

July 25, 1991

Alameda County Health Agency  
Department of Environmental Health  
80 Swan Way, Room 200  
Oakland, California 94621

Attention: Mr. Barney Chan

Reference: UNOCAL Service Station No. 5325  
3220 Lakeshore Avenue  
Oakland, California 94610

Mr. Chan:

As requested by Ron Bock of UNOCAL Corporation, we are forwarding a copy of the Site Update report dated July 23, 1991, prepared for the above referenced location. This report presents the results of the April 1, 1991 groundwater sampling performed by Gettler-Ryan Inc.

If you should have any questions or comments, please call.

Sincerely,

Keith E. Bullock

KEB/elm

enclosure

cc: Mr. Ron Bock, UNOCAL Corporation  
Mr. Tom Callaghan, Regional Water Quality Control Board

91 JUL 31 PM 3:05



**GeoStrategies Inc.**

**SITE UPDATE**

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

781401-7

July 23, 1991

RECEIVED

JUL 24 1991



**GeoStrategies Inc.**

2140 WEST WINTON AVENUE  
HAYWARD, CALIFORNIA 94545

**GETTLER-RYAN INC.**

GENERAL CONTRACTORS

(415) 352-4800

July 23, 1991

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

Attn: Mr. Keith Bullock

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

Gentlemen:

This Site Update by GeoStrategies Inc. (GSI) presents results of the 1991 second 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, (U-1 through U-3) (Plate 2). These wells were installed by GSI on September 24, 1990. These wells have been installed to evaluate the vertical and horizontal extent of petroleum hydrocarbons in soils and shallow groundwater beneath the site. The underground storage tanks were replaced in June 1990.

Quarterly sampling of wells began in October, 1990. Ground-water 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.

781401-7

# GeoStrategies Inc.

Gettler-Ryan Inc.  
July 23, 1991  
Page 2

## 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 generally to the southeast at a calculated hydraulic gradient of 0.009.

The shallow ground-water flow direction has continued to change over the historical period of monitoring this site (approximately 6 months). Continued monitoring will be needed before an accurate assessment of long-term ground-water flow direction can be performed.

### 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 the wells this quarter.

### Ground-water Analytical Data

Prior to collecting samples, monitoring wells were pumped until ground-water parameters stabilized. Purge volumes and physical parameter values were presented in Table 1. Ground-water samples were collected on April 1, 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.

# GeoStrategies Inc.

Gettler-Ryan Inc.  
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TPH-Gasoline was detected in Wells U-1 and U-2 at concentrations of 160. and 1700. parts per billion (ppb), respectively. Benzene was detected in Wells U-1, U-2 and U-3 at concentrations of 13., 250. and 1.0 ppb, respectively. Well U-3 was reported as None Detected (ND) for TPH-Gasoline. A TPH-Gasoline/benzene concentration map was prepared from this data (Plate 4). Ground-water analyses data are presented in Table 2. Historical analytical data for the site are presented in Table 3. The IT laboratory report and Chain-of-Custody form are presented in Appendix A.

## Quality Control

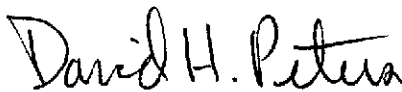
The Quality Control (QC) sample for the quarter's ground-water sampling was a trip blank. The trip blank was prepared in the IT laboratory using organic-free water to evaluate field and laboratory handling and analytical procedures. The results of the QC sample analyses were reported as ND and are presented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

If you have any questions, please call.

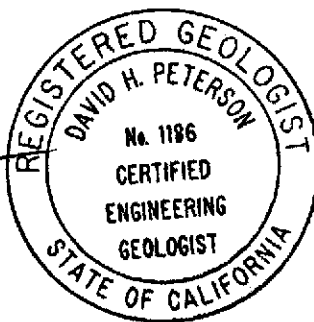
GeoStrategies Inc. by,



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: Ground-water Chemical Analytical Report and Chain-of-Custody Form

TABLE 1

## FIELD MONITORING DATA

WELL NO.	MONITORING DATE	CASING DIA. (IN)	TOTAL WELL DEPTH (FT)	WELL ELEV. (FT)	DEPTH TO WATER (FT)	PRODUCT THICKNESS (FT)	STATIC WATER ELEV. (FT)	PURGED WELL VOLUMES	pH	TEMPERATURE (F)	CONDUCTIVITY (u MHOS/CM)
U-1	01-Apr-91	3	20.2	5.75	9.25	----	-3.50	4	7.25	66.0	2550
U-2	01-Apr-91	3	20.0	4.94	8.15	----	-3.21	4	6.33	68.8	10500
U-3	01-Apr-91	3	20.0	8.14	11.80	----	-3.66	5	7.22	64.7	979

- Notes: 1. Water level elevations referenced to Mean Sea Level (MSL).  
 2. Physical parameter measurements represent stabilized values.  
 3. pH values reported in pH units.  
 4. Static water-levels corrected for floating product (conversion factor = 0.80).

TABLE 2

 =====  
 GROUND-WATER ANALYSES DATA  
 =====

WELL NO	SAMPLE DATE	ANALYZED DATE	TPH-G (PPB)	BENZENE (PPB)	TOLUENE (PPB)	ETHYLBENZENE (PPB)	XYLENES (PPB)
U-1	01-Apr-91	05-Apr-91	160.	13.	8.6	1.0	15.
U-2	01-Apr-91	08-Apr-91	1700.	250.	89.	34.	190.
U-3	01-Apr-91	08-Apr-91	<50.	1.0	2.9	0.53	5.4
TB	----	06-Apr-91	<50.	<0.5	<0.5	<0.5	<0.5

TPH-G = Total Petroleum Hydrocarbons calculated as Gasoline

PPB = Parts Per Billion      TB = Trip Blank

Note: 1. All data shown as <x are reported as ND (none detected).

TABLE 3

## HISTORICAL GROUND-WATER QUALITY DATABASE

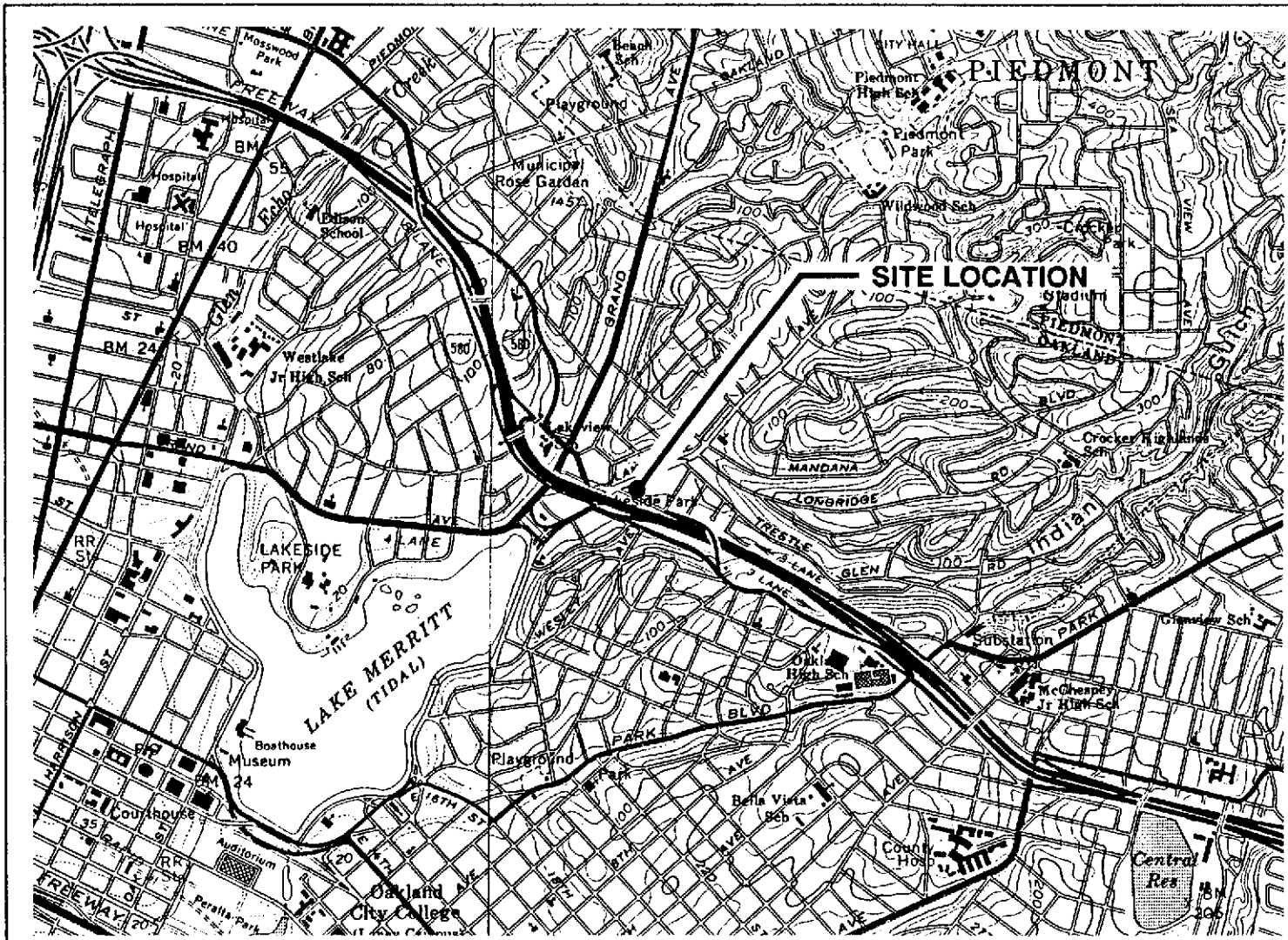
SAMPLE DATE	SAMPLE POINT	TPH-G (PPB)	BENZENE (PPB)	TOLUENE (PPB)	ETHYLBENZENE (PPB)	XYLENES (PPB)
08-Oct-90	U-1	690.	38.	75.	8.6	130.
07-Jan-91	U-1	250.	22.	16.	4.2	17.
01-Apr-91	U-1	160.	13.	8.6	1.0	15.
08-Oct-90	U-2	780.	27.	46.	15.	130.
07-Jan-91	U-2	1900.	67.	5.8	58.	69.
01-Apr-91	U-2	1700.	250.	89.	34.	190.
08-Oct-90	U-3	<50.	<0.5	<0.5	<0.5	<0.5
07-Jan-91	U-3	<50.	<0.5	<0.5	<0.5	1.8
01-Apr-91	U-3	<50.	1.0	2.9	0.53	5.4

TPH-G = Total Petroleum Hydrocarbons calculated as Gasoline

PPB = Parts Per Billion

All data shown as <X are reported as ND (none detected).





Base Map: USGS Topographic Map

Approximate Scale: 1" = 2000'



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

PLATE

1

JOB NUMBER  
7814

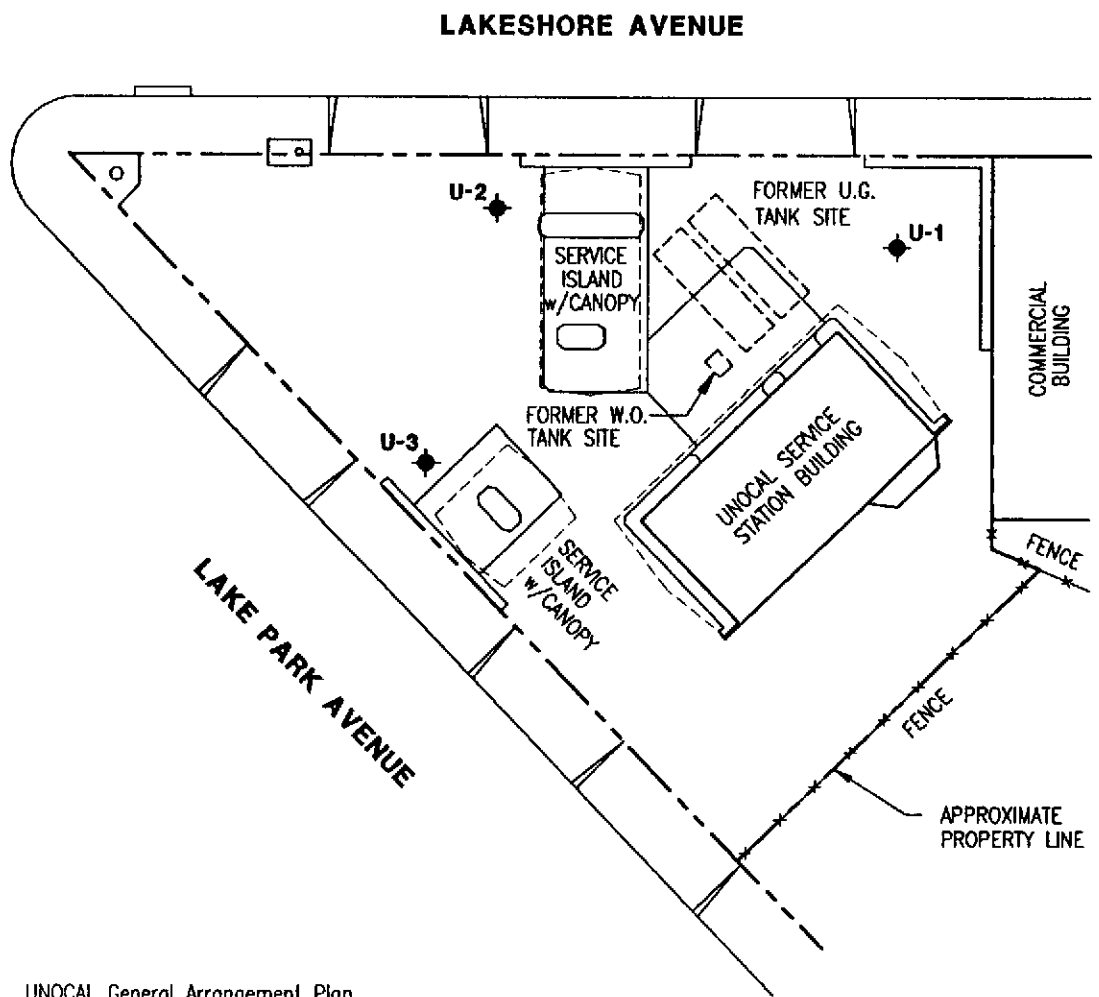
REVIEWED BY RG/CEG

DATE  
6/90

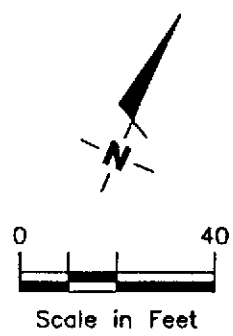
REVISED DATE

**EXPLANATION**

◆ Ground-water monitoring well



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

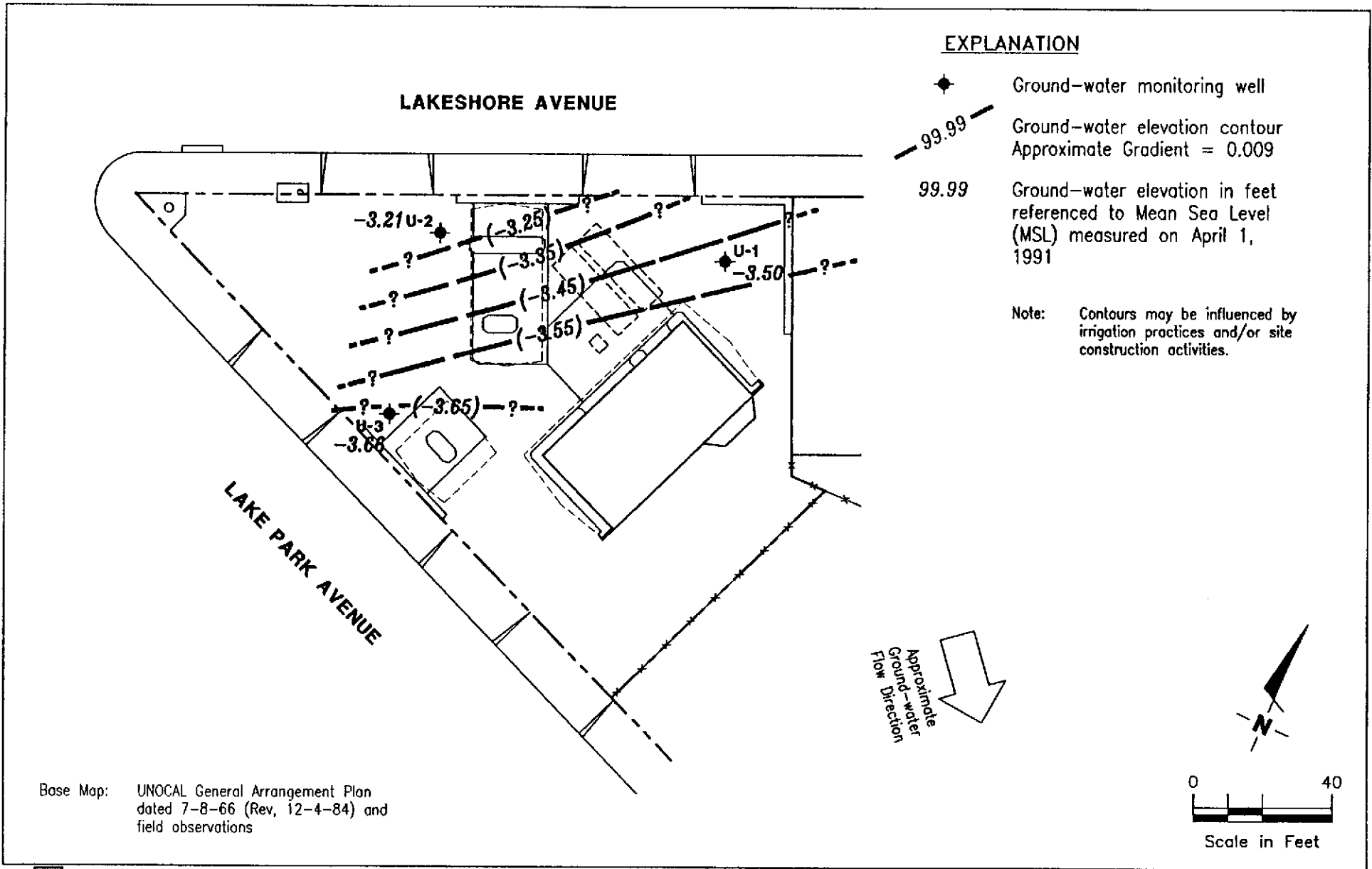
**2**

JOB NUMBER  
781401-7

REVIEWED BY  
JHP

DATE  
5/91

REVISED DATE

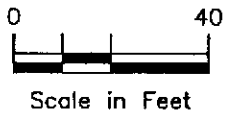


**EXPLANATION**

- ◆ Ground-water monitoring well
- 99.99 --- Ground-water elevation contour  
Approximate Gradient = 0.009
- 99.99 Ground-water elevation in feet  
referenced to Mean Sea Level  
(MSL) measured on April 1,  
1991

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

Approximate  
Ground-water  
Flow Direction



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



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

PLATE

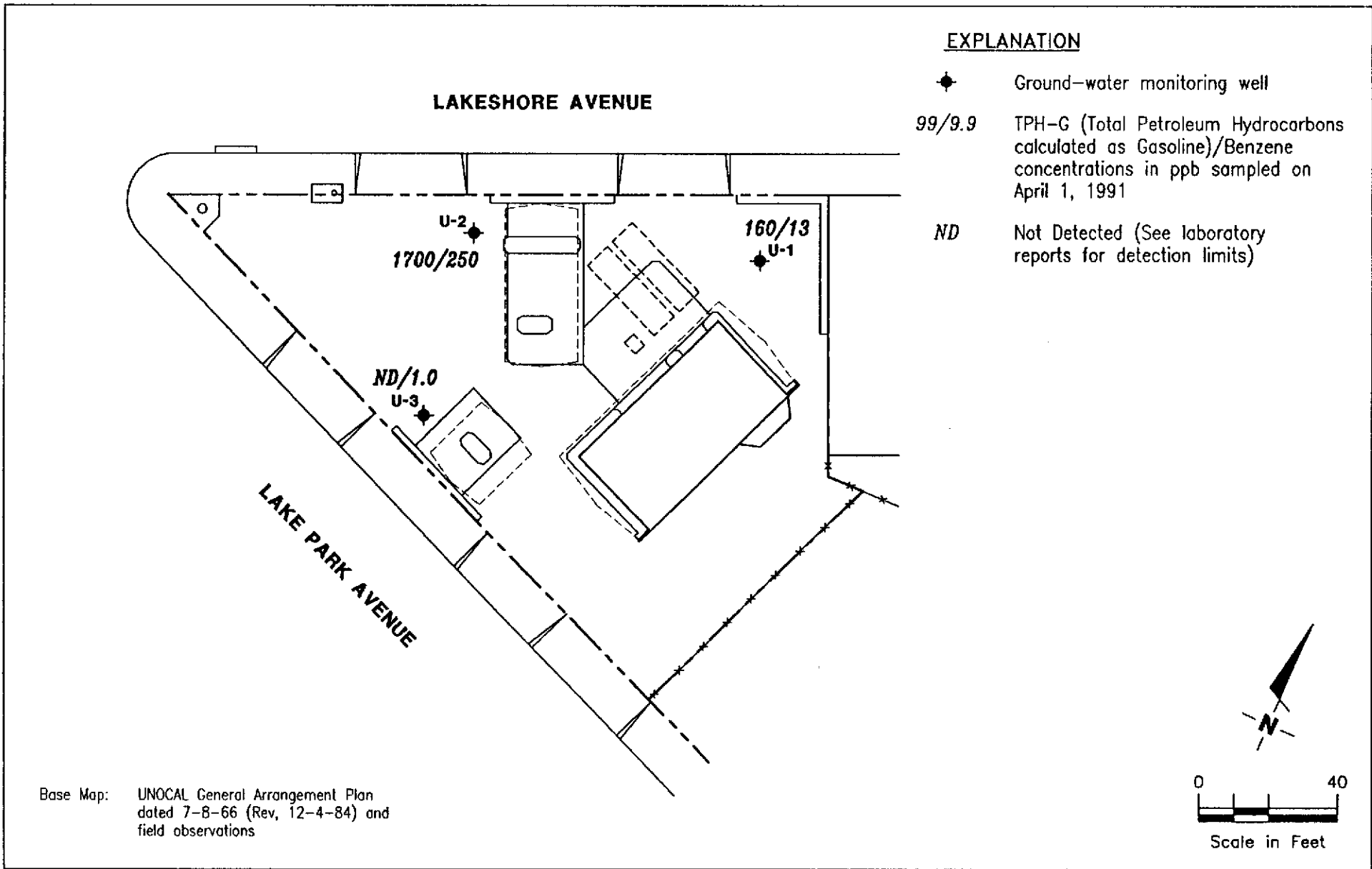
**3**

JOB NUMBER  
781401-7

REVIEWED BY  
DHP

DATE  
5/91

REVISED DATE



GeoStrategies Inc.

TPH-G/BENZENE CONCENTRATION MAP  
 UNOCAL Service Station #5325  
 3220 Lakeshore Avenue  
 Oakland, California

PLATE

4

JOB NUMBER  
781401-7

REVIEWED BY  
DHP

DATE  
5/91

REVISED DATE

APR 19 1991

**CERTIFICATE OF ANALYSIS**

**GETTLER-RYAN INC.**  
GENERAL CONTRACTORS

Date: 04/18/91

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

(CORRECTED REPORT)

Work Order: T1-04-019

P.O. Number: 3814.01

This is the Certificate of Analysis for the following samples:

Client Work ID: 3220 Lakeshore, Unocal  
Date Received: 04/02/91  
Number of Samples: 5  
Sample Type: aqueous

**TABLE OF CONTENTS FOR ANALYTICAL RESULTS**

<u>PAGES</u>	<u>LABORATORY #</u>	<u>SAMPLE IDENTIFICATION</u>
2	T1-04-019-01	U-1
3	T1-04-019-02	U-2
4	T1-04-019-03	U-3
5	T1-04-019-04	TRIP BLANK
7	T1-04-019-05	Quality Control

Reviewed and Approved:

  
Suzanne Veaudry  
Project Manager

American Council of Independent Laboratories  
International Association of Environmental Testing Laboratories  
American Association for Laboratory Accreditation

Company: Gettler-Ryan

Date: 04/18/91

Client Work ID: 3220 Lakeshore, Unocal

Work Order: T1-04-019

## TEST NAME: Petroleum Hydrocarbons

SAMPLE ID: U-1

SAMPLE DATE: 04/01/91

LAB SAMPLE ID: T104019-01

SAMPLE MATRIX: aqueous

RECEIPT CONDITION: Cool pH &lt; 2

## RESULTS in Micrograms per Liter:

	<u>METHOD</u>	<u>EXTRACTION DATE</u>	<u>ANALYSIS DATE</u>
BTEX	8020		04/05/91
Low Boiling Hydrocarbons	Mod.8015		04/05/91

<u>PARAMETER</u>	<u>DETECTION LIMIT</u>	<u>DETECTED</u>
Low Boiling Hydrocarbons calculated as Gasoline	50.	160.
BTEX		
Benzene	0.5	13.
Toluene	0.5	8.6
Ethylbenzene	0.5	1.0
Xylenes (total)	0.5	15.

Company: Gettler-Ryan  
 Date: 04/18/91  
 Client Work ID: 3220 Lakeshore, Unocal

Work Order: T1-04-019

## TEST NAME: Petroleum Hydrocarbons

SAMPLE ID: U-2  
 SAMPLE DATE: 04/01/91  
 LAB SAMPLE ID: T104019-02  
 SAMPLE MATRIX: aqueous  
 RECEIPT CONDITION: Cool pH < 2

## RESULTS in Micrograms per Liter:

	<u>METHOD</u>	<u>EXTRACTION DATE</u>	<u>ANALYSIS DATE</u>
BTEX	8020		04/08/91
Low Boiling Hydrocarbons	Mod.8015		04/08/91

<u>PARAMETER</u>	<u>DETECTION LIMIT</u>	<u>DETECTED</u>
Low Boiling Hydrocarbons calculated as Gasoline	250.	1700.
BTEX		
Benzene	2.5	250.
Toluene	2.5	89.
Ethylbenzene	2.5	34.
Xylenes (total)	2.5	190.

Company: Gattler-Ryan  
 Date: 04/18/91  
 Client Work ID: 3220 Lakeshore, Unocal

Work Order: T1-04-019

## TEST NAME: Petroleum Hydrocarbons

SAMPLE ID: U-3  
 SAMPLE DATE: 04/01/91  
 LAB SAMPLE ID: T104019-03  
 SAMPLE MATRIX: aqueous  
 RECEIPT CONDITION: Cool pH < 2

## RESULTS in Micrograms per Liter:

	METHOD	EXTRACTION DATE	ANALYSIS DATE
BTEX	8020		04/08/91
Low Boiling Hydrocarbons	Mod.8015		04/08/91

PARAMETER	DETECTION LIMIT	DETECTED
Low Boiling Hydrocarbons calculated as Gasoline	50.	None
BTEX		
Benzene	0.5	1.0
Toluene	0.5	2.9
Ethylbenzene	0.5	0.53
Xylenes (total)	0.5	5.4



Company: Gettler-Ryan  
 Date: 04/18/91  
 Client Work ID: 3220 Lakeshore, Unocal

Work Order: T1-04-019

## TEST NAME: Petroleum Hydrocarbons

SAMPLE ID: TRIP BLANK  
 SAMPLE DATE: not spec  
 LAB SAMPLE ID: T104019-04  
 SAMPLE MATRIX: aqueous  
 RECEIPT CONDITION: Cool pH < 2

## RESULTS in Micrograms per Liter:

	METHOD	EXTRACTION DATE	ANALYSIS DATE
BTEX	8020		04/06/91
Low Boiling Hydrocarbons	Mod.8015		04/06/91

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	None

Company: Gettler-Ryan  
 Date: 04/18/91  
 Client Work ID: 3220 Lakeshore, Unocal

Work Order: T1-04-019

TEST NAME: Spike and Spike Duplicates

SAMPLE ID: Quality Control  
 SAMPLE DATE: not spec  
 LAB SAMPLE ID: T104019-05A  
 EXTRACTION DATE:  
 ANALYSIS DATE: 04/05/91  
 ANALYSIS METHOD: 8020

## QUALITY CONTROL REPORT

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Analyses

RESULTS in Micrograms per Liter

PARAMETER	Sample Amt	Spike Amt	MS Result	MSD Result	MS %Rec	MSD %Rec	RPD
Benzene	ND<0.5	20.0	20.0	20.8	100.	104.	4.
Toluene	ND<0.5	20.0	19.5	20.2	98.	101.	3.
Ethyl benzene	ND<0.5	20.0	18.6	19.6	93.	98.	5.
Xylenes	ND<0.5	60.0	47.7	50.2	80.	84.	5.

SURROGATES	MS %Rec	MSD %Rec
1,3-Dichlorobenzene	104.	104.

Company: Gettler-Ryan

Date: 04/18/91

Client Work ID: 3220 Lakeshore, Unocal

Work Order: T1-04-019

TEST NAME: Spike and Spike Duplicates

SAMPLE ID: Quality Control

SAMPLE DATE: not spec

LAB SAMPLE ID: T104019-05B

EXTRACTION DATE:

ANALYSIS DATE: 04/06/91

ANALYSIS METHOD: Mod.8015

QUALITY CONTROL REPORT

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Analyses

RESULTS in Micrograms per Liter

PARAMETER	Sample Amt	Spike Amt	MS Result	MSD Result	MS %Rec	MSD %Rec	RPD
Gasoline	ND<50.	500.	390.	406.	78.	81.	4.
SURROGATES					MS %Rec	MSD %Rec	
1,3-Dichlorobenzene					77.	78.	

Company: Gettler-Ryan

Date: 04/18/91

Client Work ID: 3220 Lakeshore, Unocal

Work Order: T1-04-019

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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.

