



GeoStrategies Inc.

SITE UPDATE

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

781401-8

September 20, 1991

RECEIVED

SEP 24 1991



GeoStrategies Inc.

2140 WEST WINTON AVENUE
HAYWARD, CALIFORNIA 94545

GETTLER-RYAN INC.
GENERAL CONTRACTORS
(415) 352-7800

September 20, 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 third 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 Xylenes (BTEX) according to EPA Method 8020.

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September 20, 1991
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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 ± 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 south at a calculated hydraulic gradient of 0.01.

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 July 3, 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 Sequoia Analytical, a State-certified environmental laboratory located in Redwood City, California.

TPH - Gasoline was detected in samples from Wells U - 1 and U - 2 at concentrations of 140 and 2,100 parts per billion (ppb), respectively. Benzene was detected in Wells U-1 and U-2 at concentrations of 21 and 150 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). Ground-water analyses data are presented in Table 2. Historical analytical data for the site are presented in Table 3. The analytical laboratory report and Chain-of-Custody form are presented in Appendix A.

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Gettler-Ryan Inc.
September 20, 1991
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Quality Control

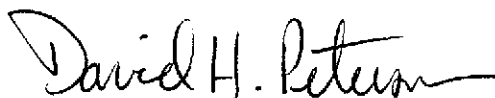
The Quality Control (QC) sample for the quarter's ground-water sampling was a trip blank. The trip blank was prepared in the Sequoia laboratory using organic-free water to evaluate field and laboratory handling and analytical procedures. The results of the QC sample analyses were reported as ND and are presented in Table 2.

If you have any questions, please call.

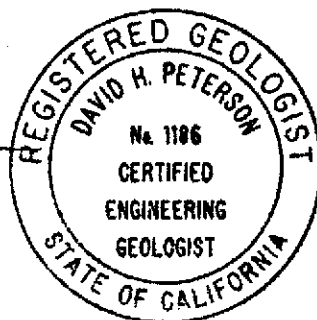
GeoStrategies Inc. by,



Cliff M. Garratt
Hydrogeologist



David H. Peterson
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: Analytical Laboratory Report and Chain-of-Custody Form


QC Review: 

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	03-Jul-91	3	20.3	5.75	9.09	----	-3.34	5	7.10	66.8	2890
U-2	03-Jul-91	3	19.9	4.94	8.41	----	-3.47	3	7.00	68.0	7850
U-3	03-Jul-91	3	20.1	8.14	12.15	----	-4.01	5	6.90	66.5	1117

- 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.

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	03-Jul-91	12-Jul-91	140	21	4.3	0.36	17
U-2	03-Jul-91	12-Jul-91	2,100	150	25	3.1	290
U-3	03-Jul-91	12-Jul-91	<30	<0.30	<0.30	<0.30	<0.30
TB	----	12-Jul-91	<30	<0.30	<0.30	<0.30	<0.30

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).

TABLE 3

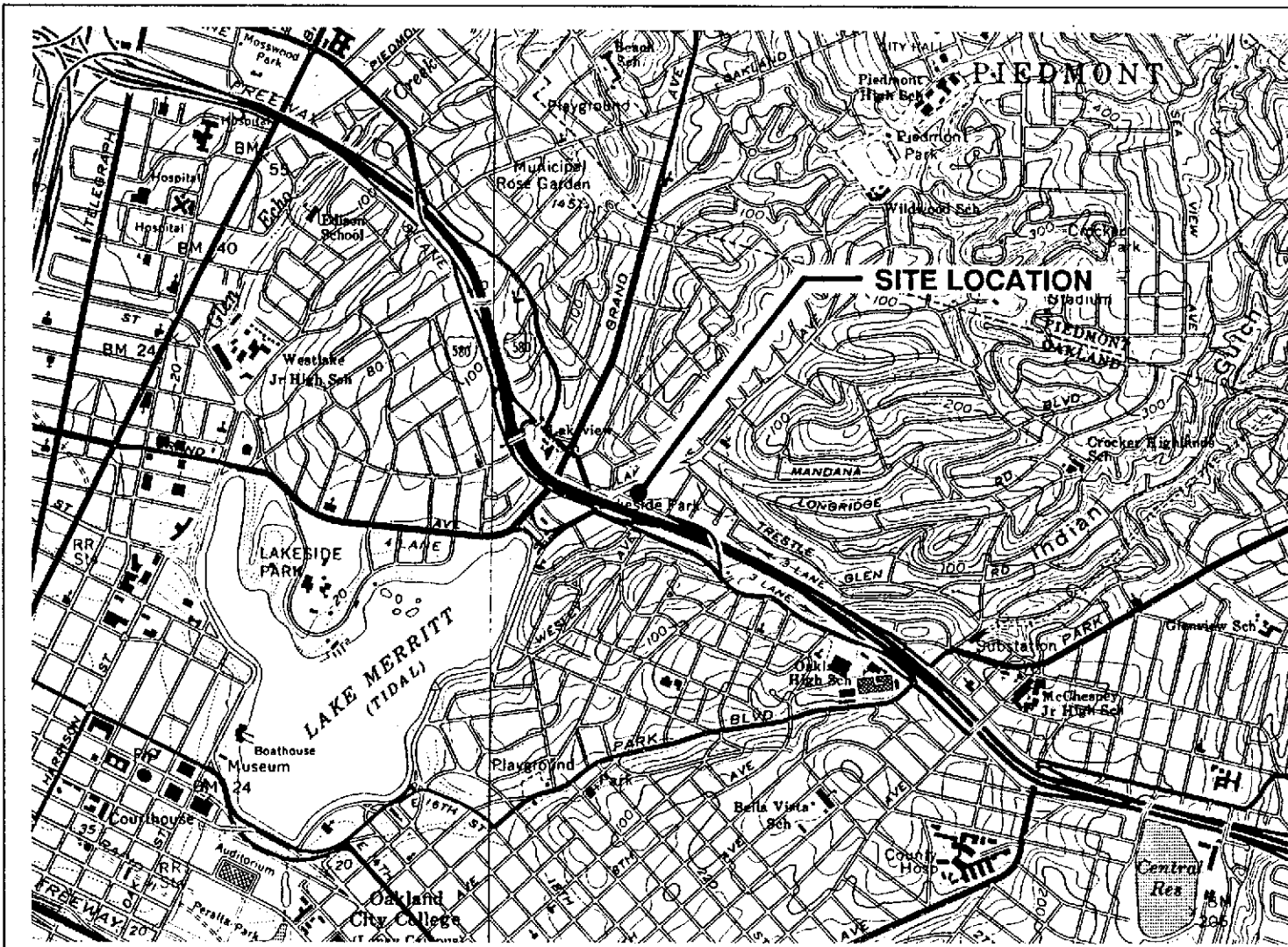
HISTORICAL GROUND-WATER QUALITY DATABASE

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.
03-Jul-91	U-1	140	21	4.3	0.36	17
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.
03-Jul-91	U-2	2100	150	25	3.1	290
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
03-Jul-91	U-3	<30	<0.30	<0.30	<0.30	<0.30

TPH-G = Total Petroleum Hydrocarbons calculated as Gasoline

PPB = Parts Per Billion

NOTE 1. 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
7814

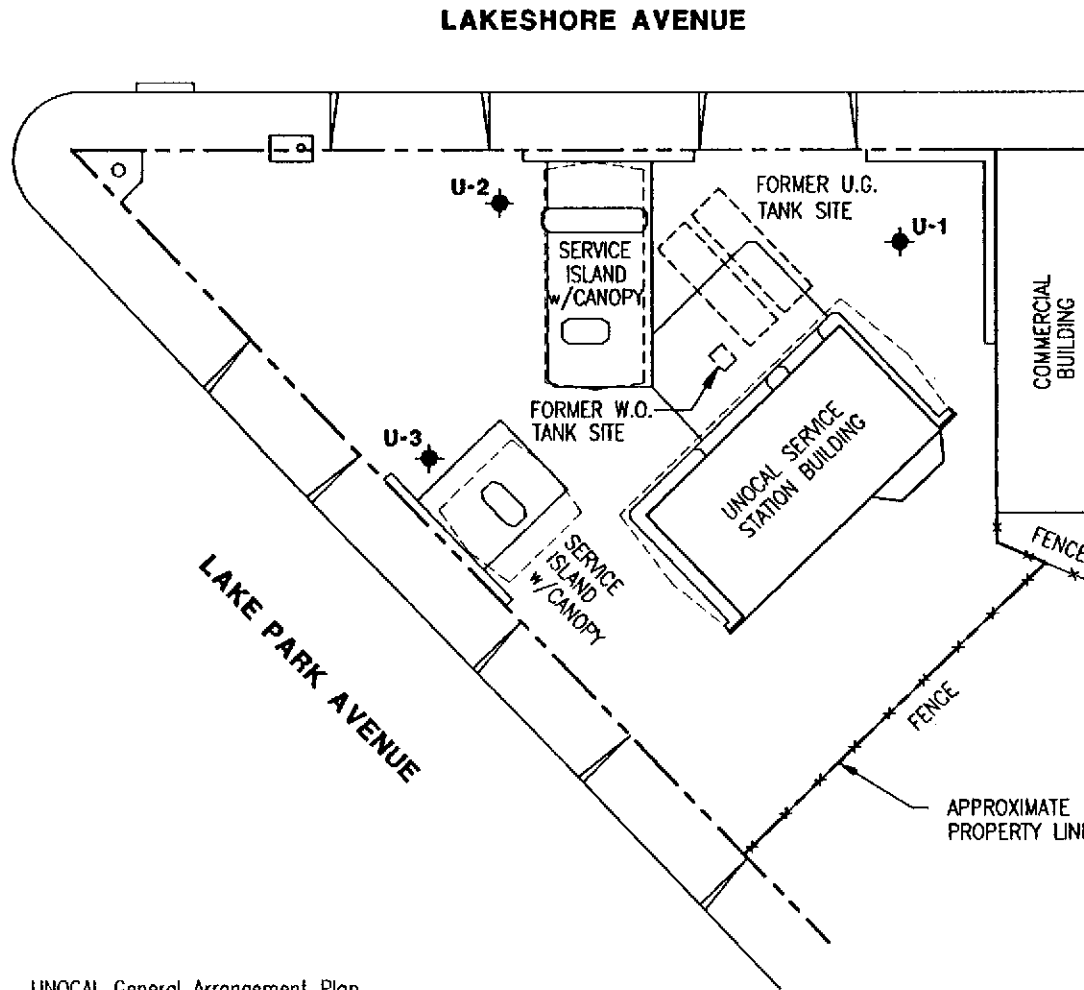
REVIEWED BY RG/CEG

DATE
6/90

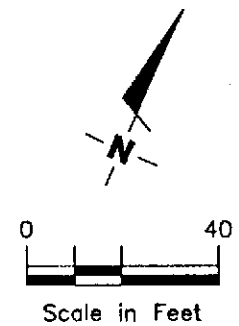
REVISED DATE

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
781401-8

REVIEWED BY
DHP

DATE
8/91

REVISED DATE



SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

RECEIVED

JUL 24 1991

GETTLER-RYAN INC.

Gettler Ryan
2150 W. Winton Avenue
Hayward, CA 94545
Attention: Tom Paulson

Client Project ID: #3814.01, Unocal 3325, Oakland
Matrix Descript: Water
Analysis Method: EPA 5030/8015/8020
First Sample #: 107-1372

Sampled FORS Jul 3, 1991
Received: Jul 8, 1991
Analyzed: Jul 10-12, 1991
Reported: Jul 22, 1991

TOTAL PETROLEUM FUEL HYDROCARBONS with BTEX DISTINCTION (EPA 8015/8020)

Sample Number	Sample Description	Low/Medium B.P. Hydrocarbons			Ethyl Benzene	Xylenes
		$\mu\text{g/L}$ (ppb)	$\mu\text{g/L}$ (ppb)	$\mu\text{g/L}$ (ppb)	$\mu\text{g/L}$ (ppb)	$\mu\text{g/L}$ (ppb)
107-1372	U-1	140	21	4.3	0.36	17
107-1373	U-2	2,100	150	25	3.1	290
107-1374	U-3	N.D.	N.D.	N.D.	N.D.	N.D.
107-1375	Trip Blank	N.D.	N.D.	N.D.	N.D.	N.D.

Detection Limits:	30	0.30	0.30	0.30	0.30
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Low to Medium Boiling Point Hydrocarbons are quantitated against a gasoline standard.
Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL

Vickie Tague
Project Manager

1071372.GET <1>



SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

Gettler Ryan
2150 W. Winton Avenue
Hayward, CA 94545
Attention: Tom Paulson

Client Project ID: #3814.01, Unocal 3325, Oakland

Q C Sample Group: 1071372-73, 75

Reported: Jul 22, 1991

QUALITY CONTROL DATA REPORT

ANALYTE	Benzene	Toluene	Ethyl Benzene	Xylenes
---------	---------	---------	---------------	---------

Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020
Analyst:	L. Laikhtman	L. Laikhtman	L. Laikhtman	L. Laikhtman
Reporting Units:	ng	ng	ng	ng
Date Analyzed:	Jul 10, 1991	Jul 10, 1991	Jul 10, 1991	Jul 10, 1991
QC Sample #:	GBLK071091	GBLK071091	GBLK071091	GBLK071091

Sample Conc.: N.D. N.D. N.D. N.D.

Spike Conc. Added: 100 100 100 300

Conc. Matrix Spike: 110 110 110 320

Matrix Spike % Recovery: 110 110 110 107

Conc. Matrix Spike Dup.: 100 100 100 300

Matrix Spike Duplicate % Recovery: 100 100 100 100

Relative % Difference: 9.5 9.5 9.5 6.5

SEQUOIA ANALYTICAL

V. Tague
Vickie Tague
Project Manager

% Recovery:	$\frac{\text{Conc. of M.S.} - \text{Conc. of Sample}}{\text{Spike Conc. Added}} \times 100$
Relative % Difference:	$\frac{\text{Conc. of M.S.} - \text{Conc. of M.S.D.}}{(\text{Conc. of M.S.} + \text{Conc. of M.S.D.}) / 2} \times 100$

1071372.GET <2>



SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

Gettler Ryan
2150 W. Winton Avenue
Hayward, CA 94545
Attention: Tom Paulson

Client Project ID: #3814.01, Unocal 3325, Oakland

Q C Sample Group: 107-1374

Reported: Jul 22, 1991

QUALITY CONTROL DATA REPORT

ANALYTE	Benzene	Toluene	Ethyl Benzene	Xylenes
---------	---------	---------	---------------	---------

Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020
Analyst:	L. Laikhtman	L. Laikhtman	L. Laikhtman	L. Laikhtman
Reporting Units:	ng	ng	ng	ng
Date Analyzed:	Jul 12, 1991	Jul 12, 1991	Jul 12, 1991	Jul 12, 1991
QC Sample #:	GBLK071291	GBLK071291	GBLK071291	GBLK071291

Sample Conc.:	N.D.	N.D.	N.D.	N.D.
Spike Conc. Added:	100	100	100	300
Conc. Matrix Spike:	100	100	100	300
Matrix Spike % Recovery:	100	100	100	100
Conc. Matrix Spike Dup.:	100	100	100	300
Matrix Spike Duplicate % Recovery:	100	100	100	100
Relative % Difference:	0	0	0	0

SEQUOIA ANALYTICAL

Vickie Tague
Project Manager

% Recovery:	$\frac{\text{Conc. of M.S.} - \text{Conc. of Sample}}{\text{Spike Conc. Added}} \times 100$
Relative % Difference:	$\frac{\text{Conc. of M.S.} - \text{Conc. of M.S.D.}}{(\text{Conc. of M.S.} + \text{Conc. of M.S.D.}) / 2} \times 100$