



**GeoStrategies Inc.**

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April 8, 1993

*Susan #413*  
~~Mr. Barney Chan~~  
County of Alameda  
Department of Environmental Health  
Hazardous Materials Division  
80 Swan Way, Room 200  
Oakland, California 94621

Reference: Former Shell Service Station  
2800 Telegraph Avenue  
Oakland, California  
WIC 204-5508-2303

Mr. Chan:

As requested by Mr. Dan Kirk of Shell Oil Company, we are forwarding a copy of the Quarterly Report dated April 8, 1993. The enclosed report presents the first quarter 1993 ground-water sampling conducted at the above referenced location.

If you have any questions, please call.

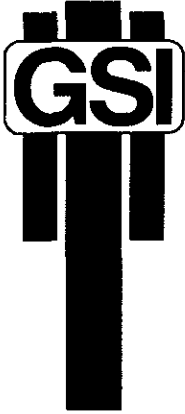
Sincerely,

Ellen Fostersmith  
Geologist

enclosure

cc: Mr. Dan Kirk, Shell Oil Company  
Mr. Jeff Holland, Shell Oil Company  
Mr. Lester Feldman, Regional Water Quality Control Board

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**GeoStrategies Inc.**

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April 8, 1993

Shell Oil Company  
P.O. Box 5278  
Concord, California

Attn: Mr. Dan Kirk

Re: QUARTERLY REPORT  
Former Shell Service Station  
2800 Telegraph Avenue  
Oakland, California  
WIC# 204-5508-2303

Mr. Kirk:

This Quarterly Report has been prepared by GeoStrategies Inc. (GSI) and presents the results of the 1993 first quarter sampling for the above referenced site (Plate 1). Sampling data were furnished by the Shell Oil Company sampling contractor.

**EXECUTIVE SUMMARY**

- During the tank removal activities in December 1988, it was estimated that at least 1,000 cubic yards were excavated and removed from the site.
- Approximately 900 gallons of contaminated groundwater were removed from the excavation pit.
- During the hydraulic lift and piping trench removal in June 1992, approximately 100 yards of contaminated soil were removed from the site.
- Well S-2 is scheduled for abandonment during the second quarter of 1993.

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- Well S-3 cannot be located due to the recent construction activities associated with new construction at the site.
- The underground piping, containment pad, and enclosure for the remediation system are presently under construction in conjunction with construction of a fast food restaurant onsite. Completion of these activities is expected during the second quarter of 1993.

### **SITE DESCRIPTION**

There are currently eleven monitoring wells and one recovery well at the site; Wells S-1 through S-11 and SR-1 (Plate 2). These wells were installed in 1988 and 1989 by Woodward-Clyde Consultants and GSI.

### **CURRENT QUARTER SAMPLING RESULTS**

Depth to water-level measurements were obtained in each monitoring well on February 22, 1993. Static ground-water levels were measured from the surveyed top of the well box and recorded to the nearest  $\pm 0.01$  foot. Water-level elevations, referenced to Mean Sea Level (MSL) datum and are presented in Table 1. Water-level data were used to construct a quarterly potentiometric map (Plate 2). Shallow ground-water flow is to the southwest at an approximate hydraulic gradient of 0.01.

Each well was checked for the presence of floating product. Floating product was not observed in the wells this quarter.

Ground-water samples were collected on February 22 and 23, 1993. Samples were analyzed for Total Petroleum Hydrocarbons calculated as Gasoline (TPH-Gasoline), according to EPA Method 8015 (Modified) and for Benzene, Toluene, Ethylbenzene, and Xylenes (BTEX) according to EPA Method 8020.

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The ground-water samples were analyzed by Anametrix Inc., a California State-certified laboratory located in San Jose, California. These data are summarized and included with the historical chemical analytical data presented in Table 2. A chemical isoconcentration map for benzene is presented on Plate 3.

### **TREATMENT SYSTEM**

A treatment system consisting of one groundwater extraction well and two soil vapor extraction wells has been designed. Construction of the underground piping and sewer connection for the system was completed in November, 1992. Since that time, construction of a Kentucky Fried Chicken restaurant has been ongoing at the site. When this construction is complete, the pad and enclosure for the system equipment will be finished. Equipment for the groundwater treatment system will include pneumatically driven total fluids groundwater extraction pumps, an oil/water separator, particulate filters, a surge tank, and carbon vessels. The treatment method for soil vapor has not yet been selected.

### **DISCUSSION**

The remediation system's underground piping, pad, enclosure and commercial building construction is scheduled for completion in the second quarter 1993. An attempt to abandon well S-2 was cancelled because of an open trench near the well and extremely muddy conditions at the site. This well is scheduled for abandonment in the early part of the second quarter of 1993. During the initial construction activities, Well S-3 was lost. Prior to bringing the site up to final grade, another attempt to locate Well S-3 will be made.

The dissolved hydrocarbon plume beneath the sites is defined on the north by Well S-1, on the west by Wells S-4 and S-5, and on the east by Well S-10. Wells S-1, S-4, S-5 and S-10 have been reported as Non Detect for benzene for at least eight consecutive quarters.

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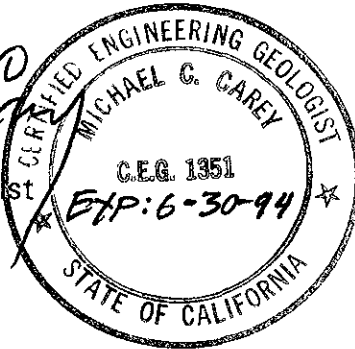
If you have any questions, please call.

GeoStrategies Inc. by,

*Ellen C. Fostersmith*

Ellen C. Fostersmith  
Geologist

*Michael Carey*  
Michael C. Carey  
Engineering Geologist  
C.E.G. 1351



ECF/MCC/rmt

Plate 1. Vicinity Map  
Plate 2. Site Plan/Potentiometric Map  
Plate 3. Benzene Isoconcentration Map

Appendix A: Blaine Tech Services Inc. Sampling Report and Chain-of-Custody Form

QC Review *MM*

**GeoStrategies Inc.**

**TABLES**

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	STATIC WATER ELEV. (FT)
S-1	22-Feb-93	3	27.20	35.31	7.60	----	27.71
S-2	22-Feb-93	3	22.72	----	9.04	----	----
S-3	22-Feb-93	3	----	----	----	----	----
S-4	22-Feb-93	3	30.50	34.08	9.82	----	24.26
S-5	22-Feb-93	3	30.66	33.42	9.45	----	23.97
S-6	22-Feb-93	3	22.12	32.59	7.60	----	24.99
S-7	22-Feb-93	3	30.80	33.33	8.86	----	24.47
S-8	22-Feb-93	3	19.18	31.97	6.04	----	25.93
S-9	22-Feb-93	3	30.02	31.86	8.00	----	23.86
S-10	22-Feb-93	3	24.3	32.95	6.72	----	26.23
S-11	22-Feb-93	3	19.30	30.78	7.30	----	23.48
SR-1	22-Feb-93	6	34.20	----	6.64	----	----

- Notes:
1. Static water elevations referenced to Mean Sea Level (MSL).
  2. Physical parameter measurements represent stabilized values.
  3. Wells S-2 was measured top of casing due to construction.
  4. Well S-3 was inaccessible due to construction activities.

TABLE 2

## HISTORICAL GROUND-WATER QUALITY DATABASE

SAMPLE DATE	SAMPLE POINT	TPH-G (PPB)	BENZENE (PPB)	TOLUENE (PPB)	ETHYLBENZENE (PPB)	XYLENES (PPB)	TPH-D (PPB)	OIL (PPB)
02-May-88	S-1	<50	500	<1	---	<4	<1,000	<5,000
08-Nov-88	S-1	<50	<0.5	<1	<1	<3	N/A	N/A
02-May-89	S-1	<50	<0.5	<1	<1	<3	N/A	N/A
03-Aug-89	S-1	<50	<0.5	<1	<1	<3	N/A	N/A
03-Oct-89	S-1	<50	<0.5	<1	<1	<3	N/A	N/A
16-Jan-90	S-1	<50	<0.5	<0.5	<0.5	<1	N/A	N/A
13-Apr-90	S-1	<50	<0.5	0.6	<0.5	<1	N/A	N/A
05-Jul-90	S-1	<50	<0.5	<0.5	<0.5	<1	N/A	N/A
12-Oct-90	S-1	<50	<0.5	<0.5	<0.5	<0.5	N/A	N/A
22-Jan-91	S-1	<50	<0.5	<0.5	<0.5	<0.5	N/A	N/A
30-Apr-91	S-1	<50	<0.5	<0.5	<0.5	<0.5	N/A	N/A
12-Jul-91	S-1	<50	<0.5	<0.5	<0.5	<0.5	N/A	N/A
04-Oct-91	S-1	<50	<0.5	<0.5	<0.5	<0.5	N/A	N/A
29-Jan-92	S-1	<50	<0.5	<0.5	<0.5	<0.5	N/A	N/A
29-Jan-92	S-1	<50	<0.5	<0.5	<0.5	<0.5	N/A	N/A
04-May-92	S-1	<50	<0.5	<0.5	<0.5	<0.5	N/A	N/A
10-Aug-92	S-1	<50	<0.5	<0.5	<0.5	<0.5	N/A	N/A
09-Nov-92	S-1	<50	<0.5	<0.5	<0.5	<0.5	N/A	N/A
23-Feb-93	S-1	<50	<0.5	<0.5	<0.5	<0.5	N/A	N/A
02-May-88	S-2	1,600	79	89	---	48	N/A	N/A
08-Nov-88	S-2	200	22	1	16	8	N/A	N/A
02-May-89	S-2	2,200	500	52	120	180	N/A	N/A
03-Aug-89	S-2	430	73	1	14	7	N/A	N/A
03-Oct-89	S-2	370	12	19	13	78	N/A	N/A
16-Jan-90	S-2	420	75	9.9	32	52	N/A	N/A
13-Apr-90	S-2	340	63	2.5	19	15	N/A	N/A
05-Jul-90	S-2	100	10	<0.5	1.8	2	N/A	N/A
12-Oct-90	S-2	<50	2	<0.5	<0.5	<0.5	N/A	N/A
22-Jan-91	S-2	<50	<0.5	<0.5	<0.5	<0.5	N/A	N/A
30-Apr-91	S-2	600	60	3.6	16	15	N/A	N/A
12-Jul-91	S-2	150	22	<0.5	3.6	2.7	N/A	N/A
04-Oct-91	S-2	90	15	<0.5	0.7	1.2	N/A	N/A
29-Jan-92	S-2	280	45	0.8	5.3	5.2	N/A	N/A
04-May-92	S-2	1,600	190	6	240	54	N/A	N/A



TABLE 2

## HISTORICAL GROUND-WATER QUALITY DATABASE

SAMPLE DATE	SAMPLE POINT	TPH-G (PPB)	BENZENE (PPB)	TOLUENE (PPB)	ETHYLBENZENE (PPB)	XYLENES (PPB)	TPH-D (PPB)	OIL (PPB)
10-Aug-92	S-2	<50	4.1	<0.5	<0.5	<0.5	N/A	N/A
09-Nov-92	S-2	84	19	0.7	2.2	4.3	N/A	N/A
23-Feb-93	S-2	16,000	1,600	480	850	1,800	N/A	N/A
02-May-88	S-3	46,000	2,700	10,000	---	10,000	N/A	N/A
02-May-89	S-3	47,000	2,000	6,000	1,700	7,200	N/A	N/A
13-Apr-90	S-3	16,000	540	2,400	810	3,900	N/A	N/A
05-Jul-90	S-3	16,000	420	1,700	640	3,100	N/A	N/A
12-Oct-90	S-3		Free Product	0.12 ft				
22-Jan-91	S-3		Free Product	0.15 ft				
30-Apr-91	S-3		Free Product	0.13 ft				
12-Jul-91	S-3		Free Product	0.13 ft				
04-Oct-91	S-3		Free Product	0.11 ft				
29-Jan-92	S-3		Not Sampled					
04-May-92	S-3		Free Product	0.01 ft				
10-Aug-92	S-3		Not Sampled					
09-Nov-92	S-3		Not Sampled					
23-Feb-93	S-3		Inaccessible					
08-Nov-88	S-4	<50	<0.5	<1	<1	<3	N/A	N/A
22-Feb-89	S-4	<50	<0.5	<1	<1	<3	N/A	N/A
02-May-89	S-4	<50	<0.5	<1	<1	<3	N/A	N/A
03-Aug-89	S-4	<50	<0.5	<1	<1	<3	N/A	N/A
03-Oct-89	S-4	<50	<0.5	<1	<1	<3	N/A	N/A
16-Jan-90	S-4	<50	<0.5	<0.5	<0.5	1	N/A	N/A
13-Apr-90	S-4	<50	<0.5	<0.5	<0.5	<1	N/A	N/A
05-Jul-90	S-4	<50	<0.5	<0.5	<0.5	<1	N/A	N/A
12-Oct-90	S-4	<50	1	4.7	1	3.2	N/A	N/A
22-Jan-91	S-4	<50	<0.5	<0.5	<0.5	2.9	N/A	N/A
30-Apr-91	S-4	<50	<0.5	<0.5	<0.5	<0.5	N/A	N/A
12-Jul-91	S-4	<50	<0.5	<0.5	<0.5	<0.5	N/A	N/A
04-Oct-91	S-4	<50	<0.5	<0.5	<0.5	<0.5	N/A	N/A
29-Jan-92	S-4	<50	<0.5	<0.5	<0.5	<0.5	N/A	N/A
04-May-92	S-4	<50	<0.5	<0.5	<0.5	<0.5	N/A	N/A
10-Aug-92	S-4	<50	<0.5	<0.5	<0.5	<0.5	N/A	N/A
09-Nov-92	S-4	<50	<0.5	<0.5	<0.5	<0.5	N/A	N/A
23-Feb-93	S-4	<50	<0.5	<0.5	<0.5	<0.5	N/A	N/A

TABLE 2

## HISTORICAL GROUND-WATER QUALITY DATABASE

SAMPLE DATE	SAMPLE POINT	TPH-G (PPB)	BENZENE (PPB)	TOLUENE (PPB)	ETHYLBENZENE (PPB)	XYLENES (PPB)	TPH-D (PPB)	OIL (PPB)
08-Nov-88	S-5	<50	<0.5	<1	<1	<3	N/A	N/A
22-Feb-89	S-5	<50	<0.5	<1	<1	<3	N/A	N/A
02-May-89	S-5	<50	<0.5	<1	<1	<3	N/A	N/A
03-Aug-89	S-5	<50	<0.5	<1	<1	<3	N/A	N/A
03-Oct-89	S-5	<50	<0.5	<1	<1	<3	N/A	N/A
16-Jan-90	S-5	<50	<0.5	<0.5	<0.5	1	N/A	N/A
13-Apr-90	S-5	<50	<0.5	<0.5	<0.5	<1	N/A	N/A
05-Jul-90	S-5	<50	<0.5	<0.5	<0.5	<1	N/A	N/A
12-Oct-90	S-5	<50	0.5	2.6	0.5	1.7	N/A	N/A
22-Jan-91	S-5	<50	<0.5	<0.5	<0.5	1	N/A	N/A
30-Apr-91	S-5	<50	<0.5	<0.5	<0.5	0.8	N/A	N/A
12-Jul-91	S-5	<50	<0.5	<0.5	<0.5	<0.5	N/A	N/A
04-Oct-91	S-5	<50	<0.5	<0.5	<0.5	<0.5	N/A	N/A
29-Jan-92	S-5	<50	<0.5	<0.5	<0.5	<0.5	N/A	N/A
04-May-92	S-5	<50	<0.5	<0.5	<0.5	<0.5	N/A	N/A
10-Aug-92	S-5	<50	<0.5	<0.5	<0.5	<0.5	N/A	N/A
09-Nov-92	S-5	<50	<0.5	<0.5	<0.5	<0.5	N/A	N/A
23-Feb-93	S-5	<50	<0.5	<0.5	<0.5	<0.5	N/A	N/A
08-Nov-88	S-6	5,500	1,700	20	20	120	N/A	N/A
22-Feb-89	S-6	6,000	2,400	50	110	300	N/A	N/A
02-May-89	S-6	9,100	3,700	120	280	300	N/A	N/A
03-Aug-89	S-6	7,100	2,400	<50	70	<200	N/A	N/A
03-Oct-89	S-6	5,900	1,600	33	58	100	N/A	N/A
16-Jan-90	S-6	5,900	1,800	150	160	410	N/A	N/A
13-Apr-90	S-6	5,900	1,800	70	20	160	N/A	N/A
05-Jul-90	S-6	4,200	1,200	20	30	80	N/A	N/A
12-Oct-90	S-6	1,700	390	6.5	3.6	16	N/A	N/A
22-Jan-91	S-6	2,200	440	15	<10	59	N/A	N/A
30-Apr-91	S-6	4,800	640	150	170	480	N/A	N/A
12-Jul-91	S-6	2,900	660	20	20	80	N/A	N/A
04-Oct-91	S-6	4,000	400	6	4.7	9.5	N/A	N/A
29-Jan-92	S-6	2,100	340	18	20	97	N/A	N/A
04-May-92	S-6	3,100	640	22	23	97	N/A	N/A
10-Aug-92	S-6	3,400	430	27	26	120	N/A	N/A
09-Nov-92	S-6	2,000	320	15	15	100	N/A	N/A

TABLE 2  
HISTORICAL GROUND-WATER QUALITY DATABASE

SAMPLE DATE	SAMPLE POINT	TPH-G (PPB)	BENZENE (PPB)	TOLUENE (PPB)	ETHYLBENZENE (PPB)	XYLENES (PPB)	TPH-D (PPB)	OIL (PPB)
23-Feb-93	S-6	14,000	780	180	380	1,300	N/A	N/A
08-Nov-88	S-7	2,600	88	430	86	430	N/A	N/A
22-Feb-89	S-7	800	25	27	29	170	N/A	N/A
02-May-89	S-7	800	32	14	21	110	N/A	N/A
03-Aug-89	S-7	5,000	660	380	230	710	N/A	N/A
03-Oct-89	S-7	960	110	8	13	46	N/A	N/A
16-Jan-90	S-7	230	1	1.8	3.1	17	N/A	N/A
13-Apr-90	S-7	320	5.1	0.8	2.3	12	N/A	N/A
05-Jul-90	S-7	270	5.5	1	0.6	5	N/A	N/A
12-Oct-90	S-7	630	43	5.3	4.8	12	N/A	N/A
22-Jan-91	S-7	1,200	77	27	57	160	N/A	N/A
30-Apr-91	S-7	240	3.2	2.3	3.6	10	N/A	N/A
12-Jul-91	S-7	960	67	4.3	6.8	32	N/A	N/A
04-Oct-91	S-7	1,200	100	7.4	1.8	14	N/A	N/A
29-Jan-92	S-7	180	4.1	0.6	0.5	3.6	N/A	N/A
04-May-92	S-7	180	1.6	<0.5	1.5	3	N/A	N/A
10-Aug-92	S-7	190	8	1.4	4.7	8.5	N/A	N/A
09-Nov-92	S-7	280	16	4	7.8	21	N/A	N/A
23-Feb-93	S-7	210	13	2.2	5.4	12	N/A	N/A
03-Aug-89	S-8	<50	<0.5	<1	<1	<3	N/A	N/A
03-Oct-89	S-8	1,600	22	110	53	240	N/A	N/A
16-Jan-90	S-8	2,000	40	150	90	400	N/A	N/A
13-Apr-90	S-8	1,800	27	71	48	210	N/A	N/A
05-Jul-90	S-8	1,500	25	75	67	250	N/A	N/A
12-Oct-90	S-8	1,000	17	31	34	120	N/A	N/A
22-Jan-91	S-8	820	17	37	30	120	N/A	N/A
30-Apr-91	S-8	2,900	46	110	120	330	N/A	N/A
12-Jul-91	S-8	820	34	38	41	110	N/A	N/A
04-Oct-91	S-8	960	18	24	38	130	N/A	N/A
29-Jan-92	S-8	1,400	13	37	54	230	N/A	N/A
05-May-92	S-8	1,600	20	420	96	330	N/A	N/A
10-Aug-92	S-8	1,500	19	37	60	250	N/A	N/A
09-Nov-92	S-8	710	5.7	24	28	120	N/A	N/A
23-Feb-93	S-8	3,800	40	54	68	260	N/A	N/A
03-Aug-89	S-9	1,600	32	120	52	250	N/A	N/A

TABLE 2

## HISTORICAL GROUND-WATER QUALITY DATABASE

SAMPLE DATE	SAMPLE POINT	TPH-G (PPB)	BENZENE (PPB)	TOLUENE (PPB)	ETHYLBENZENE (PPB)	XYLENES (PPB)	TPH-D (PPB)	OIL (PPB)
03-Oct-89	S-9	<50	<0.5	1	<1	3	N/A	N/A
16-Jan-90	S-9	<50	<0.5	<0.5	<0.5	1	N/A	N/A
13-Apr-90	S-9	<50	0.7	2.3	<0.5	3	N/A	N/A
05-Jul-90	S-9	<50	<0.5	<0.5	<0.5	<1	N/A	N/A
12-Oct-90	S-9	<50	<0.5	<0.5	<0.5	<0.5	N/A	N/A
22-Jan-91	S-9	<50	<0.5	<0.5	<0.5	<0.5	N/A	N/A
30-Apr-91	S-9	<50	<0.5	<0.5	<0.5	0.6	N/A	N/A
12-Jul-91	S-9	<50	<0.5	<0.5	<0.5	<0.5	N/A	N/A
04-Oct-91	S-9	<50	<0.5	<0.5	<0.5	<0.5	N/A	N/A
29-Jan-92	S-9	<50	<0.5	<0.5	<0.5	<0.5	N/A	N/A
05-May-92	S-9	<50	<0.5	<0.5	<0.5	<0.5	N/A	N/A
10-Aug-92	S-9	<50	<0.5	<0.5	<0.5	<0.5	N/A	N/A
09-Nov-92	S-9	<50	<0.5	<0.5	<0.5	0.7	N/A	N/A
23-Feb-93	S-9	<50	<0.5	<0.5	<0.5	<0.5	N/A	N/A
03-Aug-89	S-10	<50	<0.5	<1	<1	<3	N/A	N/A
03-Oct-89	S-10	<50	<0.5	<1	<1	<3	N/A	N/A
16-Jan-90	S-10	<50	<0.5	<0.5	<0.5	1	N/A	N/A
13-Apr-90	S-10	<50	<0.5	<0.5	<0.5	<1	N/A	N/A
05-Jul-90	S-10	<50	<0.5	<0.5	<0.5	<1	N/A	N/A
12-Oct-90	S-10	<50	<0.5	<0.5	<0.5	<0.5	N/A	N/A
22-Jan-91	S-10	<50	0.7	8.2	2.2	14	N/A	N/A
30-Apr-91	S-10	<50	<0.5	<0.5	<0.5	<0.5	N/A	N/A
12-Jul-91	S-10	<50	<0.5	<0.5	<0.5	<0.5	N/A	N/A
04-Oct-91	S-10	<50	<0.5	<0.5	<0.5	<0.5	N/A	N/A
29-Jan-92	S-10	<50	<0.5	<0.5	<0.5	<0.5	N/A	N/A
05-May-92	S-10	<50	<0.5	<0.5	<0.5	<0.5	N/A	N/A
10-Aug-92	S-10	<50	<0.5	<0.5	<0.5	<0.5	N/A	N/A
09-Nov-92	S-10	<50	<0.5	<0.5	<0.5	<0.5	N/A	N/A
22-Feb-93	S-10	<50	<0.5	<0.5	<0.5	<0.5	N/A	N/A
16-Oct-89	S-11	650	42	47	24	160	N/A	N/A
16-Jan-90	S-11	350	27	35	20	110	N/A	N/A
13-Apr-90	S-11	900	57	110	37	240	N/A	N/A
05-Jul-90	S-11	2,000	110	210	93	530	N/A	N/A
12-Oct-90	S-11	1,200	140	100	64	220	N/A	N/A
22-Jan-91	S-11	1,400	85	93	88	300	N/A	N/A

TABLE 2

## HISTORICAL GROUND-WATER QUALITY DATABASE

SAMPLE DATE	SAMPLE POINT	TPH-G (PPB)	BENZENE (PPB)	TOLUENE (PPB)	ETHYLBENZENE (PPB)	XYLENES (PPB)	TPH-D (PPB)	OIL (PPB)
30-Apr-91	S-11	5,400	48	26	80	370	N/A	N/A
12-Jul-91	S-11	190	12	2.3	10	44	N/A	N/A
04-Oct-91	S-11	440	20	8.5	14	49	N/A	N/A
29-Jan-92	S-11	1,700	30	23	48	270	N/A	N/A
04-May-92	S-11	1,500	55	32	57	190	N/A	N/A
10-Aug-92	S-11	750	29	13	43	120	N/A	N/A
09-Nov-92	S-11	4,100	32	62	120	1,100	N/A	N/A
23-Feb-93	S-11	760	15	13	37	140	N/A	N/A

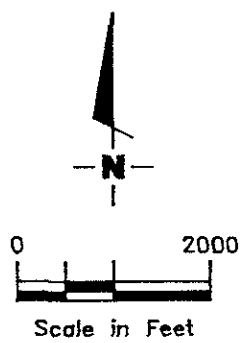
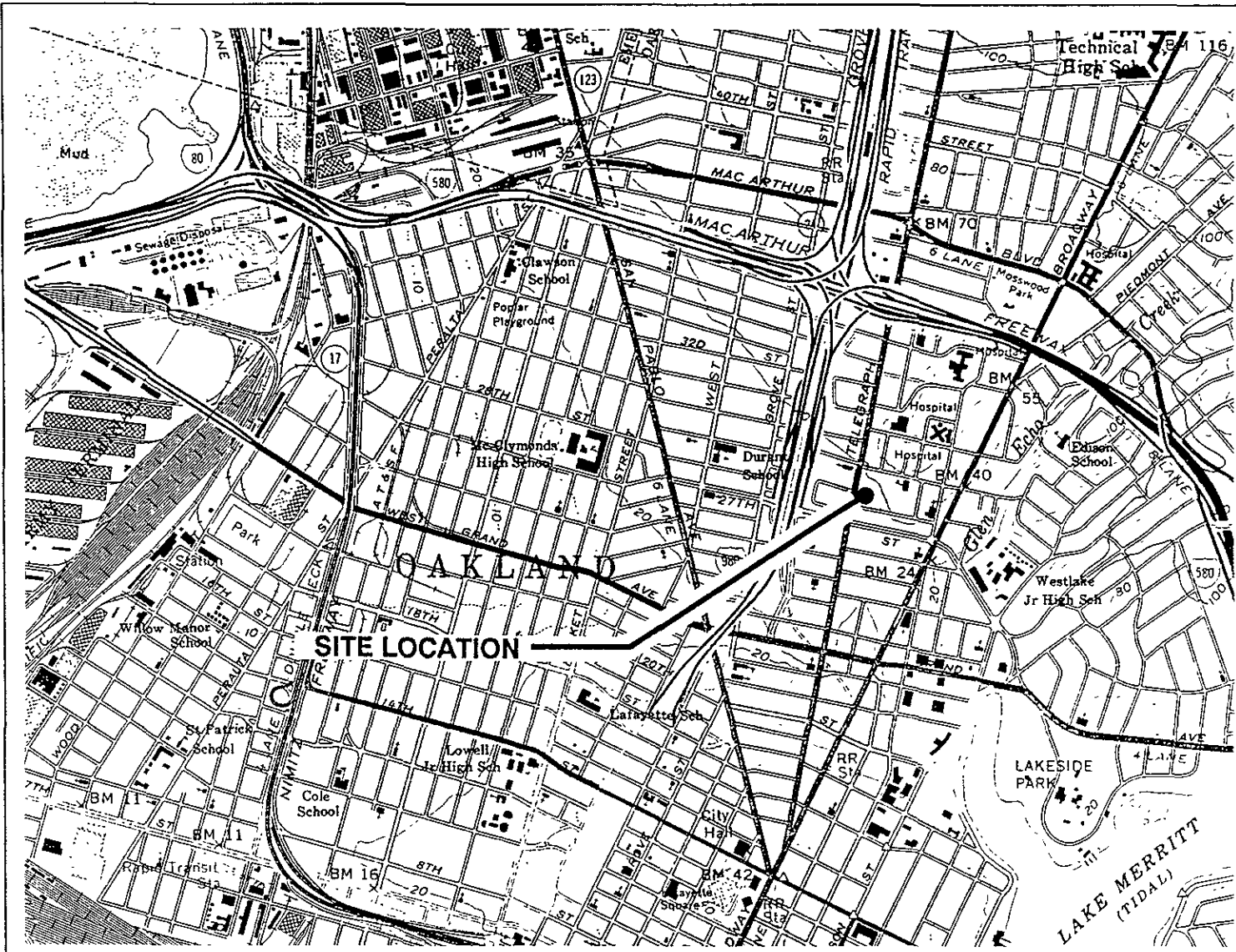
TPH-G = Total Petroleum Hydrocarbons calculated as Gasoline.

PPB = Parts Per Billion.

- Notes: 1. All data shown as <x are reported as ND (none detected).  
 2. Ethylbenzene and Xylenes were combined prior to May 1989.

·  
·  
**GeoStrategies Inc.**

## **ILLUSTRATIONS**



Base Map: USGS Topographic Map



GeoStrategies Inc.

VICINITY MAP  
 Former Shell Service Station  
 2800 Telegraph Avenue  
 Oakland, California

PLATE

1

JOB NUMBER  
7610

REVIEWED BY  
*[Signature]*

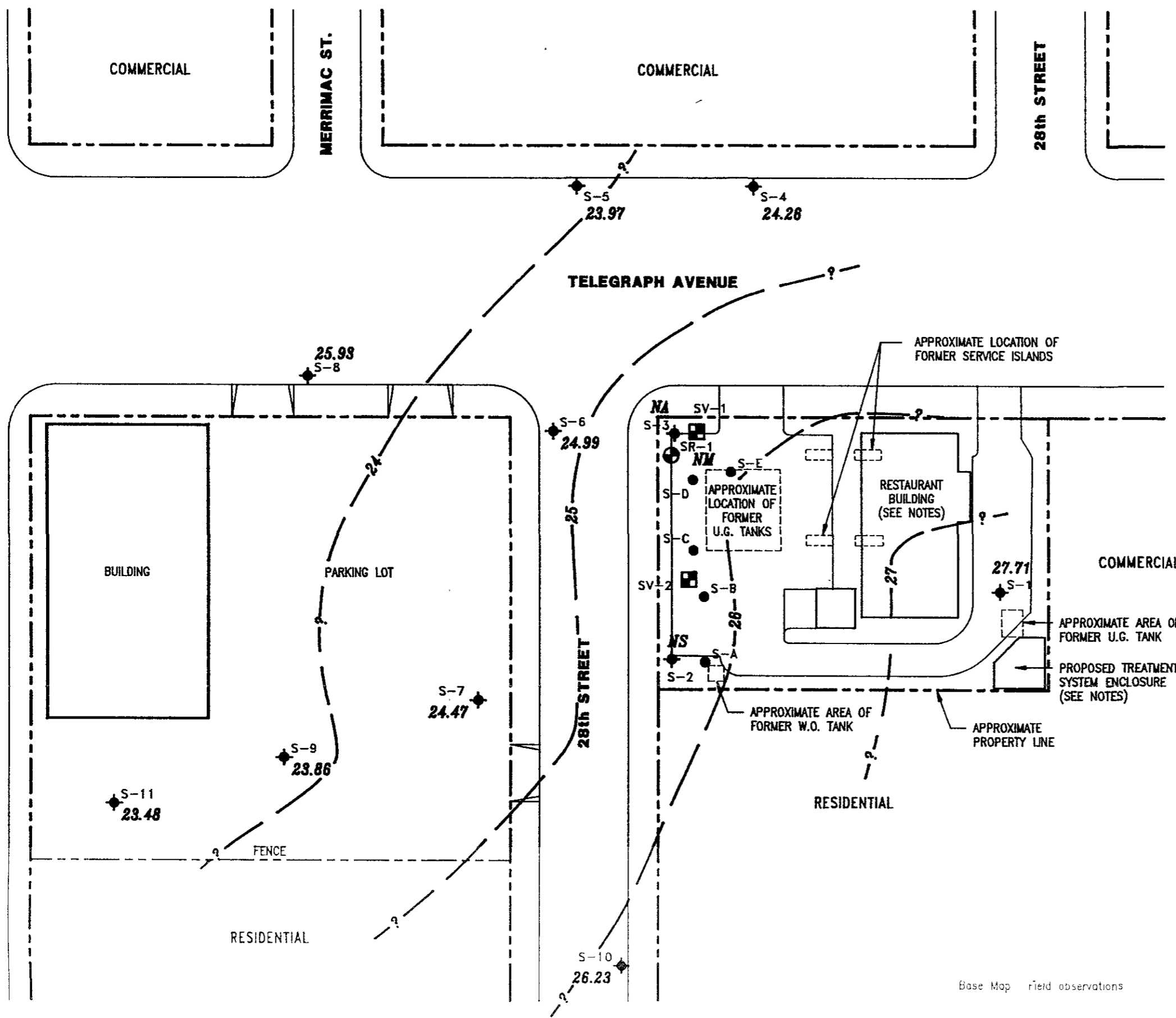
DATE  
3/91

REVISED DATE

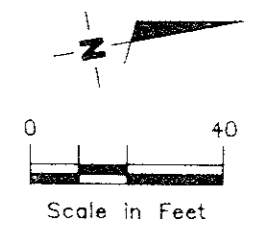
**EXPLANATION**

- ◆ Ground-water monitoring well
- ⊕ Ground-water recovery well
- ⊠ Vapor extraction well
- Soil boring
- 99.99 Ground-water elevation contour. Approximate Gradient = 0.01
- 99.99 Ground-water elevation in feet referenced to Mean Sea Level (MSL) measured on February 22, 1993
- NA Not Accessible
- NS Not Surveyed
- NM Not Measured

- NOTES:
1. Contours may be influenced by irrigation practices and/or site construction activities.
  2. Well S-8 appeared anomalous and was not used in contouring.
  3. Building and site improvements under construction at the time of this investigation.



Base Map field observations



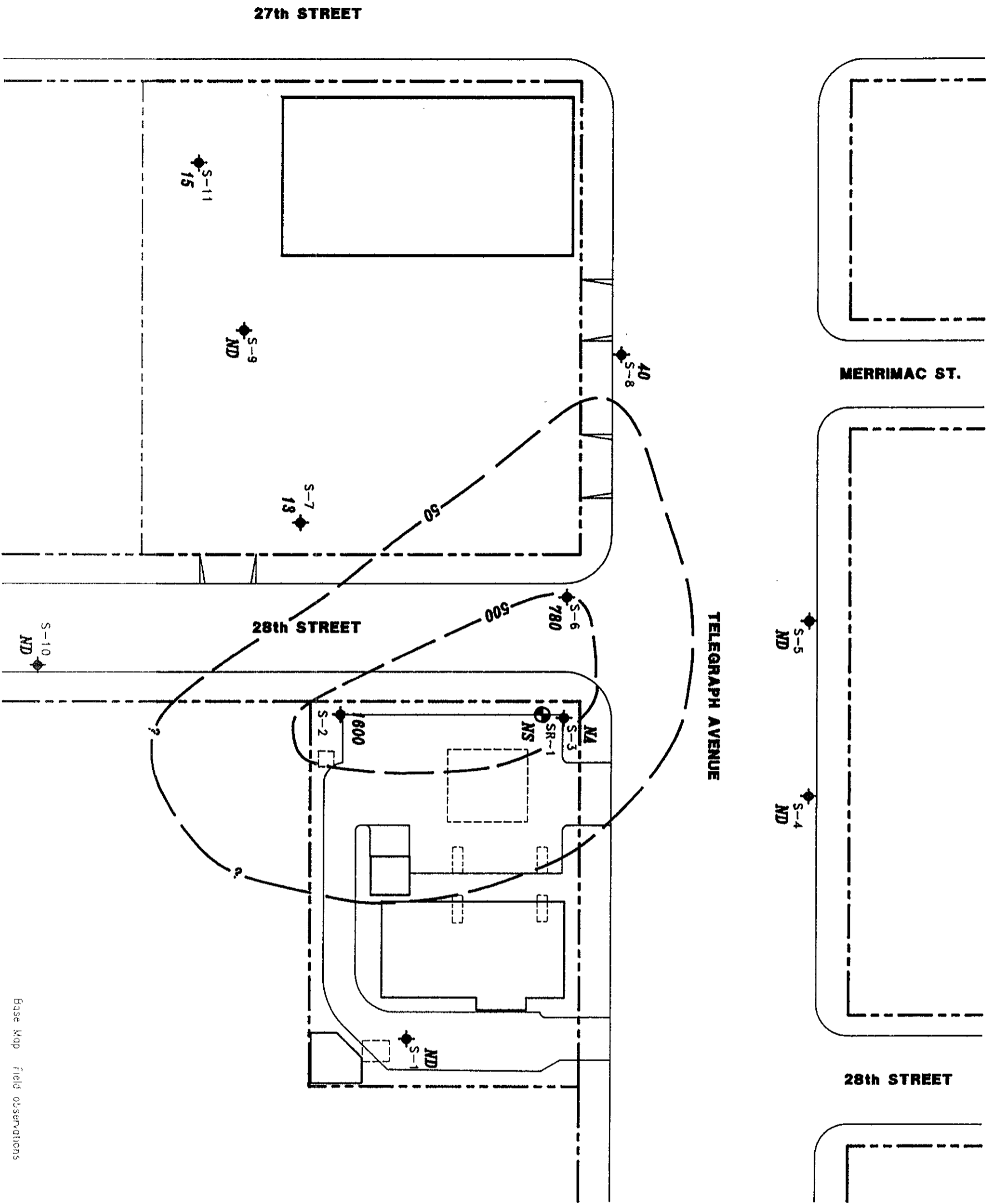
**SITE PLAN/POTENTIOMETRIC MAP**  
 Former Shell Service Station  
 2800 Telegraph Avenue  
 Oakland, California

GeoStrategies Inc.



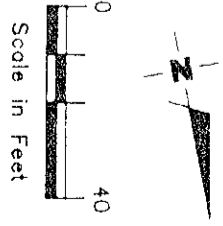
JOB NUMBER 761001-24  
 DATE 4/93  
 REVIEWED BY  
 REVISION DATE





- EXPLANATION**
- ◆ Ground-water monitoring well
  - ⊕ Ground-water recovery well
  - Benzene isoconcentration contour
  - 0.05 Benzene concentration in ppb sampled on February 22 and 23 1993
  - ND Not Detected (See laboratory reports for detection limits)
  - NA Not Accessible
  - NS Not Sampled

Base Map Field observations



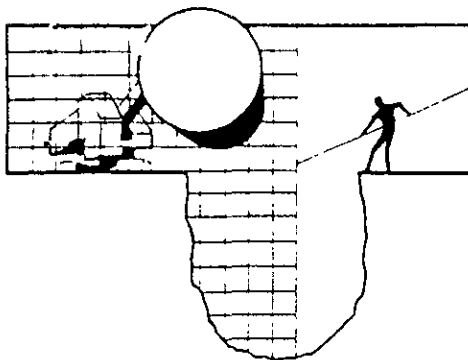
GeoStrategies Inc.

**BENZENE ISOCONCENTRATION MAP**  
 Former Shell Service Station  
 2800 Telegraph Avenue  
 Oakland, California

PLATE  
**3**

**GeoStrategies Inc.**

**APPENDIX A**  
**BLAINE TECH SERVICES INC. SAMPLING REPORT**  
**AND**  
**CHAIN-OF-CUSTODY FORM**



# BLAINE TECH SERVICES INC.

985 TIMOTHY DRIVE  
SAN JOSE CA 95133  
(408) 995-5535  
FAX (408) 293-8773

March 8, 1993

Shell Oil Company  
P.O. Box 5278  
Concord, CA 94520-9998

Attn: Daniel T. Kirk

GENERAL CONTRACTOR

SITE:  
Shell WIC # 204-5508-2303  
2800 Telegraph Ave.  
Oakland, California

QUARTER:  
1st quarter of 1993

## QUARTERLY GROUNDWATER SAMPLING REPORT 930222-A-1

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This report contains data collected during routine inspection, gauging and sampling of groundwater monitoring wells performed by Blaine Tech Services, Inc. in response to the request of the consultant who is overseeing work at this site on behalf of our mutual client, Shell Oil Company. Data collected in the course of our field work is presented in a **TABLE OF WELL GAUGING DATA**. The field information was collected during our preliminary gauging and inspection of the wells, the subsequent evacuation of each well prior to sampling, and at the time of sampling.

Measurements taken include the total depth of the well and the depth to water. The surface of the water was further inspected for the presence of immiscibles which may be present as a thin film (a sheen on the surface of the water) or as a measurable free product zone (FPZ). At intervals during the evacuation phase, the purge water was monitored with instruments that measure electrical conductivity (EC), potential hydrogen (pH), temperature (degrees Fahrenheit), and turbidity (NTU). In the interest of simplicity, fundamental information is tabulated here, while the bulk of the information is turned over directly to the consultant who is making professional interpretations and evaluations of the conditions at the site.

## TABLE OF WELL GAUGING DATA

WELL I.D.	WELL DIAMETER (inches)	DATA COLLECTION DATE	MEASUREMENTS REFERENCED TO	QUALITATIVE OBSERVATIONS (seen)	DEPTH TO FIRST IMMISCIBLE LIQUID (FPZ) (feet)	THICKNESS OF IMMISCIBLE LIQUID ZONE (feet)	VOLUME OF IMMISCIBLES REMOVED (ml)	DEPTH TO WATER (feet)	DEPTH TO WELL BOTTOM (feet)
S-1	3	02-22-93	GRADE	--	NONE	--	--	7.60	27.20
S-2	3	02-22-93	TOP OF PIPE	--	NONE	--	--	9.04	22.72
S-4	3	02-22-93	GRADE	--	NONE	--	--	9.82	30.50
S-5	3	02-22-93	GRADE	--	NONE	--	--	9.45	30.66
S-6	3	02-22-93	GRADE	ODOR	NONE	--	--	7.60	22.12
S-7	3	02-22-93	GRADE	--	NONE	--	--	8.86	30.80
S-8	3	02-22-93	GRADE	ODOR	NONE	--	--	6.04	19.18
S-9	3	02-22-93	GRADE	--	NONE	--	--	8.0	30.02
S-10 *	3	02-22-93	GRADE	--	NONE	--	--	6.72	24.3

\* Sample DUP is a duplicate sample taken from well S-10.

## TABLE OF WELL GAUGING DATA

WELL I.D.	WELL DIAMETER (inches)	DATA COLLECTION DATE	MEASUREMENTS REFERENCED TO	QUALITATIVE OBSERVATIONS (seen)	DEPTH TO FIRST IMMISCIBLE LIQUID (FPZ) (feet)	THICKNESS OF IMMISCIBLE LIQUID ZONE (feet)	VOLUME OF IMMISCIBLES REMOVED (ml)	DEPTH TO WATER (feet)	DEPTH TO WELL BOTTOM (feet)
S-11	3	02-22-93	GRADE	--	NONE	--	--	7.30	19.30
SR-1	6	02-22-93	GRADE	--	NONE	--	--	6.64	34.20

## STANDARD PROCEDURES

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### Evacuation

Groundwater wells are thoroughly purged before sampling to insure that the sample is collected from water that has been newly drawn into the well from the surrounding geologic formation. The selection of equipment to evacuate each well is based on the physical characteristics of the well and what is known about the performance of the formation in which the well has been installed. There are several suitable devices which can be used for evacuation. The most commonly employed devices are air or gas actuated pumps, electric submersible pumps, and hand or mechanically actuated bailers. Our personnel frequently employ USGS/Middleburg positive displacement pumps or similar air actuated pumps which do not agitate the water standing in the well.

Normal evacuation removes three case volumes of water from the well. More than three case volumes of water may be removed in cases where more evacuation is needed to achieve stabilization of water parameters. Less than three case volumes of water may be obtained in cases where the well dewateres and does not recharge to 80% of its original volume within two hours and any additional time our personnel have reason to remain at the site. In such cases, our personnel return to the site within twenty four hours and collect sample material from the water which has recharged into the well case.

### Decontamination

All apparatus is brought to the site in clean and serviceable condition. The equipment is decontaminated after each use and before leaving the site.

### Free Product Skimmer

The column headed, VOLUME OF IMMISCIBLES REMOVED (ml) is included in the TABLE OF WELL GAUGING DATA to cover situations where a free product skimming device must be removed from the well prior to gauging. Skimmers are installed in wells with a free product zone on the surface of the water. The skimmer is a free product recovery device which often prevents normal well gauging and free product zone measurements. The 2.0" and 3.0" PetroTraps fall into the category of devices that obstruct normal gauging. In cases where the consultant elects to have our personnel pull the skimmers out of the well and gauge the well, our personnel perform the additional task of draining the accumulated free product out of the PetroTrap before putting it back in the well. This recovered free product is measured and logged in the VOLUME OF IMMISCIBLES REMOVED column. Gauging at such site is performed in accordance with specific directions from the professional consulting firm overseeing work at the site on Shell's behalf.

## **Sample Containers**

Sample material is collected in specially prepared containers which are provided by the laboratory that performs the analyses.

## **Sampling**

Sample material is collected in stainless steel bailer type devices normally fitted with both a top and a bottom check valve. Water is promptly decanted into new sample containers in a manner which reduces the loss of volatile constituents and follows the applicable EPA standard for handling volatile organic and semi-volatile compounds.

Following collection, samples are promptly placed in an ice chest containing prefrozen blocks of an inert ice substitute such as Blue Ice or Super Ice. The samples are maintained in either an ice chest or a refrigerator until delivered into the custody of the laboratory.

## **Sample Designations**

All sample containers are identified with a site designation and a discrete sample identification number specific to that particular groundwater well. Additional standard notations (e.g. time, date, sampler) are also made on the label. Either the requested analyses or the specific analytes are written on the sample label (e.g. TPH-G, BTEX).

## **Chain of Custody**

Samples are continuously maintained in an appropriate cooled container while in our custody and until delivered to the laboratory under a standard Shell Oil Company chain of custody. If the samples are taken charge of by a different party (such as another person from our office, a courier, etc.) prior to being delivered to the laboratory, appropriate release and acceptance records are made on the chain of custody (time, date, and signature of the person releasing the samples followed by the time, date and signature of the person accepting custody of the samples).

## **Hazardous Materials Testing Laboratory**

The samples obtained at this site were delivered to Anametrix, Inc. in San Jose, California. Anametrix, Inc. is a California Department of Health Services certified Hazardous Materials Testing Laboratory and is listed as DOHS HMTL #1234.

## **Objective Information Collection**

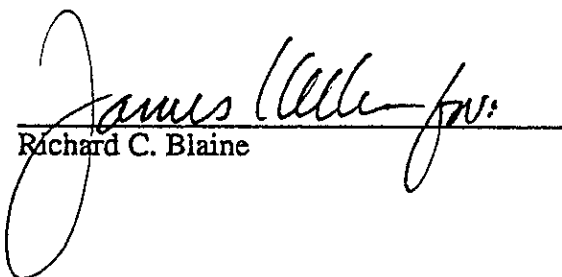
Blaine Tech Services, Inc. performs specialized environmental sampling and documentation as an independent third party. In order to avoid compromising the objectivity necessary for the proper and disinterested performance of this work, Blaine Tech Services, Inc.

performs no consulting and does not become involved in the marketing or installation of remedial systems of any kind. Blaine Tech Services, Inc. is concerned only with the generation of objective information, not with the use of that information to support evaluations and recommendations concerning the environmental condition of the site. Even the straightforward interpretation of objective analytical data is better performed by interested regulatory agencies, and those engineers and geologists who are engaged in the work of providing professional opinions about the site and proposals to perform additional investigation or design remedial systems.

### Reportage

Submission of this report and the attached laboratory report to interested regulatory agencies is handled by the consultant in charge of the project. Any professional evaluations or recommendations will be made by the consultant under separate cover.

Please call if we can be of any further assistance.

  
Richard C. Blaine


RCB/kkl

attachments: chain of custody  
certified analytical report

cc: GeoStrategies, Inc.  
2140 W. Winton Ave.  
Hayward, CA 94545  
ATTN: Ellen Fostersmith




9302316 (18) 1010MA

 <b>SHELL OIL COMPANY</b> RETAIL ENVIRONMENTAL ENGINEERING - WEST										<b>CHAIN OF CUSTODY RECORD</b> Serial No: _____										Date: 2-22-93 Page 1 of 2	
Site Address: 2800 TELEGRAPH OAKLAND WIC#: 264 5508 2303										<b>Analysis Required</b>										LAB: <u>ANALYTIX</u>	
Shell Engineer: Daniel Kuep Phone No.: 510 Fax #: 675 6171					Consultant Name & Address: <u>Oil &amp; Tech Services</u> Consultant Contact: <u>Glen Bennett</u> Phone No.: 408 Fax #: 995-5533					TPH (EPA 8015 Mod. Gds) TPH (EPA 8015 Mod. Diesel) BTEX (EPA 8020/802) Volatile Organics (EPA 8240) Test for Disposal Combination TPH 8015 & BTEX 8020 Asbestos Container Size Preparation Used Composite Y/N					CHECK ONE (1) BOX ONLY C1/D1 TURN AROUND TIME Quality Monitoring <input checked="" type="checkbox"/> 8441 24 hours <input type="checkbox"/> Site Investigation <input type="checkbox"/> 8441 48 hours <input type="checkbox"/> Soil Classy/Disposal <input type="checkbox"/> 8442 16 days <input checked="" type="checkbox"/> (Normal) Water Classy/Disposal <input type="checkbox"/> 8443 Other <input type="checkbox"/> Soil/Air Rem. or 3yr. O & M <input type="checkbox"/> 8442 Water Rem. or 3yr. O & M <input type="checkbox"/> 8443 Other <input type="checkbox"/>		NOTE: Heavy Lab as soon as Possible of 24/48 hrs. 1AY.				
Sampled by: <u>Jeff Lucias</u> Printed Name: <u>JEFF LUCIAS</u>										MATERIAL DESCRIPTION		SAMPLE CONDITION/ COMMENTS									
Sample ID	Date	Sludge	Soil	Water	Air	No. of conts.	TPH (EPA 8015 Mod. Gds)	TPH (EPA 8015 Mod. Diesel)	BTEX (EPA 8020/802)	Volatile Organics (EPA 8240)	Test for Disposal	Combination TPH 8015 & BTEX 8020	Asbestos	Container Size	Preparation Used	Composite Y/N	MATERIAL DESCRIPTION	SAMPLE CONDITION/ COMMENTS			
① S-10	2/24/93			W		3											flow duct				
② S-6						3															
③ S-8						3															
④ DUP						3															
⑤ TRIP	4					2															
⑥ S-4	2/23					3															
⑦ S-5	2/23					3															
⑧ S-11	2/23					3															
Relinquished By (signature): <u>Jeff Lucias</u>		Printed Name: <u>JEFF LUCIAS</u>		Date: <u>2-22-93</u>		Time: <u>8:15</u>		Received (signature): <u>Denny S. Carrizosa</u>		Printed Name: <u>DENNY S. CARRIZOSA</u>		Date: <u>2-24-93</u>		Time: <u>8:15</u>		Relinquished By (signature): <u>Denny S. Carrizosa</u>		Printed Name: <u>DENNY S. CARRIZOSA</u>			
Relinquished By (signature): <u>Denny S. Carrizosa</u>		Printed Name: <u>DENNY S. CARRIZOSA</u>		Date: <u>2-24-93</u>		Time: <u>07:05</u>		Received (signature): <u>Michele D. Aguilar</u>		Printed Name: <u>MICHELE D. AGUILAR</u>		Date: <u>2-24-93</u>		Time: <u>09:05</u>		Relinquished By (signature): _____		Printed Name: _____			
Relinquished By (signature): _____		Printed Name: _____		Date: _____		Time: _____		Received (signature): _____		Printed Name: _____		Date: _____		Time: _____		Relinquished By (signature): _____		Printed Name: _____			

THE LABORATORY MUST PROVIDE A COPY OF THIS CHAIN-OF-CUSTODY WITH INVOICE AND RESULTS

9302316 (18) 1010 MA

 <b>SHELL OIL COMPANY</b> RETAIL ENVIRONMENTAL ENGINEERING - WEST		<b>CHAIN OF CUSTODY RECORD</b> Serial No: _____			Date: 2-22-93 Page 2 of 2																																																																	
Site Address: 2300 Telegraph OAKLAND WIC#: 204 5508 2303		<b>Analysis Required</b>				LAB: ANSAMETRIX																																																																
Shall Engineer: Daniel Kirk Phone No.: 510 Fax #: 675-6171		<table border="1"> <tr> <td>TPH (EPA 8015 Mod. Gas)</td> <td>TPH (EPA 8015 Mod. Diesel)</td> <td>BTEX (EPA 8020/602)</td> <td>Volatile Organics (EPA 8240)</td> <td>Test for Disposal</td> <td>Combination TPH 8015 &amp; BTEX 8020</td> <td>Asbestos</td> <td>Container Size</td> <td>Preparation Used</td> <td>Composite Y/N</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table>				TPH (EPA 8015 Mod. Gas)	TPH (EPA 8015 Mod. Diesel)	BTEX (EPA 8020/602)	Volatile Organics (EPA 8240)	Test for Disposal	Combination TPH 8015 & BTEX 8020	Asbestos	Container Size	Preparation Used	Composite Y/N																															<table border="1"> <tr> <td>CHECK ONE (S) BOX ONLY</td> <td>C1/D1</td> <td>TURN AROUND TIME</td> </tr> <tr> <td>Quarterly Monitoring</td> <td><input checked="" type="checkbox"/> S441</td> <td>24 hours <input type="checkbox"/></td> </tr> <tr> <td>Site Investigation</td> <td><input type="checkbox"/> S441</td> <td>48 hours <input type="checkbox"/></td> </tr> <tr> <td>Soil Classy/Disposal</td> <td><input type="checkbox"/> S442</td> <td>15 days <input checked="" type="checkbox"/> (Normal)</td> </tr> <tr> <td>Water Classy/Disposal</td> <td><input type="checkbox"/> S443</td> <td>Other <input type="checkbox"/></td> </tr> <tr> <td>Soil/Air Rem. or Sys. O &amp; M</td> <td><input type="checkbox"/> S442</td> <td rowspan="2">NOTE: Notify Lab as soon as feasible of 24/48 hr. IAL.</td> </tr> <tr> <td>Water Rem. or Sys. O &amp; M</td> <td><input type="checkbox"/> S443</td> </tr> <tr> <td>Other</td> <td><input type="checkbox"/></td> <td></td> </tr> </table>		CHECK ONE (S) BOX ONLY	C1/D1	TURN AROUND TIME	Quarterly Monitoring	<input checked="" type="checkbox"/> S441	24 hours <input type="checkbox"/>	Site Investigation	<input type="checkbox"/> S441	48 hours <input type="checkbox"/>	Soil Classy/Disposal	<input type="checkbox"/> S442	15 days <input checked="" type="checkbox"/> (Normal)	Water Classy/Disposal	<input type="checkbox"/> S443	Other <input type="checkbox"/>	Soil/Air Rem. or Sys. O & M	<input type="checkbox"/> S442	NOTE: Notify Lab as soon as feasible of 24/48 hr. IAL.	Water Rem. or Sys. O & M	<input type="checkbox"/> S443	Other	<input type="checkbox"/>	
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5-9	2/24/93			W		3																																																																
Relinquished by (Signature): [Signature] Relinquished by (Signature): [Signature] Relinquished by (Signature): [Signature]		Printed Name: JEFF CURTIS Printed Name: JEFF CURTIS Printed Name: JEFF CURTIS		Date: 2-24-93 Time: 8:45 Date: 2-24-93 Time: 8:05 Date: _____ Time: _____		Received (Signature): [Signature] Received (Signature): [Signature] Received (Signature): [Signature]		Printed Name: BENNY S. CURTIS Printed Name: MICHELE D. AQUILAR Printed Name: _____		Date: 2-24-93 Time: 8:54 Date: 2-24-93 Time: 12:05 Date: _____ Time: _____																																																												

THE LABORATORY MUST PROVIDE A COPY OF THIS CHAIN-OF-CUSTODY WITH INVOICE AND RESULTS



MR. GLEN BENNETT  
BLAINE TECH  
985 TIMOTHY STREET  
SAN JOSE, CA 95133

Workorder # : 9302316  
Date Received : 02/24/93  
Project ID : 204-5508-2303  
Purchase Order: MOH-B813

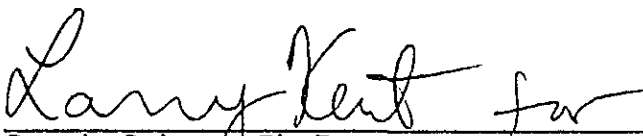
The following samples were received at Anamatrix, Inc. for analysis :

ANAMETRIX ID	CLIENT SAMPLE ID
9302316- 1	S-10
9302316- 2	S-6
9302316- 3	S-8
9302316- 4	DUP
9302316- 5	TRIP
9302316- 6	S-4
9302316- 7	S-5
9302316- 8	S-11
9302316- 9	S-1
9302316-10	S-2
9302316-11	S-7
9302316-12	S-9

This report consists of 7 pages not including the cover letter, and is organized in sections according to the specific Anamatrix laboratory group or section which performed the analysis(es) and generated the data. The Report Summary that precedes each section will help you determine which Anamatrix group is responsible for those test results, and will bear the signatures of the department supervisor and the chemist who have reviewed the analytical data. Please refer all questions to the department supervisor who signed the form.

Anamatrix is certified by the California Department of Health Services (DHS) to perform environmental testing under Certificate Number 1234. A detailed list of the approved fields of testing can be obtained by calling our office, or the DHS Environmental Laboratory Accreditation Program at (415)540-2800.

If you have any further questions or comments on this report, please give us a call as soon as possible. Thank you for using Anamatrix.

  
\_\_\_\_\_  
Sarah Schoen, Ph.D.  
Laboratory Director

3-9-93  
\_\_\_\_\_  
Date

REPORT SUMMARY  
ANAMETRIX, INC. (408)432-8192

MR. GLEN BENNETT  
BLAINE TECH  
985 TIMOTHY STREET  
SAN JOSE, CA 95133

Workorder # : 9302316  
Date Received : 02/24/93  
Project ID : 204-5508-2303  
Purchase Order: MOH-B813  
Department : GC  
Sub-Department: TPH

SAMPLE INFORMATION:

ANAMETRIX SAMPLE ID	CLIENT SAMPLE ID	MATRIX	DATE SAMPLED	METHOD
9302316- 1	S-10	WATER	02/22/93	TPHg/BTEX
9302316- 2	S-6	WATER	02/22/93	TPHg/BTEX
9302316- 3	S-8	WATER	02/22/93	TPHg/BTEX
9302316- 4	DUP	WATER	02/22/93	TPHg/BTEX
9302316- 5	TRIP	WATER	02/22/93	TPHg/BTEX
9302316- 6	S-4	WATER	02/23/93	TPHg/BTEX
9302316- 7	S-5	WATER	02/23/93	TPHg/BTEX
9302316- 8	S-11	WATER	02/23/93	TPHg/BTEX
9302316- 9	S-1	WATER	02/23/93	TPHg/BTEX
9302316-10	S-2	WATER	02/22/93	TPHg/BTEX
9302316-11	S-7	WATER	02/22/93	TPHg/BTEX
9302316-12	S-9	WATER	02/22/93	TPHg/BTEX

REPORT SUMMARY  
ANAMETRIX, INC. (408)432-8192

MR. GLEN BENNETT  
BLAINE TECH  
985 TIMOTHY STREET  
SAN JOSE, CA 95133

Workorder # : 9302316  
Date Received : 02/24/93  
Project ID : 204-5508-2303  
Purchase Order: MOH-B813  
Department : GC  
Sub-Department: TPH

QA/QC SUMMARY :

- No QA/QC problems encountered for these samples.

Charles Baermer 3/9/93  
Department Supervisor Date

Charles M. Burch 3-9-93  
Chemist Date

ANALYSIS DATA SHEET - TOTAL PETROLEUM HYDROCARBONS  
(GASOLINE WITH BTEX)  
ANAMETRIX, INC. - (408) 432-8192

Anamatrix W.O.: 9302316  
Matrix : WATER  
Date Sampled : 02/22/93

Project Number : 204-5508-2303  
Date Released : 03/08/93

COMPOUNDS	Reporting Limit (ug/L)	Sample I.D.# S-10	Sample I.D.# S-6	Sample I.D.# S-8	Sample I.D.# DUP	Sample I.D.# TRIP
Benzene	0.5	ND	780	40	ND	ND
Toluene	0.5	ND	180	54	ND	ND
Ethylbenzene	0.5	ND	380	68	ND	ND
Total Xylenes	0.5	ND	1300	260	ND	ND
TPH as Gasoline	50	ND	14000	3800	ND	ND
% Surrogate Recovery		119%	127%	123%	131%	132%
Instrument I.D.		HP4	HP4	HP4	HP4	HP4
Date Analyzed		03/01/93	03/02/93	03/02/93	03/01/93	03/02/93
RLMF		1	50	10	1	1

- ND - Not detected at or above the practical quantitation limit for the method.
- TPHg - Total Petroleum Hydrocarbons as gasoline is determined by GCFID using modified EPA Method 8015 following sample purge and trap by EPA Method 5030.
- BTEX - Benzene, Toluene, Ethylbenzene, and Total Xylenes are determined by modified EPA Method 8020 following sample purge and trap by EPA Method 5030.
- RLMF - Reporting Limit Multiplication Factor.

Anamatrix control limits for surrogate p-Bromofluorobenzene recovery are 61-139%

All testing procedures follow California Department of Health Services (Cal-DHS) approved methods.

Charles M. Burch 3-9-93  
Analyst Date

Cheryl Bealman 3/9/93  
Supervisor Date

ANALYSIS DATA SHEET - TOTAL PETROLEUM HYDROCARBONS  
(GASOLINE WITH BTEX)  
ANAMETRIX, INC. - (408) 432-8192

Anamatrix W.O.: 9302316  
Matrix : WATER  
Date Sampled : 02/22 & 23/93

Project Number : 204-5508-2303  
Date Released : 03/08/93

Reporting Limit	Sample I.D.# S-4	Sample I.D.# S-5	Sample I.D.# S-11	Sample I.D.# S-1	Sample I.D.# S-2	
COMPOUNDS (ug/L)	-06	-07	-08	-09	-10	
Benzene	0.5	ND	ND	15	ND	1600
Toluene	0.5	ND	ND	13	ND	480
Ethylbenzene	0.5	ND	ND	37	ND	850
Total Xylenes	0.5	ND	ND	140	ND	1800
TPH as Gasoline	50	ND	ND	760	ND	16000
% Surrogate Recovery	119%	138%	121%	124%	107%	
Instrument I.D.	HP4	HP4	HP4	HP4	HP4	
Date Analyzed	03/01/93	03/01/93	03/02/93	03/01/93	03/02/93	
RLMF	1	1	5	1	100	

- ND - Not detected at or above the practical quantitation limit for the method.
- TPHg - Total Petroleum Hydrocarbons as gasoline is determined by GCFID using modified EPA Method 8015 following sample purge and trap by EPA Method 5030.
- BTEX - Benzene, Toluene, Ethylbenzene, and Total Xylenes are determined by modified EPA Method 8020 following sample purge and trap by EPA Method 5030.
- RLMF - Reporting Limit Multiplication Factor.

Anamatrix control limits for surrogate p-Bromofluorobenzene recovery are 61-139%

All testing procedures follow California Department of Health Services (Cal-DHS) approved methods.

Charles M Burch 3-9-93  
Analyst Date

Cheryl Balmer 3/4/93  
Supervisor Date

ANALYSIS DATA SHEET - TOTAL PETROLEUM HYDROCARBONS  
(GASOLINE WITH BTEX)  
ANAMETRIX, INC. - (408) 432-8192

Anamatrix W.O.: 9302316  
Matrix : WATER  
Date Sampled : 02/22/93

Project Number : 204-5508-2303  
Date Released : 03/08/93

Reporting Limit	Sample I.D.# S-7	Sample I.D.# S-9	Sample I.D.# BM0101E3	Sample I.D.# BM0201E3
COMPOUNDS (ug/L)	-11	-12	BLANK	BLANK
Benzene	0.5	13	ND	ND
Toluene	0.5	2.2	ND	ND
Ethylbenzene	0.5	5.4	ND	ND
Total Xylenes	0.5	12	ND	ND
TPH as Gasoline	50	210	ND	ND
% Surrogate Recovery	113%	138%	117%	120%
Instrument I.D.	HP4	HP4	HP4	HP4
Date Analyzed	03/02/93	03/01/93	03/01/93	03/02/93
RLMF	1	1	1	1

- ND - Not detected at or above the practical quantitation limit for the method.
- TPHg - Total Petroleum Hydrocarbons as gasoline is determined by GCFID using modified EPA Method 8015 following sample purge and trap by EPA Method 5030.
- BTEX - Benzene, Toluene, Ethylbenzene, and Total Xylenes are determined by modified EPA Method 8020 following sample purge and trap by EPA Method 5030.
- RLMF - Reporting Limit Multiplication Factor.

Anamatrix control limits for surrogate p-Bromofluorobenzene recovery are 61-139%

All testing procedures follow California Department of Health Services (Cal-DHS) approved methods.

Charles M. Burch 3.9.93  
Analyst Date

Charles Balmer 3/9/93  
Supervisor Date



TOTAL VOLATILE HYDROCARBON MATRIX SPIKE REPORT  
 EPA METHOD 5030 WITH GC/FID  
 ANAMETRIX, INC. (408) 432-8192

Sample I.D. : 204-5508-2303 S-9  
 Matrix : WATER  
 Date Sampled : 02/22/93  
 Date Analyzed : 03/02/93

Anamatrix I.D. : 9302316-12  
 Analyst : *CMR*  
 Supervisor : *CB*  
 Date Released : 03/08/93

COMPOUND	SPIKE AMT (ug/L)	SAMPLE CONC (ug/L)	MS AMT (ug/L)	% REC MS	MD AMT (ug/L)	% REC MD	RPD	% REC LIMITS
BENZENE	20.0	0.0	19.1	96%	19.7	99%	3%	45-139
TOLUENE	20.0	0.0	19.5	98%	19.7	99%	1%	51-138
ETHYLBENZENE	20.0	0.0	19.5	98%	19.5	98%	0%	48-146
TOTAL-XYLENES	20.0	0.0	18.9	95%	18.6	93%	-2%	50-139
p-BFB				83%		105%		61-139

\* Quality control limit established by Anamatrix, Inc.

BTEX LABORATORY CONTROL SAMPLE REPORT  
 EPA METHOD 5030 WITH GC/PID  
 ANAMETRIX, INC. (408) 432-8192

Sample I.D.	: LAB CONTROL SAMPLE	Anamatrix I.D.:	LCSW0302
Matrix	: WATER	Analyst	: <i>CMB</i>
Date Sampled	: N/A	Supervisor	: <i>ES</i>
Date Analyzed	: 03/02/93	Date Released	: 03/08/93
		Instrument ID	: HP4

COMPOUND	SPIKE AMT. (ug/L)	LCS (ug/L)	REC LCS	%REC LIMITS
Benzene	20.0	18.5	93%	52-133
Toluene	20.0	18.7	94%	57-136
Ethylbenzene	20.0	18.6	93%	56-139
TOTAL Xylenes	20.0	18.1	91%	56-141
P-BFB			99%	61-139

\* Limits established by Anamatrix, Inc.