GeoStrategies Inc.

SITE UPDATE

UNOCAL Service Station No. 5325
3220 Lakeshore Avenue
Oakland, California

781401-6

March 21, 1991

GeoStrategies Inc.
2140 WEST WINTON AVENUE
HAYWARD, CALIFORNIA 94545

March 21, 1991

Gettler-Ryan Inc.
2150 West Winton Avenue
Hayward, California 94545

Attn: Mr. John Werfal

Re: SITE UPDATE
UNOCAL Service Station No. 5325
3220 Lakeshore Avenue
Oakland, California

Gentlemen:

This Site Update by GeoStrategies Inc. (GSI) presents the results of the 1991 first quarter ground-water sampling performed by Gettler-Ryan Inc. (G-R) for the above referenced site (Plate 1). The scope of work presented in the document was performed at the request of UNOCAL. Field work and laboratory analysis methods were performed to comply with current State of California Water Resources Control Board (SWRCB) guidelines. Ground-water sampling procedures are presented in a GSI Well Installation report dated December 19, 1990.

SITE BACKGROUND

There are currently three monitoring wells at the site, Wells U-1 through U-3 (Plate 2). These wells were installed by GSI on September 24, 1990. The old underground storage tanks were replaced in June 1990. These wells have been installed to evaluate the vertical and horizontal extent of petroleum hydrocarbons in soils and shallow groundwater beneath the site.

Quarterly sampling of wells began in October, 1990. Ground-water monitoring samples have been analyzed for Total Petroleum Hydrocarbons calculated as Gasoline (TPH-Gasoline) according to EPA Method 8015 (Modified) and Benzene, Toluene, Ethylbenzene, and Toluene (BTEX) according to EPA Method 8020.

CURRENT QUARTERLY SAMPLING RESULTS

Potentiometric Data

Prior to ground-water sampling, water-levels were measured in each monitoring well using an electronic oil-water interface probe. Static ground-water levels were measured from the surveyed top of well box and recorded to the nearest $\pm$0.01 foot. Elevations corresponding to Mean Sea Level (MSL) are presented in Table 1. Water-level data were used to construct a potentiometric map presented on Plate 3. Shallow groundwater flows to the west at a calculated hydraulic gradient of 0.002.

Floating Product Measurements

Each monitoring well was checked for the presence of floating product with an electronic oil-water interface probe. A clear acrylic bailer was used to confirm interface probe results. Floating product was not detected in any wells this quarter.

Ground-water Analytical Data

Ground-water samples were collected on January 7, 1991. The samples were analyzed for TPH-Gasoline according to EPA Method 8015 (Modified) and BTEX according to EPA Method 8020. Chemical analyses were performed by International Technology (IT) Analytical Services, a State-certified environmental laboratory located in San Jose, California.

TPH-Gasoline was detected in Wells U-1 and U-2 at concentrations of 250. and 1900. parts per billion (ppb), respectively. Benzene was detected in Wells U-1 and U-2 at concentrations of 22. and 67. ppb, respectively. Well U-3 was reported as None Detected (ND) for TPH-Gasoline and benzene. A TPH-Gasoline/benzene concentration map was prepared from this data (Plate 4). Historical analytical data for the site are presented in Table 2. The IT laboratory report and Chain-of-Custody forms are presented in Appendix A.

Quality Control

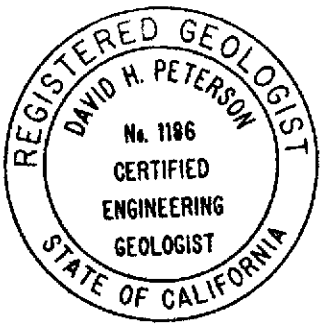
Quality control (QC) sample for the quarter's ground-water sampling was a trip blank. The trip blank was prepared in the IT laboratory using organic-free water to evaluate laboratory handling and analytical procedures. The results of the QC samples analyses are presented in Table 1.

If you have any questions, please call.

GeoStrategies Inc. by,

Cliff M. Garratt
Hydrogeologist

David H. Peterson
Senior Geologist
C.E.G. 1186



CMG/DHP/mlg

Plate 1. Vicinity Map
Plate 2. Site Plan
Plate 3. Potentiometric Map
Plate 4. TPH-G/Benzene Concentration Map

Appendix A: Gettler-Ryan Inc. Groundwater Sampling Report

QC Review: DHP

TABLE 1

GROUND-WATER ANALYSES DATA

WELL NO	SAMPLE DATE	ANALYZED DATE	TPH-G (PPB)	BENZENE (PPB)	TOLUENE (PPB)	EHTYLBENZENE (PPB)	XYLENES (PPB)	WELL ELEV (FT)	STATIC WATER ELEV (FT)	PRODUCT THICKENSS (FT)	DEPTH TO WATER (FT)
U-1	07-Jan-91	12-Jan-91	250.	22.	16.	4.2	17.	5.75	-3.83	----	9.58
U-2	07-Jan-91	16-Jan-91	1900.	67.	5.8	58.	69.	4.94	-3.91	----	8.85
U-3	07-Jan-91	12-Jan-91	<50	<0.5	<0.5	<0.5	1.8	8.14	-3.94	----	12.08
TB	07-Jan-91	12-Jan-91	<50	<0.5	<0.5	<0.5	0.8	----	----	----	----

TPH-G = Total Petroleum Hydrocarbons calculated as Gasoline
PPB = Parts Per Billion TB = Trip Blank

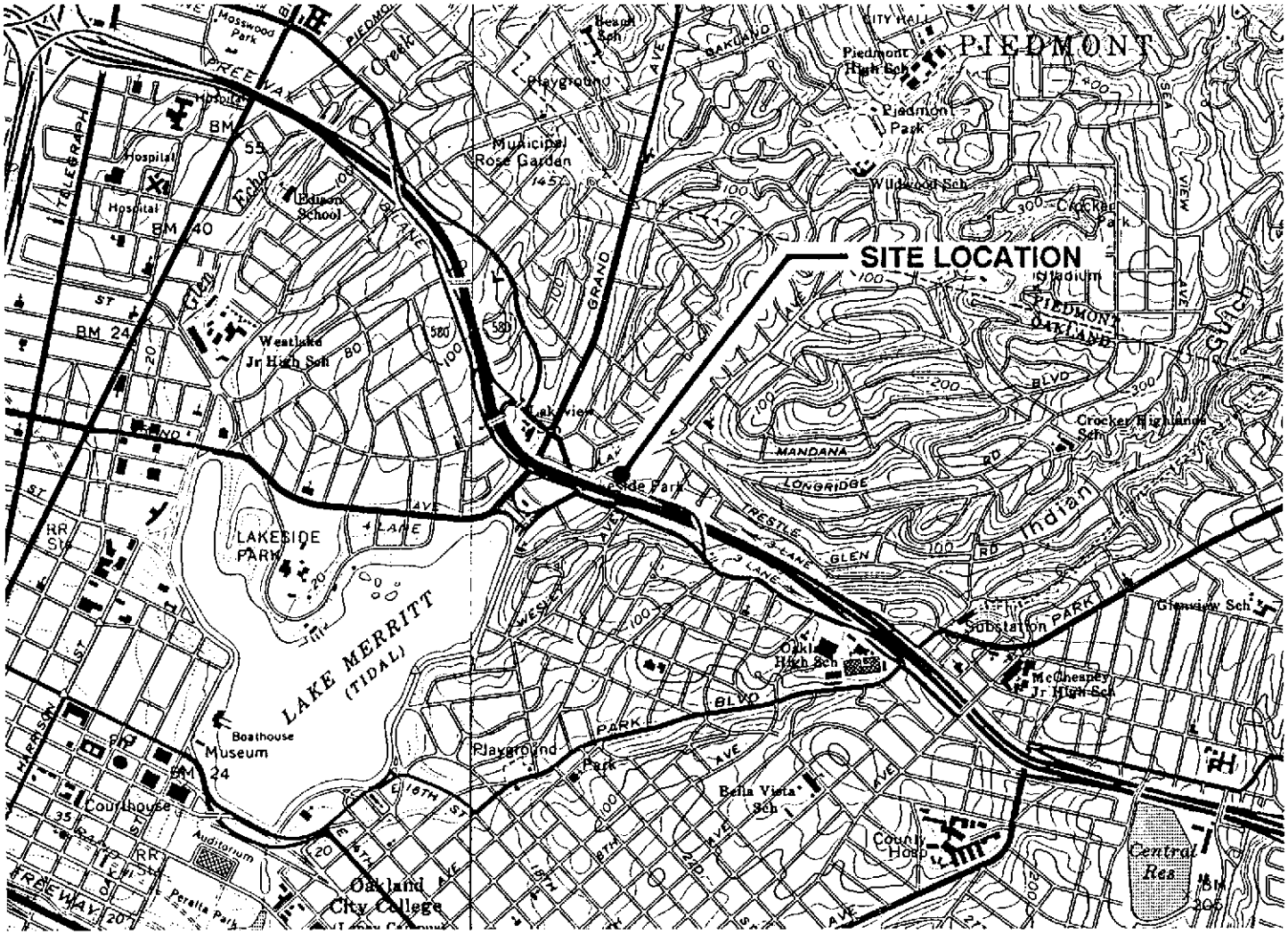
Notes: 1. All data shown as <x are reported as ND (none detected).
2. Static Water elevations referenced to mean sea level.

TABLE 2

HISTORICAL GROUNDWATER QUALITY DATABASE

SAMPLE DATE	SAMPLE POINT	TPH-G (PPB)	BENZENE (PPB)	TOLUENE (PPB)	E.B. (PPB)	XYLENES (PPB)
08-Oct-90	U-1	690.	38.	75.	8.6	130.
07-Jan-90	U-1	250.	22.	16.	4.2	17.
08-Oct-90	U-2	780.	27.	46.	15.	130.
07-Jan-90	U-2	1900.	67.	5.8	58.	69.
08-Oct-90	U-3	<50.	<0.5	<0.5	<0.5	<0.5
07-Jan-90	U-3	<50.	<0.5	<0.5	<0.5	1.8

TPH-G = Total Petroleum Hydrocarbons as Gasoline
PPB = Parts per Billion
E.B. = Ethylbenzene
NOTE: All data shown as <X are reported as ND (none detected)



Base Map: USGS Topographic Map

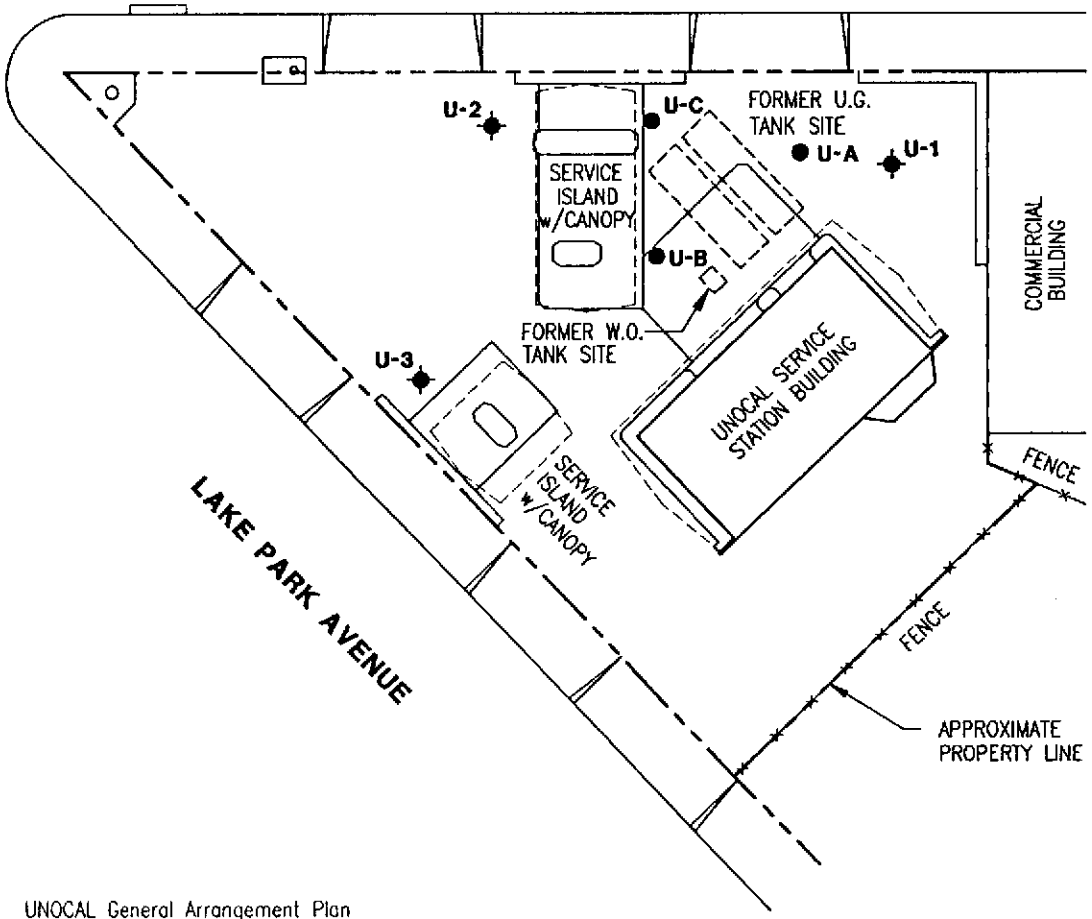
Approximate Scale: 1" = 2000'

GeoStrategies Inc.

Vicinity Map
UNOCAL Service Station #5325
3220 Lakeshore Avenue
Oakland, California

PLATE
1

JOB NUMBER	REVIEWED BY RG/CEG	DATE	REVISED DATE
7814		6/90	



EXPLANATION

- Ground-water monitoring well
- Soil boring

N

0 40

Scale in Feet

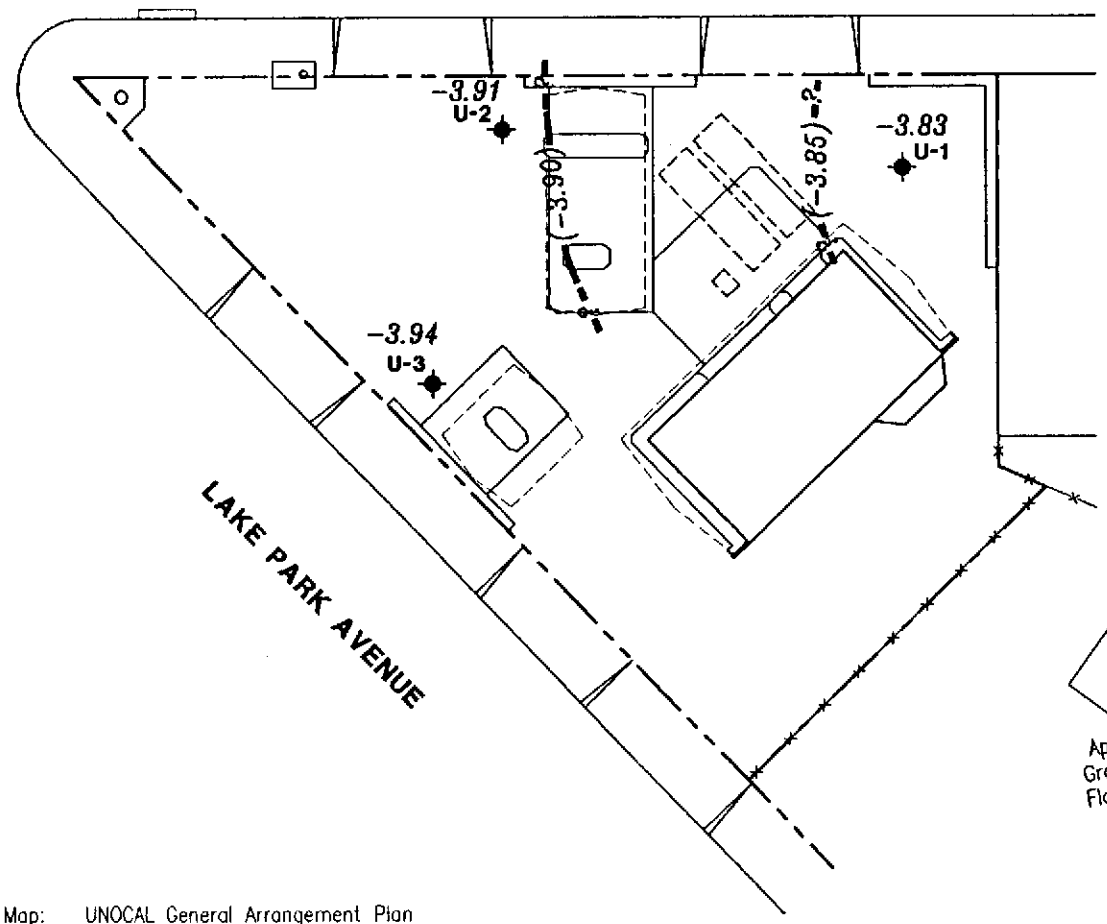
Base Map: UNOCAL General Arrangement Plan dated 7-8-66 (Rev, 12-4-84) and field observations

GeoStrategies Inc.

SITE PLAN
UNOCAL Service Station #5325
3220 Lakeshore Avenue
Oakland, California

PLATE 2

JOB NUMBER	REVIEWED BY	DATE	REVISED DATE
781401-6	DHP	2/91	



EXPLANATION

Ground-water monitoring well

99.99 Ground-water elevation contour
Approximate Gradient = 0.002

99.99 Ground-water elevation in feet referenced to Mean Sea Level (MSL) measured on January 7, 1991

Note: Contours may be influenced by irrigation practices and/or site construction activities.

N

0 40

Scale in Feet

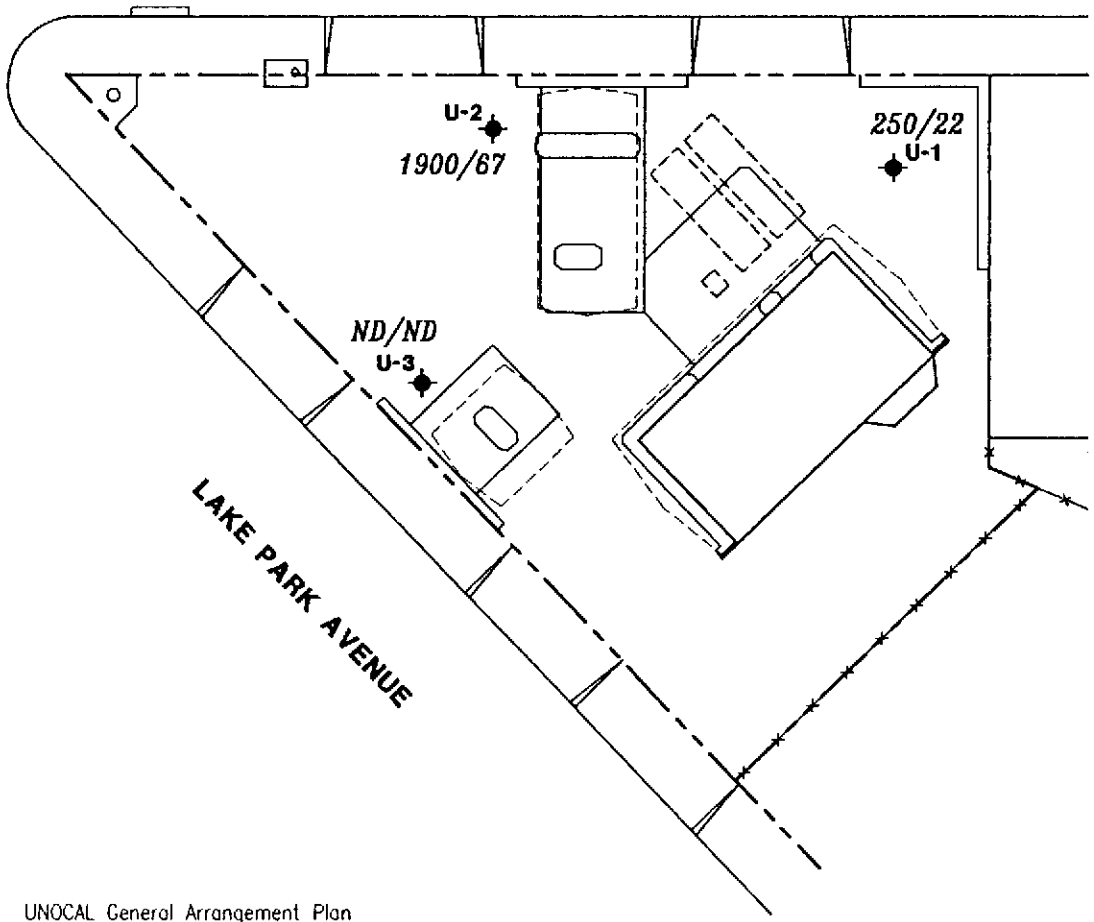
Base Map: UNOCAL General Arrangement Plan dated 7-8-66 (Rev, 12-4-84) and field observations

GeoStrategies Inc.

POTENTIOMETRIC MAP
UNOCAL Service Station #5325
3220 Lakeshore Avenue
Oakland, California

PLATE **3**

JOB NUMBER	REVIEWED BY	DATE	REVISED DATE
781401-6	DHP	2/91	



EXPLANATION

- Ground-water monitoring well
- *99/9.9* TPH-G (Total Petroleum Hydrocarbons calculated as Gasoline)/Benzene concentrations in ppb sampled on January 7, 1991
- *ND* Not Detected (See laboratory reports for detection limits)

Base Map: UNOCAL General Arrangement Plan dated 7-8-66 (Rev, 12-4-84) and field observations

N

0 40

Scale in Feet

GeoStrategies Inc.

TPH-G/BENZENE CONCENTRATION MAP

UNOCAL Service Station #5325
3220 Lakeshore Avenue
Oakland, California

PLATE **4**

JOB NUMBER	REVIEWED BY	DATE	REVISED DATE
781401-6	DHP	2/91	

gettler — ryan inc.

February 1, 1991

GROUNDWATER SAMPLING REPORT

UNOCAL
Post Office Box 5155
San Ramon, California 94583

Referenced Site: UNOCAL Service Station #5325
3220 Lakeshore Avenue
Oakland, California

Sampling Date: January 7, 1991

This report presents the results of the quarterly groundwater sampling and analytical program conducted by Gettler-Ryan Inc. on January 7, 1991 at the referenced location. The site is occupied by an operating service station located southeast of Lakeshore Avenue and Lake Park Avenue. The service station has underground storage tanks containing unleaded, and super unleaded gasoline products.

There are currently three groundwater monitoring wells on site at the locations shown on the attached site map. Prior to sampling, each well was inspected for total well depth, water levels, and presence of separate phase product using an electronic interface probe. A clean acrylic bailer was used to visually confirm the presence and thickness of separate phase product. Groundwater depths ranged from 8.85 to 12.08 feet below grade. Separate phase product was not observed in any of the monitoring wells.

The wells were then purged and sampled. Standard sampling procedure calls for a minimum of four case volumes to be purged from each well. Each well was purged while pH, temperature, and conductivity measurements were monitored for stability. Details of the final well purging results are presented on the attached Table of Monitoring Data. In cases where a well dewatered or less than four case volumes were purged, groundwater samples were obtained after the physical parameters had stabilized. Under such circumstances the sample may not represent actual formation water, due to low flow conditions.

Samples were collected, using Teflon bailers, in properly cleaned and laboratory prepared containers. All sampling equipment was thoroughly cleaned after each well was sampled and steam cleaned upon completion of work at the site. The samples were labeled, stored on blue ice, and transported to the laboratory for analysis. A trip blank, supplied by the laboratory was included and analyzed to assess quality control. Analytical results for the blank are included in the Certified Analytical Report (CAR's). Chain of custody records were established noting sample identification numbers, time, date, and custody signatures.

2150 west winton avenue • hayward, california 94545-1210 • (415) 783-7500

The samples were analyzed at International Technology Corporation - Santa Clara Valley Laboratory, located at 2055 Junction Avenue, San Jose, California. The laboratory is assigned a California DHS-HMTL Certification number of E630. The results are presented as a Certified Analytical Report, a copy of which is attached to this report.

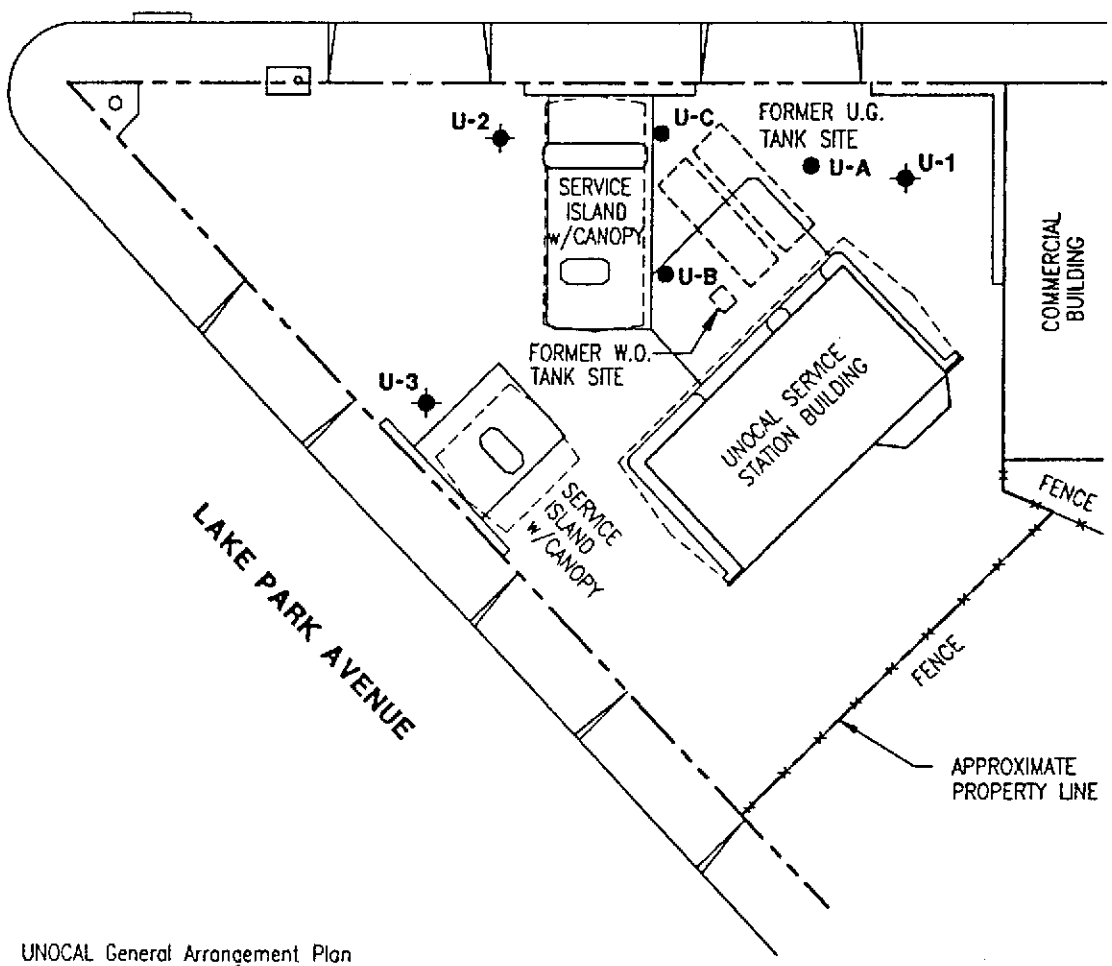
Tom Paulson
Sampling Manager

attachments

TABLE OF MONITORING DATA
GROUNDWATER WELL SAMPLING REPORT

WELL I.D.	U-1	U-2	U-3
Casing Diameter (inches)	3	3	3
Total Well Depth (feet)	20.2	19.9	20.0
Depth to Water (feet)	9.58	8.85	12.08
Free Product (feet)	none	none	none
Reason Not Sampled	----	----	----
Calculated 4 Case Vol.(gal.)	16.1	16.8	12.0
Did Well Dewater?	no	yes	yes
Volume Evacuated (gallons)	19.0	7.0	7.0
Purging Device	Suction	Suction	Suction
Sampling Device	Bailer	Bailer	Bailer
Time	09:22	08:54	08:40
Temperature (F)*	68.1	69.4	66.4
pH*	7.22	6.39	6.97
Conductivity (umhos/cm)*	3210	10960	1242

* Indicates Stabilized Value



EXPLANATION

- Ground-water monitoring well
- Soil boring

Base Map: UNOCAL General Arrangement Plan dated 7-8-66 (Rev, 12-4-84) and field observations

N

0 40

Scale in Feet

PLATE

GeoStrategies Inc.

SITE PLAN
UNOCAL Service Station #5325
3220 Lakeshore Avenue
Oakland, California

JOB NUMBER | REVIEWED BY | DATE | REVISED DATE

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYTICAL SERVICES

RECEIVED

JAN 25 1991

CERTIFICATE OF ANALYSIS GETTLER-RYAN INC.

Date: 01/24/91

Gettler-Ryan
2150 West Winton
Hayward, CA 94545
Tom Paulson

Work Order: T1-01-054 P.O. Number: 3814

This is the Certificate of Analysis for the following samples:

Client Work ID: GR3814, Unocal #5325
Date Received: 01/08/91
Number of Samples: 4
Sample Type: aqueous

TABLE OF CONTENTS FOR ANALYTICAL RESULTS

Reviewed and Approved:

Suzanne Veaudry
Project Manager

IT ANALYTICAL SERVICES
SAN JOSE, CA

Company: Gettler-Ryan
Date: 01/24/91
Client Work ID: GR3814, Unocal #5325

Work Order: T1-01-054

TEST NAME: **Petroleum Hydrocarbons**

SAMPLE ID: **U-1**
SAMPLE DATE: **01/07/91**
LAB SAMPLE ID: **T101054-01**
SAMPLE MATRIX: **aqueous**
RECEIPT CONDITION: **Cool pH < 2**

RESULTS in Micrograms per Liter:

	METHOD	EXTRACTION DATE	ANALYSIS DATE
BTEX	8020		01/12/91
Low Boiling Hydrocarbons	Mod.8015		01/12/91

PARAMETER	DETECTION LIMIT	DETECTED
Low Boiling Hydrocarbons calculated as Gasoline	50.	250.
BTEX		
Benzene	0.5	22.
Toluene	0.5	16.
Ethylbenzene	0.5	4.2
Xylenes (total)	0.5	17.

IT ANALYTICAL SERVICES
SAN JOSE, CA

Company: Gettler-Ryan
Date: 01/24/91
Client Work ID: GR3814, Unocal #5325

Work Order: T1-01-054

TEST NAME: **Petroleum Hydrocarbons**

SAMPLE ID: **U-2**
SAMPLE DATE: **01/07/91**
LAB SAMPLE ID: **T101054-02**
SAMPLE MATRIX: **aqueous**
RECEIPT CONDITION: **Cool pH < 2**

RESULTS in Micrograms per Liter:

	METHOD	EXTRACTION DATE	ANALYSIS DATE
BTEX	8020		01/16/91
Low Boiling Hydrocarbons	Mod.8015		01/16/91

PARAMETER	DETECTION LIMIT	DETECTED
Low Boiling Hydrocarbons calculated as Gasoline	50.	1900.
BTEX		
Benzene	0.5	67.
Toluene	0.5	5.8
Ethylbenzene	0.5	58.
Xylenes (total)	0.5	69.

IT ANALYTICAL SERVICES
SAN JOSE, CA

Company: Gettler-Ryan
Date: 01/24/91
Client Work ID: GR3814, Unocal #5325

Work Order: T1-01-054

TEST NAME: **Petroleum Hydrocarbons**

SAMPLE ID: **U-3**
SAMPLE DATE: **01/07/91**
LAB SAMPLE ID: **T101054-03**
SAMPLE MATRIX: **aqueous**
RECEIPT CONDITION: **Cool pH < 2**

RESULTS in Micrograms per Liter:

	METHOD	EXTRACTION DATE	ANALYSIS DATE
BTEX	8020		01/12/91
Low Boiling Hydrocarbons	Mod.8015		01/12/91

PARAMETER	DETECTION LIMIT	DETECTED
Low Boiling Hydrocarbons calculated as Gasoline	50.	**None**
BTEX		
Benzene	0.5	**None**
Toluene	0.5	**None**
Ethylbenzene	0.5	**None**
Xylenes (total)	0.5	**1.8**

IT ANALYTICAL SERVICES
SAN JOSE, CA

Company: Gettler-Ryan
Date: 01/24/91
Client Work ID: GR3814, Unocal #5325

Work Order: T1-01-054

TEST NAME: **Petroleum Hydrocarbons**

SAMPLE ID: **Trip Blank**
SAMPLE DATE: **not spec**
LAB SAMPLE ID: **T101054-04**
SAMPLE MATRIX: **aqueous**
RECEIPT CONDITION: **Cool pH < 2**

RESULTS in Micrograms per Liter:

	METHOD	EXTRACTION DATE	ANALYSIS DATE
BTEX	8020		01/12/91
Low Boiling Hydrocarbons	Mod.8015		01/12/91

PARAMETER	DETECTION LIMIT	DETECTED
Low Boiling Hydrocarbons calculated as Gasoline	50.	None
BTEX		
Benzene	0.5	None
Toluene	0.5	None
Ethylbenzene	0.5	None
Xylenes (total)	0.5	0.8

IT ANALYTICAL SERVICES
SAN JOSE, CA

Company: Gettler-Ryan
Date: 01/24/91
Client Work ID: GR3814, Unocal #5325

Work Order: T1-01-054

TEST CODE **TPHVB** TEST NAME **TPH Gas,BTEX by 8015/8020**

The method of analysis for low boiling hydrocarbons is taken from EPA Methods modified 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 in series with a photoionization detector. The result for total low boiling hydrocarbons is calculated as gasoline. Results in soils are corrected for moisture content and are reported on a dry soil basis unless otherwise noted.

Geltler - Ryan Inc. IT1-01-054 ENVIRONMENTAL DIVISION **Chain of Custody**

COMPANY Unocal # 5325 JOB NO.

JOB LOCATION 3220 Lakeshore

CITY Oakland PHONE NO. 783-7500

AUTHORIZED Tom Paulson DATE 1-7-91 P.O. NO. 3814.01

SAMPLE ID	NO. OF CONTAINERS	SAMPLE MATRIX	DATE/TIME SAMPLED	ANALYSIS REQUIRED	SAMPLE CONDITION LAB ID
V-1	3	liquid	1-7-91 9:22	THC(gas) BTXE	OK COOL (12)
V-2			8:54		
V-3			8:40		
Trip	1		12-31-90		

RELINQUISHED BY: John P. Zwerzyski 1-7-91 14:45

RECEIVED BY: Refrig # 1 1-7-91 14:46

RELINQUISHED BY: Refrig #1 1-8-91 900

RECEIVED BY: BW Ba 1-8-91 901

RELINQUISHED BY: BW Ba 1-8-91 1319

RECEIVED BY LAB: Jason J. Koch 1/8/91 1319

DESIGNATED LABORATORY: IT (SCV) DHS #: E630

REMARKS: Normal TAT

DATE COMPLETED 1-7-91 FOREMAN John P. Zwerzyski

ORIGINAL