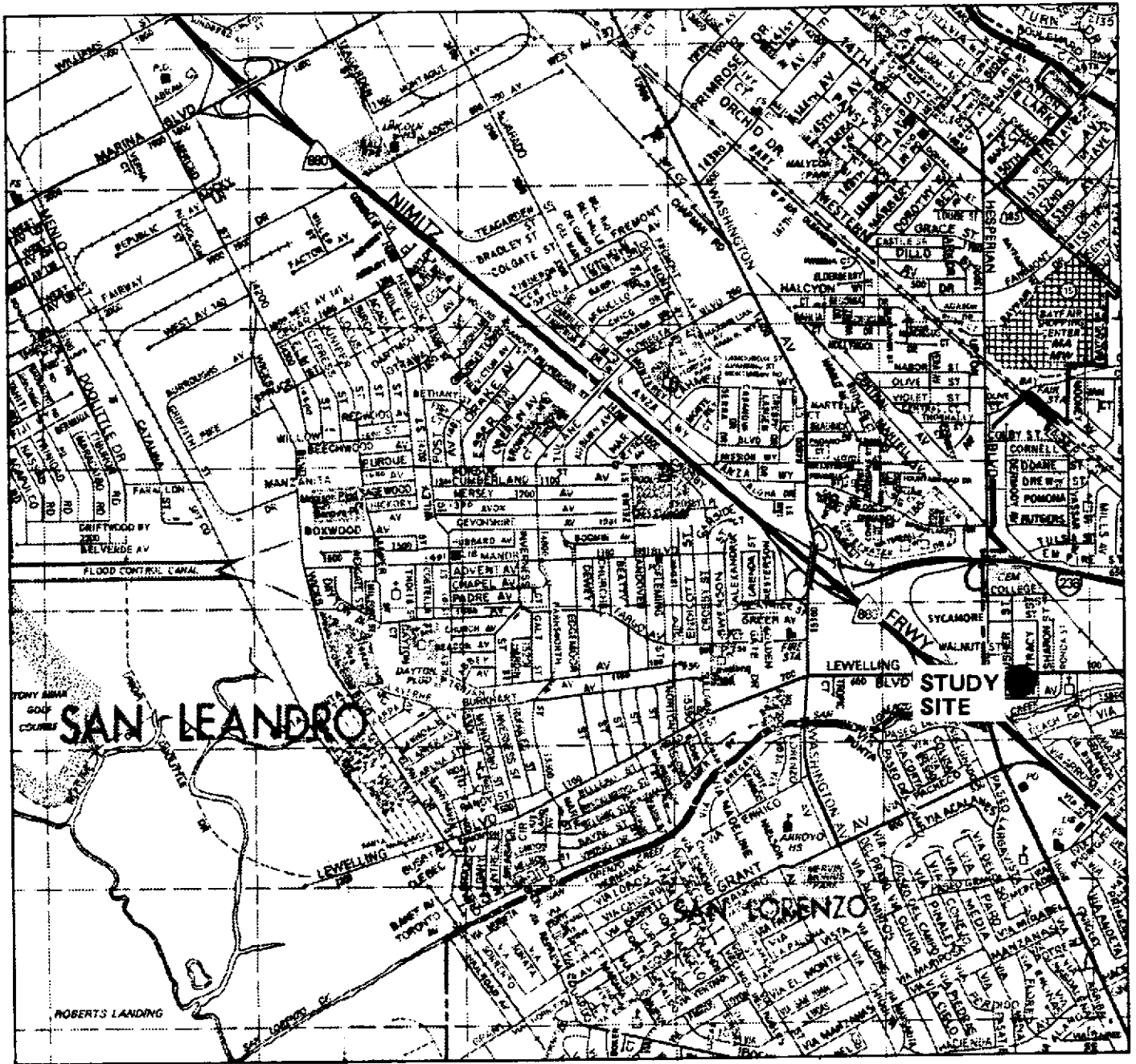
Figure 2 - Site Plan of the Unocal Service Station at 376 Lewelling Boulevard, San Lorenzo, Showing the Approximate Location of the Ground water Monitoring Well Installed for this Investigation.

Appendix A: Logs of Boring U-1. Explanation of Terms Used for Soil Description and Legend of Boring Log Symbols. I.T. Corporation Water Analysis.

Table 1. Summary of the Laboratory Analysis of the Water Sample from the Unocal Service Station at 376 Lewelling Boulevard, San Lorenzo, California

Well Number	Sample Number	Micrograms per Liter ($\mu\text{g/L}$)			
		Low Boiling Hydrocarbon (Gasoline)	Benzene	Toluene	Ethyl Benzene and Xylenes
U-1	U-1	93,000*	3600	11,000	20,000

* Includes unidentified compound not in fresh gasoline standard.

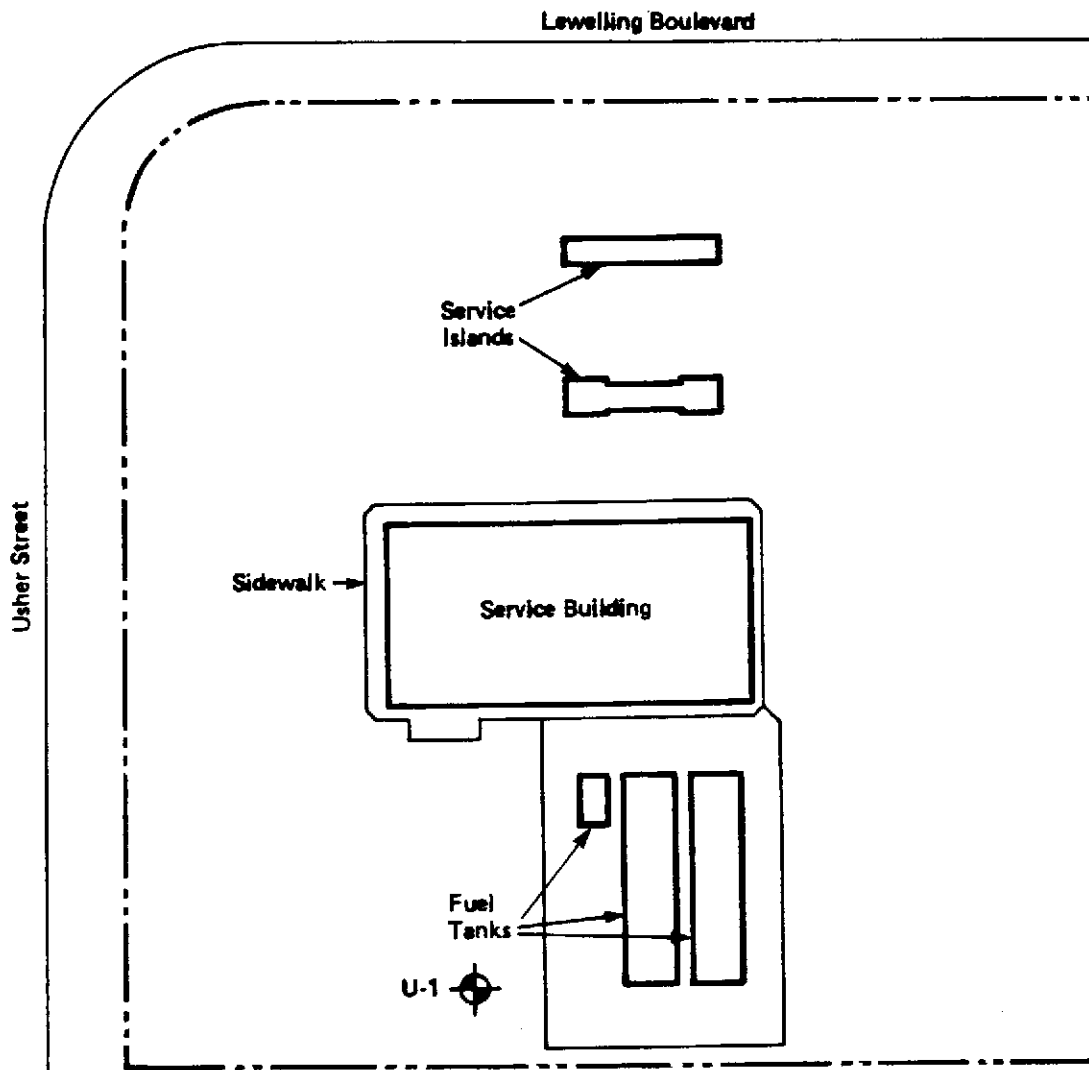


LEGEND

● Location of Study Site

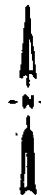


Project No. 8820011A	Gettler-Ryan	LOCATION OF THE UNOCAL SERVICE STATION AT 376 LEVEE BOULEVARD, SAN LORENZO, CALIFORNIA	Figure 1
Woodward-Clyde Consultants			



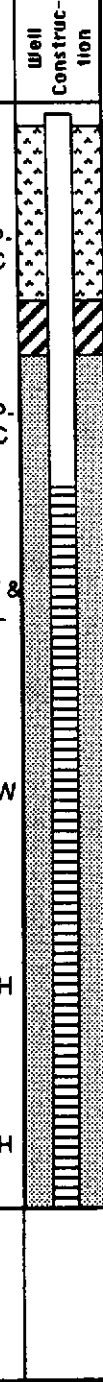
LEGEND

 Approximate Location of Groundwater Monitoring Well



Project No. 8820011A	Gettler-Ryan	WELL LOCATION MAP OF THE UNOCAL SERVICE STATION AT 376 LEWELLING BOULEVARD, SAN LORENZO, CALIFORNIA	Figure 2
Woodward-Clyde Consultants			

MONITORING WELL LOCATION 376 Lewelling Blvd., San Lorenzo, CA			ELEVATION AND DATUM		
DRILLING AGENCY	Bay Land Drilling	DRILLER	Kurt	DATE STARTED	2/1/88
				DATE FINISHED	2/1/88
DRILLING EQUIPMENT	CME - 55	COMPLETION DEPTH	30.5'	SAMPLER	California Modified Sampler
DRILLING METHOD	8-inch Hollowstem Augers	DRILL BIT		NO. OF SAMPLES	DIST. 6
				UNDIST.	none
SIZE AND TYPE OF CASING	3-inch PVC	WATER LEVEL	FIRST 17.9'	COMPL.	24 HRS.
TYPE OF PERFORATION	0.020-inch slotted screen	FROM	30.5 TO 10.5 FT.	LOGGED BY:	CHECKED BY:
SIZE AND TYPE OF PACK	12/20 Monterey sand	FROM	30.5 TO 7 FT.	G. Heyman	M. Bonkowski
TYPE OF SEAL	NO. 1 Bentonite	FROM	7 TO 5.5 FT.		
	NO. 2 Cement	FROM	5.5 TO 0.7 FT.		

Depth (feet)	Samples	Blows	MATERIAL DESCRIPTION	USCS	Well Construction
			ASPHALTIC PAVEMENT		
1	1	1	SAND with CLAYEY SAND yellow-brown with dark gray brown clayey pockets, fine to medium grained, loose, moist, subrounded, moderately to poorly sorted, clayey sand is more common in samples C and D, contains organic fragments	SP-SC	
5	2	1	No odor		
10	2	2	medium brown, fine to medium grained with little to some clay, very loose to loose, wet, subrounded, well to moderately sorted, fine organic fragments throughout	SP-SC	
15	3	3	SAND with interlayered CLAYEY SILT brown to dark brown, silt is dark gray, fine to very coarse grained sand, little gravel to 2x2x2.5 cm., little to some clay, medium dense, stiff, silt has low plasticity, wet, subrounded to subangular, silt layers are up to 3-inches thick in the B sample	SW & ML	
20	4	5	SAND dark gray, fine to medium grained, little to some clay, little gravel to 0.5x0.5x1 cm., loose, saturated, subrounded to subangular, poorly sorted, homogeneous	SW	
23.5			- CLAY at 23.5 feet in cuttings -		
25	5	7	SILTY CLAY and CLAY dark to medium gray brown, trace very fine to medium sand, one 2-inch layer of clayey sand, medium to high plasticity, stiff, saturated, homogeneous	CH	
30	6	23	CLAY dark gray brown, little to some silt, occasionally little very fine to medium sand, very plastic, very stiff to hard, wet, homogeneous	CH	
BOTTOM OF BORING: 30.5'					

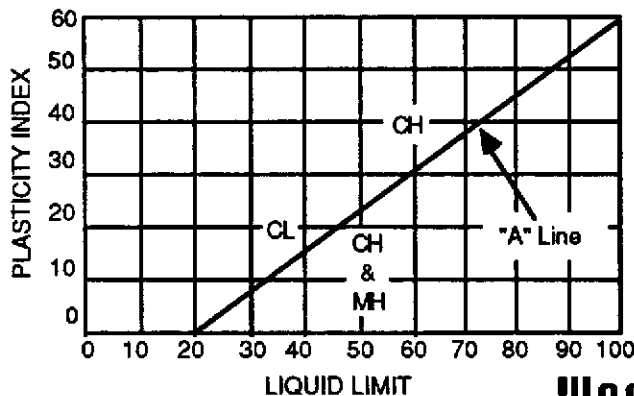
SAMPLE CLASSIFICATION CHART

UNIFIED SOIL CLASSIFICATION SCHEME				
MAJOR DIVISIONS	SYMBOLS	GRAPHIC COLUMN	TYPICAL NAMES	
COARSE GRAINED SOILS (More than 1/2 of soil > no. 200 sieve size)	GRAVELS	GW	Well-graded gravels and gravel-sand mixtures, little or no fines	
	(More than 1/2 of coarse fraction > no. 4 sieve size)	GP		Poorly-graded gravels or gravel-sand mixtures, little or no fines
		GM		Silty gravels, gravel-sand-silt mixtures
		GC		Clayey gravels, gravel-sand-clay mixtures
	SANDS (More than 1/2 of coarse fraction < no. 4 sieve size)	SW		Well-graded sands or gravelly sands, little or no fines
		SP		Poorly-graded sands or gravelly sands, little or no fines
		SM		Silty sands, sand-silt mixtures
SC			Clayey sands, sand-clay mixtures	
FINE GRAINED SOILS (More than 1/2 of soil < no. 200 sieve size)	SILTS & CLAYS	ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity	
	LL < 50	CL		Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays
		OL		Organic silts and organic silty clays of low plasticity
		SILTS & CLAYS	MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts
	LL > 50	CH		Inorganic clays of high plasticity, fat clays
		OH		Organic clays of medium to high plasticity, organic silty clays, organic silts
HIGHLY ORGANIC SOILS	Pt		Peat and other highly organic soils	

CLASSIFICATION MODIFIERS	
TRACE	0 - 10%
LITTLE	10 - 20%
SOME	20 - 35%
AND	35 - 50%
± MODIFIERS	

GRAIN SIZE CLASSIFICATION		
CLASSIFICATION	RANGE OF GRAIN SIZES	
	U.S Standard Sieve Size	Grain Size in Millimeters
BOULDERS	Above 12"	Above 305
COBBLES	12" to 3"	305 to 76.2
GRAVEL coarse (c) fine (f)	3" to No. 4	76.2 to 4.76
	3" to 3/4"	76.2 to 19.1
	3/4" to No. 4	19.1 to 4.76
SAND coarse (c) medium (m) fine (f)	No. 4 to No. 200	4.76 to 0.074
	No. 4 to No. 10	4.76 to 2.00
	No. 10 to No. 40	2.00 to 0.420
	No. 40 to No. 200	0.420 to 0.074
SILT & CLAY	Below No. 200	Below 0.074

PLASTICITY CHART



SAMPLE CLASSIFICATION CHART

MOISTURE CONTENT	
DRY	- LITTLE/NO PERCEPTIBLE MOISTURE
DAMP	- SOME PERCEPTIBLE MOISTURE, NOT COMPACTABLE
MOIST	- COMPACTABLE
WET	- ABOVE COMPACTABLE RANGE
SATURATED	- PORES, VOIDS FILLED WITH WATER
	- WATER TABLE (AT TIME OF DRILLING)

SORTING ($S_o = P_{75} / 25$)	
S_o	
EXTREMELY WELL	1.0-1.1
VERY WELL	1.1-1.2
WELL	1.2-1.4
MODERATELY	1.4-2.0
POORLY	2.0-2.7
VERY POORLY	2.7-5.0

SOIL CONSISTENCY				
SAND OR GRAVEL	BLOWS/FT	SILT OR CLAY	BLOWS/FT	THUMB PENETRATION
Very loose	< 5	Very Soft	< 3	Very easily - inches
Loose	5 - 15	Soft	3 - 5	Easily - inches
Medium Dense	16 - 40	Medium (firm)	6 - 10	Moderate effort - inches
Dense	41 - 65	Stiff	11 - 20	Indented easily
Very Dense	> 65	Very Stiff	21 - 40	Indented by nail
		Hard	> 40	Difficult by nail

SOIL BORING AND WELL CONSTRUCTION LEGEND

	MODIFIED CALIFORNIA SAMPLE RECOVERY		BLANK CASING
	WATER LEVEL OBSERVED IN BORING		SCREENED CASING
	STATIC WATER LEVEL MEASURED IN WELL		CEMENT GROUT
			BENTONITE
			SAND PACK

NOTE: BLOW COUNT (BLOWS/FT) REPRESENTS THE NUMBER OF BLOWS OF A 140- POUND HAMMER FALLING 30 INCHES PER BLOW REQUIRED TO DRIVE A SAMPLER THROUGH THE LAST 12 INCHES OF AN 18- INCH PENETRATION

NOTE: THE LINE SEPARATING STRATA ON THE LOGS REPRESENTS APPROXIMATE BOUNDARIES ONLY. THE ACTUAL TRANSITION MAY BE GRADUAL. NO WARRANTY IS PROVIDED AS TO THE CONTINUITY OF SOIL STRATA BETWEEN BORINGS. LOGS REPRESENT THE SOIL SECTION OBSERVED AT THE BORING LOCATION ON THE DATE OF DRILLING ONLY.





INTERNATIONAL
TECHNOLOGY
CORPORATION

RECEIVED

FEB 25 1988

GETTLER-RYAN INC
GENERAL CONTRACTOR

Gettler-Ryan
1992 National Avenue
Hayward, CA 94545

February 24, 1988

ATTN: John Werfal

Following is the result of analysis on the sample described below.

Project Number: G-R #9700/BTS #88040F2, Unocal,
376 Lewelling, San Lorenzo
Lab Number: S8-02-080-01
Sample Type: water
Date Received: 2/9/88
Analysis Requested: Low Boiling Hydrocarbons

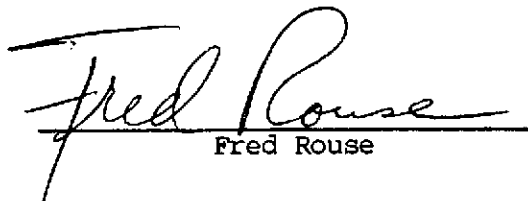
The method of analysis for low boiling hydrocarbons is taken from E.P.A. Methods 8015, 8020 and 5030. The sample is examined using the purge and trap technique. Final detection is by gas chromatography using a flame ionization detector as well as a photo-ionization detector.

The result for total low boiling hydrocarbons is calculated as gasoline and includes benzene, toluene, ethyl benzene and xylenes.

Summary of Results

Lab Number	Sample Identification	Micrograms per Liter			
		Low Boiling Hydrocarbons (Gasoline)	Benzene	Toluene	Ethyl benzene and xylenes
S8-02-080-01	U-1	93,000.*	3,600.	11,000.	20,000.
Detection Limit		10,000.	50.	200.	400.

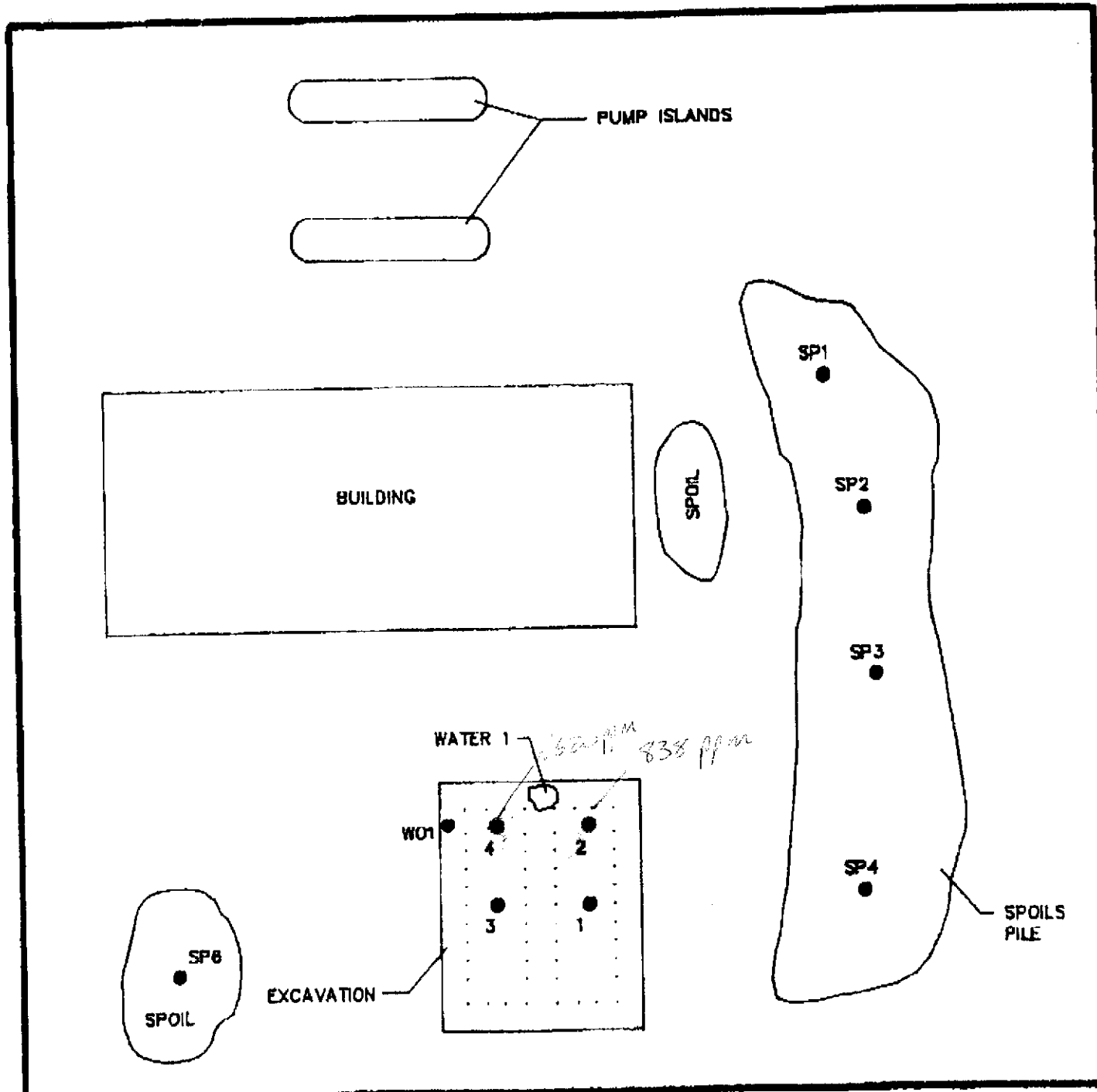
* Includes unidentified compound not in fresh gasoline standard.


Fred Rouse

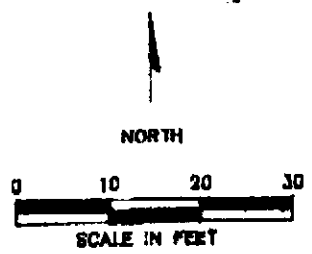
FR/ksr

cc: Rich Blaine/Blaine Tech Services

Regional Office
397 Mathew Street • Santa Clara, California 95050 • 408-727-4277



● SAMPLE LOCATION



GEOTEST

SAMPLE LOCATION MAP
 UNOCAL/STATION NO: 5760
 PROJECT NO: 88560-32



GEOTEST
 1990 Obispo Avenue, Suite A
 Long Beach, California 90804
 Telephone: (213) 498-8515

CHAIN-OF-CUSTODY RECORD

PROJECT NO:
 DATE 11/19/87 PAGE 1 OF 2

PROJECT NAME UNOCA
 REFERENCE Station # 5760
 ADDRESS 3 1/2 Lewelling Blvd.
San Lorenzo, CA
 ANALYSTS (SIGNATURE) Joe Newcombe-Dior
 LABORATORY GEOTEST

METHODS						NUMBER OF CONTAINERS	COMMENTS/ CONTAINER TYPE
PETROLEUM HYDROCARBONS 8016	PETROLEUM HYDROCARBONS 418.1	BTX (8020/802)	CAD METALS	HALOGENATED VOLATILE ORGANICS 8016			
✓						1	clay soil, glass jar
✓						1	wet soil, glass jar
✓						1	
✓						1	
✓						1	soil, glass jar
✓						1	
✓						1	
✓						1	
✓						1	soil, glass jar
✓	✓	✓	✓	✓		1	soil, glass jar
✓						2	water 2 vial vials

SAMPLE NO.	DATE	TIME	LOCATION
3	11/19/87	9:05	18' below gr. surface (below fill of pipe)
4	11/19/87	9:15	20' below gr. surface (north end of pipe)
1	11/19/87	10:10	15' below gr. surface (below fill of pipe)
2	11/19/87	11:15	20' below gr. surface (below north end of pipe)
SP1		10:10	Spills Pile
SP2		10:12	
SP3		10:15	
SP4		10:20	Spills Pile
WD1	11/19/87	10:25	7' below gr. surface water in area
Water 1	11/19/87	11:00	Water in excavated

RELINQUISHED BY
Joe Newcombe-Dior
 SIGNATURE
Joe Newcombe-Dior
 PRINTED NAME
GEOTEST
 COMPANY
 DATE 11/24/87
 TIME 10:30

RECEIVED BY
 SIGNATURE
 PRINTED NAME
 COMPANY

RELINQUISHED BY
 SIGNATURE
 PRINTED NAME
 COMPANY

RECEIVED BY
 SIGNATURE
 PRINTED NAME
 COMPANY

RELINQUISHED BY
 SIGNATURE
 PRINTED NAME
 COMPANY

RECEIVED BY (LAB)
Steve A. Carr
 SIGNATURE
STEVE A. CARR
 PRINTED NAME
Geotest
 COMPANY

TOTAL NUMBER OF CONTAINERS 11

SAMPLE CONDITIONS
 RECEIVED ON ICE YES / NO
 SEALED YES / NO

SPECIAL SHIPMENT/HANDLING
 OR STORAGE REQUIREMENTS:
ON SITE
ANALYSIS

GEO SERVICES 08/21/92 09:150



GEOTEST
 1800 Obispo Avenue, Suite A
 Long Beach, California 90804
 Telephone: (213) 498-9515

CHAIN-OF-CUSTODY RECORD

PROJECT NO: 88560-3
 DATE 11/19/87 PAGE 2

PROJECT NAME: UNOCAL
 REFERENCE: STATION # 5760
 ADDRESS: 376 Lowndes Blvd.
San Lorenzo, CA
 SAMPLERS (SIGNATURE): [Signature]
 LABORATORY: GEOTEST

SAMPLE NO.	DATE	TIME	LOCATION	METHODS						NUMBER OF CONTAINERS	COMMENTS/ CONTAINER TYPE	
				PETROLEUM HYDROCARBONS 8016	PETROLEUM HYDROCARBONS 416.1	BTX (802082)	CAC METALS	HALOGENATED VOLATILE ORGANICS 8016				
SP5	11/19/87	12:15	SPOILS PILE	✓							1	Soil, glass jar
SP6	11/19/87	12:20	SPOILS PILE	✓							1	soil, glass jar

1 RELINQUISHED BY [Signature] LISA Newcombe-Dirol COMPANY: <u>GEOTEST</u>	DATE <u>11/20/87</u>	3 RELINQUISHED BY SIGNATURE PRINTED NAME COMPANY	DATE TIME	5 RELINQUISHED BY SIGNATURE PRINTED NAME COMPANY	DATE TIME	2 TOTAL NUMBER OF CONTAINERS SAMPLE CONDITIONS RECEIVED ON ICE YES/NO SEALED YES/NO SPECIAL SHIPMENT/HANDLING OR STORAGE REQUIREMENTS: <u>ON SITE ANALYSIS</u>
	TIME <u>10:30</u>		DATE TIME		DATE TIME	
	2 RECEIVED BY SIGNATURE PRINTED NAME COMPANY		4 RECEIVED BY [Signature] SIGNATURE PRINTED NAME COMPANY		6 RECEIVED BY (LAB) [Signature] SIGNATURE PRINTED NAME COMPANY	

08/21/92 09:51 P.02
 GEOSERVICES
 GEOSERVICES
 GEOSERVICES
 08/21/92 08:44 FAX 213 597 0786

MOBILE LABORATORY RESULTS REPORT

PREPARED FOR

UNOCAL
STATION #5760
376 LEWELLING BLVD.
SAN LORENZO

ANALYSIS OF HYDROCARBON CONTENT BY GAS CHROMATOGRAPHY
MODIFIED EPA METHOD 8015

DATE RECEIVED : NOVEMBER 19, 1987
DATE OF ANALYSIS : NOVEMBER 19, 1987
PROJECT NUMBER : 88560-32

SAMPLE ID #CONCENTRATION *e of cobalt*
(ppm)

1	12.7
2	838.
3	51.7
4	1620.
SP1	30.1
SP2	2.8
SP3	ND, <1.0
SP4	1.2
SP5	349.
SP6	1800.

Analyst: LND

Reviewed & Approved: _____

Date: _____

*NOTE: Samples were received in a chilled state, intact and with Chain-of-Custody attached.



GEOTEST

An Environmental Monitoring and Testing Service

LABORATORY RESULTS REPORT

PREPARED FOR

UNOCAL #5760
376 LEWELLING BLVD.
SAN LORENZO

ANALYSIS OF BTXE BY GAS CHROMATOGRAPHY EPA METHOD 8020

DATE RECEIVED : NOVEMBER 19, 1987
DATE OF ANALYSIS: NOVEMBER 19, 1987
PROJECT NUMBER : 88560-32

<u>SAMPLE ID #</u>	BENZENE (mg/kg)	TOLUENE (mg/kg)	ETHYLBENZENE (mg/kg)	TOTAL XYLENES (mg/kg)
W01	ND, <.01	ND, <.01	ND, <.05	ND, <.01

ND - Not detected below indicated limit of detection.

Analyst: LND

Reviewed & Approved: Steve A. Can

Date: 12/4/87

NOTE: Samples were received in a chilled state, intact and with Chain-of-Custody attached.

GEOTEST is a division of GEOSERVICES, a California corporation

Post Office Box 90911 Long Beach, California 90809-0911 (213) 498-9515 (800) 624-5744

MOBILE LABORATORY RESULTS REPORT

PREPARED FOR

UNOCAL
STATION 5760
376 LEWELLING BLVD.
SAN LORENZO

ANALYSIS OF HYDROCARBON CONTENT BY INFRARED SPECTROMETRY
EPA METHOD 418.1

DATE RECEIVED : NOVEMBER 19, 1987
DATE OF ANALYSIS : NOVEMBER 19, 1987
PROJECT NUMBER : 88560-32

SAMPLE ID #

CONCENTRATION
(mg/kg)

W01

ND, <1.0

Analyst:LND

Reviewed & Approved: _____
Date: _____

*NOTE: Samples were received in a chilled state, intact and with chain-of-custody attached.



GEOTEST

An Environmental Monitoring and Testing Service

FIELD LABORATORY RESULTS REPORT

PREPARED FOR

UNOCAL #5760
376 LEWELLING BLVD.
SAN LORENZO

ANALYSIS OF HALOGENATED VOLATILE ORGANICS BY GAS CHROMATOGRAPHY - EPA METHOD 8010

DATE RECEIVED : NOVEMBER 19, 1987
DATE OF ANALYSIS : NOVEMBER 20, 1987
PROJECT NUMBER : 88560-32

PARAMETERS

SAMPLE WO1

Bromodichloromethane	ND, 20	ppb
Bromoform	ND, 20	ppb
Bromomethane	ND, 20	ppb
Carbon Tetrachloride	ND, 20	ppb
Chlorobenzene	ND, 20	ppb
Chloroethane	ND, 20	ppb
Chloroform	ND, 20	ppb
2-Chloroethyl vinyl ether	ND, 20	ppb
Chloromethane	ND, 20	ppb
Dibromochloromethane	ND, 20	ppb
1,2-Dichlorobenzene	ND, 20	ppb
1,3-Dichlorobenzene	ND, 20	ppb
1,4-Dichlorobenzene	ND, 20	ppb
1,1-Dichloroethane	ND, 20	ppb
1,2-Dichloroethane	ND, 20	ppb
1,1-Dichloroethylene	ND, 20	ppb
trans-1,2-Dichloroethylene	ND, 20	ppb
Dichloromethane	ND, 20	ppb
1,2-Dichloropropane	ND, 20	ppb
1,3-Dichloropropylene	ND, 20	ppb
Methylene chloride	ND, 20	ppb
1,1,2,2-Tetrachloroethane		
and		
Tetrachloroethylene	ND, 20	ppb
1,1,1-Trichloroethane	ND, 20	ppb
1,1,2-Trichloroethane	ND, 20	ppb
Trichloroethylene	ND, 20	ppb
Vinyl chloride	ND, 20	ppb

Analyst:LND

Reviewed and Approved: Steve A. Can

Date: 12/14/87

GEOTEST is a division of GEOSERVICES, a California corporation

MOBILE LABORATORY RESULTS REPORT

PREPARED FOR

UNOCAL
STATION 5760
376 LEWELLING BLVD.
SAN LORENZO

ANALYSIS OF BTXE BY GAS CHROMATOGRAPHY
EPA METHOD 602
WATER SAMPLES

DATE RECEIVED : NOVEMBER 19, 1987
DATE OF ANALYSIS: NOVEMBER 19, 1987
PROJECT NUMBER : 88560-32

<u>SAMPLE ID #</u>	BENZENE (ppb)	TOLUENE (ppb)	ETHYLBENZENE (ppb)	TOTAL XYLENES (ppb)
WATER 1	18.0	3.4	13.5	135.2

ND - Not detected below indicated limit of detection.

Analyst: LND

Reviewed & Approved: _____

Date: _____

NOTE: Samples were received in a chilled state, intact and with Chain-of-Custody attached.

MOBILE LABORATORY RESULTS REPORT

PREPARED FOR

UNOCAL
STATION #5760
376 LEWELLING BLVD.
SAN LORENZO

ANALYSIS OF HYDROCARBON CONTENT BY GAS CHROMATOGRAPHY
MODIFIED EPA METHOD 8015

DATE RECEIVED : NOVEMBER 19, 1987
DATE OF ANALYSIS : NOVEMBER 19, 1987
PROJECT NUMBER : 88560-32

<u>SAMPLE ID #</u>	<u>CONCENTRATION</u> (ppm)
WATER 1	505.

Analyst:LND

Reviewed & Approved: _____

Date: _____

*NOTE: Samples were received in a chilled state, intact and with Chain-of-Custody attached.