



GeoStrategies Inc.

April 22, 1993

Ms. Susan Hugo
Alameda County
Department of Environmental Health
80 Swan Way, Room 200
Oakland, California 94621

Reference: Shell Service Station
1800 Powell Street
Emeryville, California
WIC 204-2495-0101

Ms. Hugo:

As requested by Mr. Dan Kirk of Shell Oil Company, we are forwarding a copy of the Quarterly Report dated April 22, 1993 for the above referenced location. The report presents the results of the ground-water sampling conducted during the first quarter of 1993.

If you have any questions, please call.

Sincerely,

A handwritten signature in cursive script that reads "Ellen Fostersmith".

Ellen Fostersmith
Geologist

EF/rmt

Enclosure

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

:ellens\605-s.wp



GeoStrategies Inc.

April 22, 1993

Shell Oil Company
P.O. Box 5278
Concord, California 94520

Attn: Mr. Dan Kirk

Re: **QUARTERLY REPORT**
Shell Service Station
1800 Powell Street
Emeryville, California
WIC #204-2495-0101

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

- Benzene concentrations at the site ranged from 800 ppb in Well S-8 to none detected (ND) in Wells S-14.
- Historical research indicates that the site overlies an old landfill. Tar paper and other debris have been encountered during drilling at the site.

SITE DESCRIPTION

There are currently seven monitoring wells at the site; S-5, S-8, S-9, S-10, S-12, S-13 and S-14 (Plate 2). Wells S-1 through S-10 were installed prior to 1983. GSI installed Wells S-11 through S-14 in 1989. Wells S-6 and S-7 were abandoned in 1989. Wells S-1 through S-4 and S-11 were redesignated as tank backfill wells S-A through S-E, respectively.

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CURRENT QUARTER SAMPLING RESULTS

Depth to water-level measurements were obtained in each monitoring well on February 17, 1993. Static ground-water levels were measured from the surveyed top of each well box and recorded to nearest ± 0.01 foot. Water-level elevations, referenced to Mean Sea Level (MSL) datum are presented in Table 1. Water-level data were used to construct a quarterly potentiometric map (Plate 2). Shallow groundwater flow across the site is generally to the west at an approximate hydraulic gradient of 0.02.

Each well was checked for the presence of floating product. Well S-9 has contained a high viscosity, black, sludge-like substance since 1986, and was not monitored or sampled. The product in Well S-9 is believed to be related to the tar paper and/or other landfill debris underlying the site.

Ground-water samples were collected on February 17, 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. Samples from Wells S-12, S-13, and S-14 were also analyzed for TPH-Diesel according to EPA Method 8015. Sample DUP was collected as a duplicate sample from Well S-8. 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.

DISCUSSION

The dissolved hydrocarbon plume has been relatively stable and does not appear to be migrating from the site. The site is underlain by a landfill which operated from 1884 to 1969. Industrial and residential debris have been identified during drilling at the site. Given the already degraded condition resulting from past land use in the site vicinity, additional subsurface investigation and/or remediation at the Shell Service Station does not appear to be warranted.

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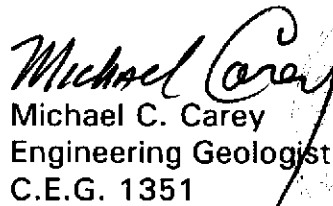
Shell Oil Company
April 22, 1993
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If you have any questions, please call.

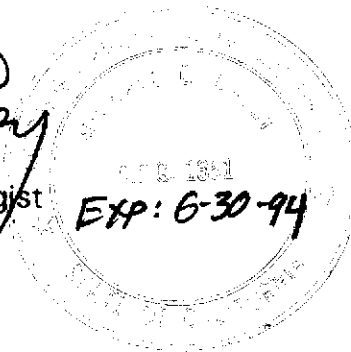
GeoStrategies Inc. by,



Ellen C. Fostersmith
Geologist



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 Service Inc. Sampling Report and
Chain-of-Custody Form

QC Review: E.M.

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)
S-5	17-Feb-93	8	12.48	11.72	8.29	---	3.43
S-8	17-Feb-93	3	18.98	12.76	9.65	---	3.11
S-10	17-Feb-93	6	19.80	12.58	7.34	---	5.24
S-12	17-Feb-93	3	24.55	12.84	8.08	---	4.76
S-13	17-Feb-93	3	21.00	12.59	7.60	---	4.99
S-14	17-Feb-93	3	24.12	12.69	9.69	---	3.00

Notes:

1. Static water elevations referenced to Mean Sea Level (MSL).
2. Well S-9 contained a black, tarry substance and was not monitored or sampled.

TABLE 2
HISTORICAL GROUND-WATER QUALITY DATABASE

SAMPLE DATE	SAMPLE WELL	TPH-G (PPB)	BENZENE (PPB)	TOLUENE (PPB)	ETHYLBENZENE (PPB)	XYLENES (PPB)	TPH-D (PPB)	OIL (PPB)
27-Oct-88	S-5	3,000	660	20	20	70	N/A	N/A
10-Feb-89	S-5	2,900	550	20	20	30	N/A	N/A
28-Apr-89	S-5	4,300	750	10	20	<30	N/A	N/A
07-Jul-89	S-5	1,500	300	8	7	9	N/A	N/A
25-Oct-89	S-5	2,100	760	10	40	50	N/A	N/A
04-Jan-90	S-5	1,300	520	9	8	10	N/A	N/A
06-Jul-90	S-5	1,400	500	10	4	<10	N/A	N/A
19-Oct-90	S-5	4,200	1,100	9	14	7	N/A	N/A
14-Jan-91	S-5	4,500	1,100	15	30	25	6,100	N/A
23-Apr-91	S-5	2,800	500	8	14	10	N/A	N/A
08-Jul-91	S-5	3,200	1,000	16	9	12	N/A	N/A
11-Oct-91	S-5	1,700	16	5.7	5.2	8.9	N/A	N/A
12-Feb-92	S-5	1,300	300	5	<5	<5	N/A	N/A
11-May-92	S-5	1,900	490	<5	<5	<5	N/A	N/A
01-Sep-92	S-5	6,700	760	26	<25	<25	N/A	N/A
04-Dec-92	S-5	2,900	890	5.3	7.3	13	N/A	N/A
17-Feb-93	S-5	1,300	280	3	3.4	9.4	N/A	N/A
27-Oct-88	S-6	6,000	1,700	50	80	420	N/A	N/A
10-Feb-89	S-6	2,800	740	20	20	140	N/A	N/A
28-Apr-89	S-6	6,500	2,400	30	50	210	N/A	N/A
07-Jul-89	S-6	3,700	1,700	34	55	200	N/A	N/A

TABLE 2
HISTORICAL GROUND-WATER QUALITY DATABASE

SAMPLE DATE	SAMPLE WELL	TPH-G (PPB)	BENZENE (PPB)	TOLUENE (PPB)	ETHYLBENZENE (PPB)	XYLENES (PPB)	TPH-D (PPB)	OIL (PPB)
25-Oct-89	S-6	<50	23	<5	<5	10	N/A	N/A
10-Nov-89	S-6	Well abandoned						
27-Oct-88	S-7	50	1.1	<1	<1	4	N/A	N/A
10-Feb-89	S-7	50	0.9	<1	<1	<3	N/A	N/A
28-Apr-89	S-7	<50	1	<1	<1	<3	N/A	N/A
07-Jul-89	S-7	70	2.2	<1	<1	<3	N/A	N/A
25-Oct-89	S-7	6,200	2,200	130	190	660	N/A	N/A
10-Nov-89	S-7	Well abandoned						
27-Oct-88	S-8	1,000	610	9	1	42	N/A	N/A
10-Feb-89	S-8	500	160	5	<2	17	N/A	N/A
28-Apr-89	S-8	2,700	1,500	20	10	40	N/A	N/A
07-Jul-89	S-8	440	180	5	2	12	N/A	N/A
25-Oct-89	S-8	2,000	1,100	17	5	70	N/A	N/A
04-Jan-90	S-8	1,900	1,300	20	<10	70	N/A	N/A
06-Jul-90	S-8	1,600	920	30	<10	60	N/A	N/A
19-Oct-90	S-8	1,400	640	<10	<10	30	N/A	N/A
14-Jan-91	S-8	670	190	5.8	<0.5	19	760	600
23-Apr-91	S-8	2,400*	740	54	5.7	59	N/A	N/A
08-Jul-91	S-8	1,100	450	15	<2.5	42	N/A	N/A
11-Oct-91	S-8	340	4	0.6	<0.5	17	N/A	N/A
12-Feb-92	S-8	<1,000	260	<10	<10	11	N/A	N/A
11-May-92	S-8	1,800	700	14	<5	46	N/A	N/A

TABLE 2
HISTORICAL GROUND-WATER QUALITY DATABASE

SAMPLE DATE	SAMPLE WELL	TPH-G (PPB)	BENZENE (PPB)	TOLUENE (PPB)	ETHYLBENZENE (PPB)	XYLENES (PPB)	TPH-D (PPB)	OIL (PPB)
01-Sep-92	S-8	Floating Product						
04-Dec-92	S-8	960	250	4.3	<2.5	14	N/A	N/A
17-Feb-93	S-8	2,700	800	35	10	83	N/A	N/A
27-Oct-88	S-9	Floating Product thickness not measured						
10-Feb-89	S-9	Floating Product -1.30 feet measured thickness						
28-Apr-89	S-9	Floating Product -1.25 feet measured thickness						
07-Jul-89	S-9	Floating Product -1.20 feet measured thickness						
25-Oct-89	S-9	Floating Product unable to measure accurately						
04-Jan-90	S-9	Floating Product unable to measure accurately						
12-Apr-90	S-9	Floating Product unable to measure accurately						
06-Jul-90	S-9	Floating Product unable to measure accurately						
19-Oct-90	S-9	Floating Product unable to measure accurately						
14-Jan-91	S-9	Floating Product unable to measure accurately						
23-Apr-91	S-9	Floating Product unable to measure accurately						
08-Jul-91	S-9	Floating Product unable to measure accurately						
11-Oct-91	S-9	Floating Product unable to measure accurately						
27-Oct-88	S-10	700,000	37,000	100,000	20,000	110,000	N/A	N/A
10-Feb-89	S-10	6,500	480	700	100	1,800	N/A	N/A
28-Apr-89	S-10	13,000	1,300	500	600	3,700	N/A	N/A
07-Jul-89	S-10	14,000	1,300	310	270	2,400	N/A	N/A
25-Oct-89	S-10	4,200	580	34	44	440	N/A	N/A
04-Jan-90	S-10	1,700	360	10	7.8	170	N/A	N/A

TABLE 2
HISTORICAL GROUND-WATER QUALITY DATABASE

SAMPLE DATE	SAMPLE WELL	TPH-G (PPB)	BENZENE (PPB)	TOLUENE (PPB)	ETHYLBENZENE (PPB)	XYLENES (PPB)	TPH-D (PPB)	OIL (PPB)
12-Apr-90	S-10		Floating Product -0.01 feet measured thickness					
06-Jul-90	S-10		Floating Product -0.01 feet measured thickness					
19-Oct-90	S-10		Floating Product -0.03 feet measured thickness					
14-Jan-91	S-10		Floating Product -0.03 feet measured thickness					
23-Apr-91	S-10		Floating Product -0.01 feet measured thickness					
08-Jul-91	S-10		Floating Product -0.03 feet measured thickness					
11-Oct-91	S-10		Not Sampled Insufficient recharge after -2 hours					
12-Feb-92	S-10	1,200	470	16	<5	14	N/A	N/A
11-May-92	S-10	1,100	100	6	4	19	N/A	N/A
01-Sep-92	S-10	Floating Product 0.01 ft						
04-Dec-92	S-10	Floating Product						
17-Feb-93	S-10	530	89	8.5	1.6	4.5	N/A	N/A
17-Nov-89	S-12	<250	18	<2	<2	<5	1,400	N/A
04-Jan-90	S-12	<250	24	2	<2	<5	N/A	N/A
06-Jul-90	S-12	80	15	0.7	<0.5	2	N/A	N/A
19-Oct-90	S-12	150	12	9	<0.5	3.6	N/A	N/A
14-Jan-90	S-12	120	3.6	0.8	<0.5	2.9	1,000	600
23-Apr-91	S-12	100	3.7	3.8	0.8	11	820^	800
08-Jul-91	S-12	70	2.5	0.8	<0.5	2.4	N/A	N/A
11-Oct-91	S-12	220	2.1	0.7	<0.5	1.2	2,500	5,100
12-Feb-92	S-12	110	0.8	<0.5	<0.5	1.3	2,500#	1,400
11-May-92	S-12	140	0.8	0.8	<0.5	2.5	3,800^	N/A

TABLE 2
HISTORICAL GROUND-WATER QUALITY DATABASE

SAMPLE DATE	SAMPLE WELL	TPH-G (PPB)	BENZENE (PPB)	TOLUENE (PPB)	ETHYLBENZENE (PPB)	XYLENES (PPB)	TPH-D (PPB)	OIL (PPB)
01-Sep-92	S-12	190	3	15	0.5	4.5	2,600^	N/A
04-Dec-92	S-12	180	1.2	1	1	7.7	3,900^	N/A
17-Feb-93	S-12	350*	0.6	<0.5	0.5	5.5	2,100^	N/A
17-Nov-89	S-13	1,900	700	160	70	340	2,000	5,000
04-Jan-90	S-13	2,800	1,400	130	10	500	N/A	N/A
06-Jul-90	S-13	3,100	1,800	60	40	270	N/A	N/A
24-Oct-90	S-13	3,400	1,500	28	28	250	N/A	N/A
14-Jan-90	S-13	1,900	830	15	<10	99	900	1,600
23-Apr-91	S-13	2,900*	1,100	20	30	140	770&	640
08-Jul-91	S-13	1,500	880	10	6	160	N/A	N/A
11-Oct-91	S-13	480	830	15	<0.5	120	2,400	4,900
12-Feb-92	S-13	1,300	510	<10	<10	86	1,300@	1,300
11-May-92	S-13	1,000	470	<5	<5	50	1,300^	N/A
01-Sep-92	S-13	FP						
04-Dec-92	S-13	900	290	4.6	<2.5	20	2,400^	N/A
17-Feb-93	S-13	840*	310	3.5	<2.5	27	1,200^	N/A
17-Nov-89	S-14	<250	3	<2	<2	<5	<400	3,000
04-Jan-90	S-14	<250	3	2	<2	<5	N/A	N/A
23-Apr-91	S-14	1,200	7.4	2.7	15	110	18,000&	<5,000
08-Jul-91	S-14	190	6.5	0.6	1.9	26	N/A	N/A
11-Oct-91	S-14	4,900	7	1.2	<0.5	25	21,000	<500
12-Feb-92	S-14	370	4.6	<2.5	<2.5	26	12,000*	2,500

TABLE 2
HISTORICAL GROUND-WATER QUALITY DATABASE

SAMPLE DATE	SAMPLE WELL	TPH-G (PPB)	BENZENE (PPB)	TOLUENE (PPB)	ETHYLBENZENE (PPB)	XYLENES (PPB)	TPH-D (PPB)	OIL (PPB)
11-May-92	S-14	660	2.9	<2.5	<2.5	24	2,200^	N/A
01-Sep-92	S-14	700	3.2	<2.5	<2.5	15	7,900	N/A
04-Dec-92	S-14	210	<0.5	<0.5	0.8	6.8	11,000^	N/A
17-Feb-93	S-14	130*	<0.5	<0.5	<0.5	4.4	5,700^	N/A

TPH-G = Total Petroleum Hydrocarbons calculated as Gasoline
 TPH-D = Total Petroleum Hydrocarbons calculated as Diesel.
 PPB = Parts Per Billion.

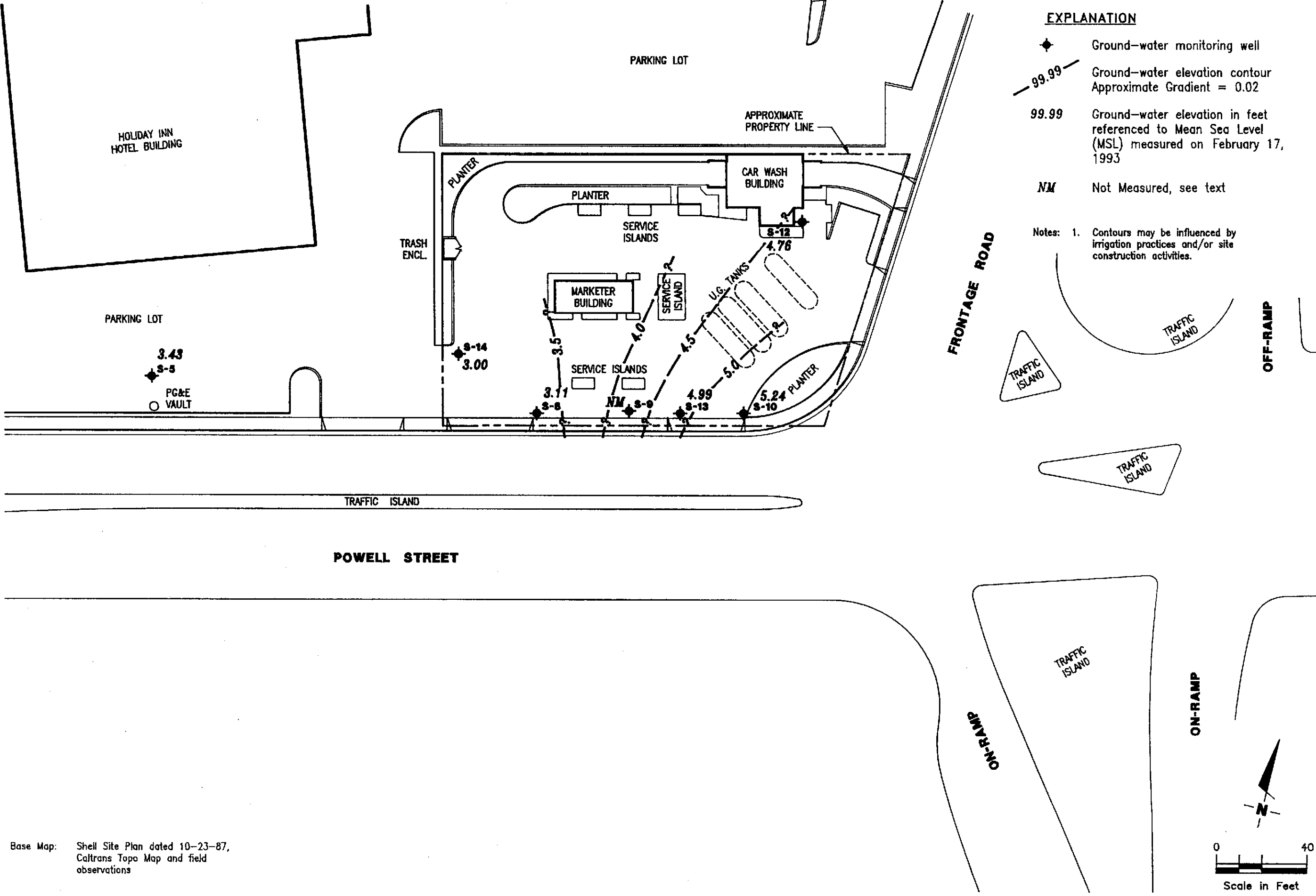
* = Compounds detected and calculated as low boiling hydrocarbons consist of compounds eluting within the chromatographic range of gasoline, but are not characteristic of the standard gasoline pattern.
 ^ = Chromatographic pattern of compounds detected and calculated as diesel is similar to but does not match that of the diesel standard used for calibration; pattern is characteristic of weathered diesel.
 & = Results include compounds apparently due to gasoline as well as those due to diesel.

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

EXPLANATION

- ◆ Ground-water monitoring well
- 99.99 - Ground-water elevation contour
Approximate Gradient = 0.02
- 99.99 Ground-water elevation in feet
referenced to Mean Sea Level
(MSL) measured on February 17,
1993
- NM Not Measured, see text

Notes: 1. Contours may be influenced by irrigation practices and/or site construction activities.



SITE PLAN/POTENTIOMETRIC MAP
 Shell Service Station
 1800 Powell Street
 Emeryville, California

DATE 4/93

REVISED DATE

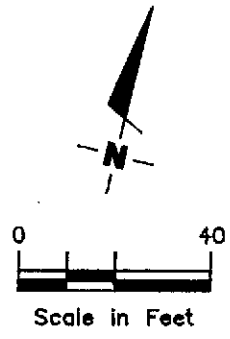
GeoStrategies Inc.



REVIEWED BY

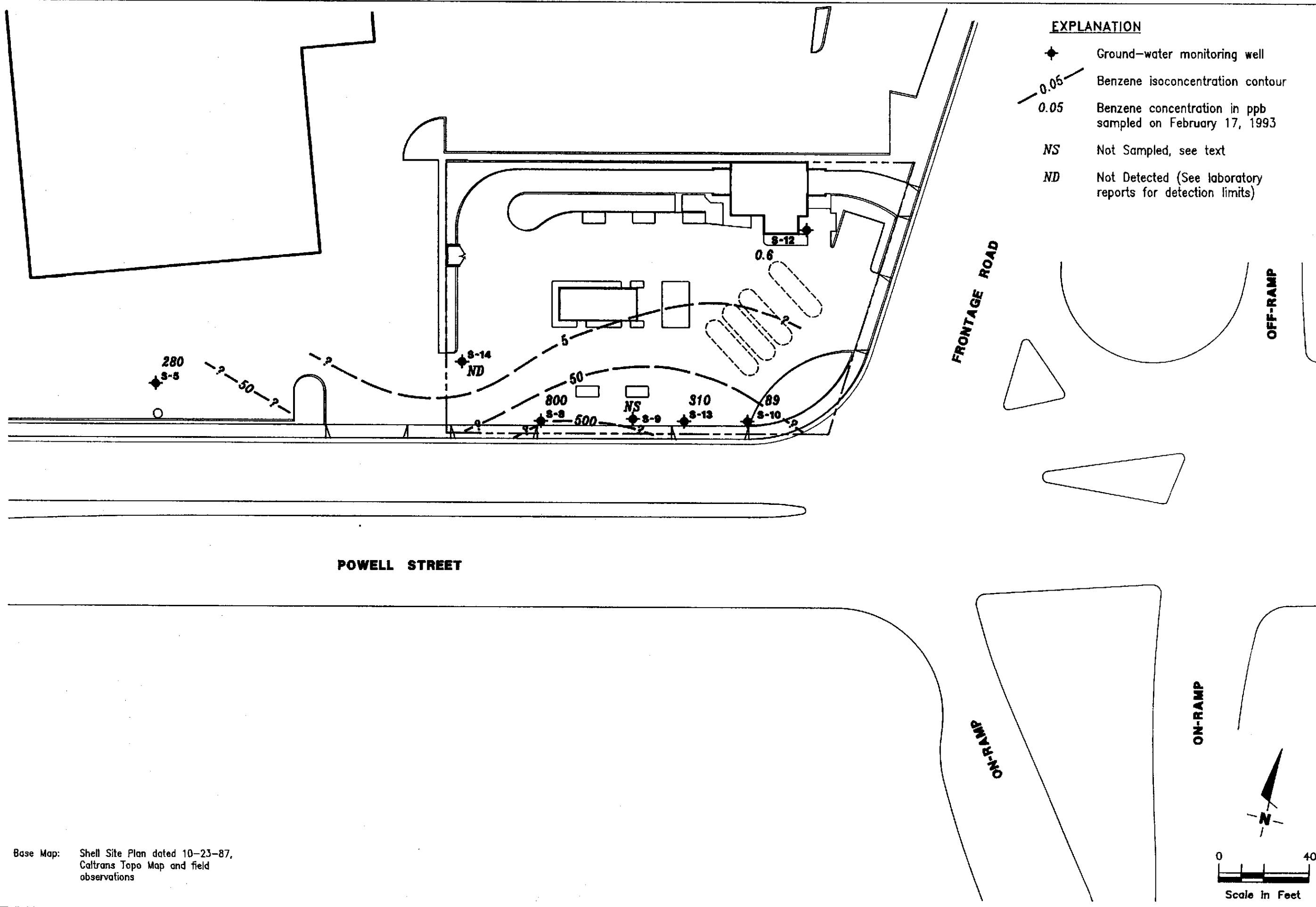
JOB NUMBER 760501-18

Base Map: Shell Site Plan dated 10-23-87, Caltrans Topo Map and field observations



EXPLANATION

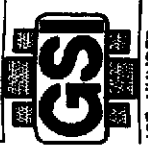
- ◆ Ground-water monitoring well
- 0.05— Benzene isoconcentration contour
- 0.05 Benzene concentration in ppb sampled on February 17, 1993
- NS Not Sampled, see text
- ND Not Detected (See laboratory reports for detection limits)



BENZENE ISOCONCENTRATION MAP
 Shell Service Station
 1800 Powell Street
 Emeryville, California

DATE 4/93
 REVISIONS DATE

GeoStrategies Inc.



REVIEWED BY
 JOB NUMBER 760501-18

Base Map: Shell Site Plan dated 10-23-87,
 Caltrans Topo Map and field
 observations

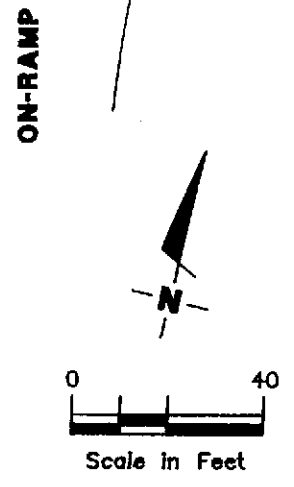


TABLE OF WELL GAUGING DATA

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-5	8	02-17-93	GRADE	ODOR	NONE	--	--	8.29	12.48
S-8 *	3	02-17-93	GRADE	ODOR	NONE	--	--	9.65	18.98
S-10	6	02-17-93	GRADE	--	NONE	--	--	7.34	19.80
S-12	3	02-17-93	GRADE	--	NONE	--	--	8.08	24.55
S-13	3	02-17-93	GRADE	--	NONE	--	--	7.60	21.0
S-14	3	02-17-93	GRADE	--	NONE	--	--	9.69	24.12

* Sample DUP was a duplicate sample taken from well S-8.

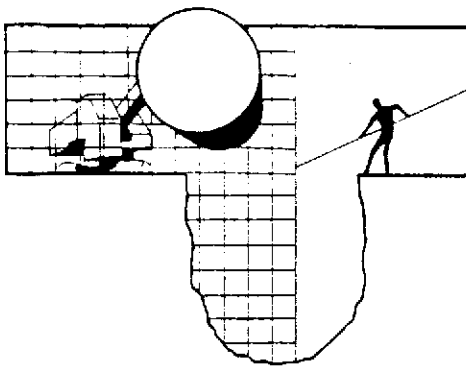
GeoStrategies Inc.

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

February 25, 1993

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

Attn: Daniel T. Kirk

GETTLER-RYAN, INC.
GENERAL CONTRACTORS

SITE:
Shell WIC # 204-2495-0101
1800 Powell Street
Emeryville, California

QUARTER:
1st quarter of 1993

QUARTERLY GROUNDWATER SAMPLING REPORT 930217-W-1

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.

STANDARD PROCEDURES

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

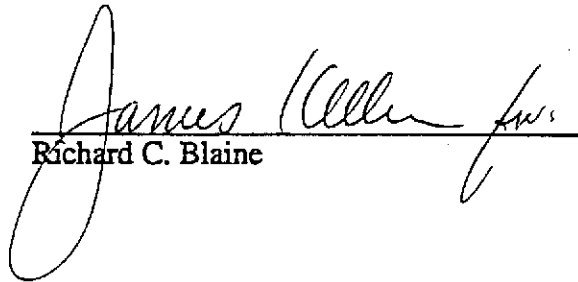
Blaine Tech Services, Inc. performs specialized environmental sampling and documentation as an independent third party. In order to avoid compromising the objectivity necessary for the proper and disinterested performance of this work, Blaine Tech Services, Inc.

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/lpn

attachments: chain of custody
certified analytical report

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

9300045 (18) 10/3 12:50 PM

 SHELL OIL COMPANY RETAIL ENVIRONMENTAL ENGINEERING - WEST		CHAIN OF CUSTODY RECORD Serial No: _____		Date: <u>2/11/93</u> Page (of) <u>1</u>												
Site Address: <u>1800 Powell St. Emeryville</u>		Analysis Required		LAB: <u>Armedex</u>												
VIC#: <u>204-2495-0101</u>		Shell Engineer: <u>Don Kirk</u> Phone No.: _____ Fax #: _____		CHECK ONE (1) FOR ONLY C/V/O1 TURN AROUND TIME												
Consultant Name & Address: <u>Blanic Tech Serv. 985 Timothy San Jose</u>		Consultant Contact: <u>Glen Bennett</u> Phone No.: <u>925-5335</u> Fax #: _____		Quarterly Monitoring <input checked="" type="checkbox"/> 5441 24 hours <input type="checkbox"/>												
Common(s): _____		Sampled by: <u>Don Wells</u>		Site Investigation <input type="checkbox"/> 5441 48 hours <input type="checkbox"/>												
Printed Name: <u>Don Wells</u>		Printed Name: _____		Soil Classify/Disposal <input type="checkbox"/> 5443 16 days <input checked="" type="checkbox"/> Normal												
Sample ID Date Sludge Soil Water Air No. of conls.		TPH (EPA 8015 Mod. Gas)		Water Classify/Disposal <input type="checkbox"/> 5443 Other <input type="checkbox"/>												
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		NOTE: Notify Lab as soon as possible of 24/48 hr. TAT.												
①	S-12	2/17		X		3/1	X		X			40 mL	40 mL	N	Groundwater	
②	S-14			X		3/1	X		X			40 mL	40 mL			
③	S-8			X		3			X			40 mL	40 mL			
④	S-5			X		3			X			40 mL	40 mL			
⑤	S-13			X		3/1	X		X			40 mL	40 mL			
⑥	S-10			X		3			X			40 mL	40 mL			
⑦	dup			X		3			X							
⑧	TB			X		2			X							Trip Blank
Relinquished by (Signature): <u>[Signature]</u>		Relinquished by (Signature): <u>[Signature]</u>		Relinquished by (Signature): <u>[Signature]</u>		Relinquished by (Signature): <u>[Signature]</u>										
Printed Name: _____		Printed Name: _____		Printed Name: _____		Printed Name: _____										
Date: <u>2-11-93</u> Time: <u>0900</u>		Date: <u>2-18-93</u> Time: <u>0925</u>		Date: <u>2-18-93</u> Time: <u>0925</u>		Date: <u>2-18-93</u> Time: <u>0925</u>										
Relinquished by (Signature): <u>[Signature]</u>		Relinquished by (Signature): <u>[Signature]</u>		Relinquished by (Signature): <u>[Signature]</u>		Relinquished by (Signature): <u>[Signature]</u>										
Printed Name: _____		Printed Name: _____		Printed Name: _____		Printed Name: _____										
Date: _____ Time: _____		Date: _____ Time: _____		Date: _____ Time: _____		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 # : 9302245
Date Received : 02/18/93
Project ID : 204-2495-0101
Purchase Order: MOH-B813

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

ANAMETRIX ID	CLIENT SAMPLE ID
9302245- 1	S-12
9302245- 2	S-14
9302245- 3	S-8
9302245- 4	S-5
9302245- 5	S-13
9302245- 6	S-10
9302245- 7	DUP
9302245- 8	TB

This report consists of 8 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

03-04-93

Date

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

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

Workorder # : 9302245
Date Received : 02/18/93
Project ID : 204-2495-0101
Purchase Order: MOH-B813
Department : GC
Sub-Department: TPH

SAMPLE INFORMATION:

ANAMETRIX SAMPLE ID	CLIENT SAMPLE ID	MATRIX	DATE SAMPLED	METHOD
9302245- 1	S-12	WATER	02/17/93	TPHd
9302245- 2	S-14	WATER	02/17/93	TPHd
9302245- 5	S-13	WATER	02/17/93	TPHd
9302245- 1	S-12	WATER	02/17/93	TPHg/BTEX
9302245- 2	S-14	WATER	02/17/93	TPHg/BTEX
9302245- 3	S-8	WATER	02/17/93	TPHg/BTEX
9302245- 4	S-5	WATER	02/17/93	TPHg/BTEX
9302245- 5	S-13	WATER	02/17/93	TPHg/BTEX
9302245- 6	S-10	WATER	02/17/93	TPHg/BTEX
9302245- 7	DUP	WATER	02/17/93	TPHg/BTEX
9302245- 8	TB	WATER	02/17/93	TPHg/BTEX

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

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

Workorder # : 9302245
Date Received : 02/18/93
Project ID : 204-2495-0101
Purchase Order: MOH-B813
Department : GC
Sub-Department: TPH

QA/QC SUMMARY :

- The concentration reported as gasoline for sample S-14 is primarily due to the presence of a heavier petroleum product of hydrocarbon range C10-C14.
- The concentrations reported as gasoline for samples S-12 and S-13 are primarily due to the presence of a discrete hydrocarbon peak not indicative of gasoline.
- The concentrations reported as diesel for samples S-12, S-14 and S-13 are primarily due to the presence of a heavier petroleum product of hydrocarbon range C18-30.

Cheryl Balmer 3/4/93
Department Supervisor Date

Rozzie Dawson 3/4/93
Chemist Date

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

Anamatrix W.O.: 9302245
Matrix : WATER
Date Sampled : 02/17/93

Project Number : 204-2495-0101
Date Released : 03/03/93

	Reporting Limit	Sample I.D.# S-12	Sample I.D.# S-14	Sample I.D.# S-8	Sample I.D.# S-5	Sample I.D.# S-13
COMPOUNDS	(ug/L)	-01	-02	-03	-04	-05
Benzene	0.5	0.6	ND	790	280	310
Toluene	0.5	ND	ND	35	3.0	3.5
Ethylbenzene	0.5	0.5	ND	10	3.4	ND
Total Xylenes	0.5	5.5	4.4	83	9.4	27
TPH as Gasoline	50	350	130	2700	1300	840
% Surrogate Recovery		118%	110%	91%	107%	104%
Instrument I.D.		HP12	HP12	HP12	HP12	HP12
Date Analyzed		02/23/93	02/23/93	02/25/93	02/25/93	02/25/93
RLMF		1	1	10	5	5

- 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 3.4.93
Analyst Date

Cheryl B. Lerner 3/3/93
Supervisor Date

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

Anamatrix W.O.: 9302245
Matrix : WATER
Date Sampled : 02/17/93

Project Number : 204-2495-0101
Date Released : 03/03/93

Reporting Limit	Sample I.D.# S-10	Sample I.D.# DUP	Sample I.D.# TB	Sample I.D.# BF2301E3	Sample I.D.# BF2401E3
COMPOUNDS (ug/L)	-06	-07	-08	BLANK	BLANK
Benzene	0.5	89	800	ND	ND
Toluene	0.5	8.5	27	ND	ND
Ethylbenzene	0.5	1.6	8.3	ND	ND
Total Xylenes	0.5	4.5	65	ND	ND
TPH as Gasoline	50	530	2200	ND	ND
% Surrogate Recovery	94%	102%	117%	119%	111%
Instrument I.D.	HP12	HP12	HP12	HP12	HP12
Date Analyzed	02/24/93	02/25/93	02/23/93	02/23/93	02/24/93
RLMF	2	10	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 Burch 3-3-93
Analyst Date

Charles Belmer 3/3/93
Supervisor Date

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

Anamatrix W.O.: 9302245
Matrix : WATER
Date Sampled : N/A

Project Number : 204-2495-0101
Date Released : 03/03/93

COMPOUNDS	Reporting Limit (ug/L)	Sample I.D.# BF2501E3 BLANK
Benzene	0.5	ND
Toluene	0.5	ND
Ethylbenzene	0.5	ND
Total Xylenes	0.5	ND
TPH as Gasoline	50	ND
* Surrogate Recovery		107%
Instrument I.D.		HP12
Date Analyzed		02/25/93
RLMF		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 Burch 3-3-93
Analyst Date

Cheryl Balmer 3/3/93
Supervisor Date

ANALYSIS DATA SHEET - TOTAL PETROLEUM HYDROCARBONS AS DIESEL
ANAMETRIX, INC. (408) 432-8192

Anamatrix W.O.: 9302245
Matrix : WATER
Date Sampled : 02/17/93
Date Extracted: 02/22/93

Project Number : 204-2495-0101
Date Released : 03/03/93
Instrument I.D.: HP23

Anamatrix I.D.	Client I.D.	Date Analyzed	Reporting Limit (ug/L)	Amount Found (ug/L)
9302245-01	S-12	02/24/93	50	2100
9302245-02	S-14	02/24/93	50	5700
9302245-05	S-13	02/24/93	50	1200
DWBLO22293	METHOD BLANK	02/23/93	50	ND

Note : Reporting limit is obtained by multiplying the dilution factor times 50 ug/L.

ND - Not detected at or above the practical quantitation limit for the method.

TPHd - Total Petroleum Hydrocarbons as diesel is determined by GCFID following sample extraction by EPA Method 3510.

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

Charles M. Burch 3-4-93
Analyst Date

Cheryl Balmer 3/4/93
Supervisor Date

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

Sample I.D. : LAB CONTROL SAMPLE
 Matrix : WATER
 Date Sampled : N/A
 Date Analyzed : 02/23/93

Anamatrix I.D. : LCSW0223
 Analyst : *CMB*
 Supervisor : *CS*
 Date Released : 03/03/93
 Instrument I.D.: HP12

COMPOUND	SPIKE AMT. (ug/L)	REC LCS (ug/L)	%REC LCS	% REC LIMITS
GASOLINE	250	274	110%	67-127
SURROGATE			104%	61-139

* Quality control established by Anamatrix, Inc.

TOTAL EXTRACTABLE HYDROCARBON LABORATORY CONTROL SAMPLE REPORT
 EPA METHOD 3510 WITH GC/FID
 ANAMETRIX, INC. (408) 432-8192

Sample I.D. : LAB CONTROL SAMPLE
 Matrix : WATER
 Date Sampled : N/A
 Date Extracted: 02/22/93
 Date Analyzed : 02/23/93

Anamatrix I.D. : LCS0222
 Analyst : RD
 Supervisor : OS
 Date Released : 03/04/93
 Instrument I.D.: HP9

COMPOUND	SPIKE AMT (ug/L)	LCS REC (ug/L)	% REC LCS	LCSD REC (ug/L)	% REC LCSD	RPD	% REC LIMITS
DIESEL	1250	850	68%	760	61%	-11%	47-130

*Quality control established by Anamatrix, Inc.