Shell Oil Company

EAST BAY MARKETING DISTRICT

P O Box 4023
Concord, CA 94524
(415) 676-1414

February 15, 1991

Mr. Rick Mueller
City of Pleasanton
Pleasanton Fire Department
Post Office Box 520
Pleasanton, California 94566-0802

SUBJECT: SHELL SERVICE STATION
3790 HOPYARD ROAD
PLEASANTON, CALIFORNIA

Dear Mr. Mueller:

Enclosed is a copy of the February 15, 1991 Site Update report prepared for the subject location. The report presents the results of the ground-water sampling conducted during the fourth quarter of 1990.

If you should have any questions or comments regarding this project please do not hesitate to call me at (415) 675-6127.

Very truly yours,

Jack Brastad
Senior Environmental Engineer

enclosure

cc: Mr. Tom Callaghan, Regional Water Quality Control Board
Mr. John Werfal, Gettler-Ryan Inc.

GeoStrategies Inc.

SITE UPDATE

Shell Service Station
3790 Hopyard Road
Pleasanton, California
WIC 204-6138-0501

763201-8

February 15, 1991

GeoStrategies Inc.
2140 WEST WINTON AVENUE
HAYWARD, CALIFORNIA 94545

February 15, 1991

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

Attn: Mr. John Werfal

Re: SITE UPDATE
Shell Service Station
3790 Hopyard Road
Pleasanton, California

Gentlemen:

This Site Update has been prepared by GeoStrategies Inc. (GSI) for the Shell Service Station located at the above referenced location (Plate 1). This report presents the results of the fourth quarter ground-water sampling of 1990, performed by Gettler-Ryan Inc. (G-R) in accordance with the current quarterly monitoring plan for the site. G-R Groundwater Sampling Procedures are presented in the GSI report dated October 2, 1990. Field work and laboratory analysis methods were performed to comply with current State of California Water Resources Control Board (SWRCB) procedures for conducting environmental investigations related to leaking underground fuel tanks.

763201-8

In January 1986 EMCON Associates drilled three soil borings in the vicinity of the tank complex to collect soil samples prior to the replacement of the Underground Storage Tanks (UGSTs). A temporary monitoring well was placed in Boring S-C, but ground-water samples were not obtained due to dewatering of the well during purging. Two vadose wells (ST-1 and ST-2) were installed within the former tank backfill material, and two monitoring wells (S-1 and S-2) were installed by Pacific Environmental Group (PACIFIC) in October 1987. PACIFIC installed three additional monitoring wells (S-3, S-4 and S-5) in January 1988. The UGSTs were replaced in August 1988. Woodward-Clyde Consultants installed monitoring wells S-6 through S-9 during the first quarter of 1989. Monitoring wells S-10 and recovery wells SR-1 through SR-3 were installed by GSI during the third quarter of 1989. In February 1990, aquifer tests (slug and constant-rate discharge) were performed at the site to estimate specific aquifer characteristics.

In November 1990, Well S-5 was resampled to substantiate increased concentrations of TPH-Gasoline and benzene reported in the third quarterly ground-water sampling of 1990.

CURRENT QUARTER SAMPLING RESULTS

Potentiometric Data

Water-level data were collected on December 18, 1990 by G-R. Prior to ground-water sampling, depth to ground-water levels were measured in each well using a portable oil-water interface probe. Static ground-water levels were measured from the surveyed top of the well box and recorded to the nearest $\pm$0.01 foot. Groundwater was encountered at depths between 13.00 feet and 17.90 feet below the top of the well box, or corresponding elevations of 310.34 to 314.67 feet above Mean Sea Level (MSL).

Ground-water elevation data collected for this sampling period indicate that the shallow groundwater flows in a southerly direction with a calculated hydraulic gradient of 0.018. Potentiometric data have been compiled in Table 1, and are plotted and contoured on Plate 3.

Each well was monitored for the presence of separate-phase hydrocarbons using an electronic oil-water interface probe. Wells were visually checked using a clear acrylic bailer to confirm interface probe results and to check for the presence of a product sheen. Separate-phase product or product sheens were not observed in any monitoring wells.

Chemical Analytical Data

Ground-water samples were collected from the monitoring well network on December 18, 1990 by G-R. The ground-water samples were 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. All samples were analyzed by International Technology Corporation (IT) Analytical Services, a State-certified analytical laboratory located in San Jose, California.

Chemical analytical data are summarized in Table 1. TPH-Gasoline was identified in Wells S-2, S-4, S-5, S-6 and SR-3 at concentrations ranging from 0.061 parts per million (ppm) in Well S-2 to 25. ppm in Well S-5. Benzene was identified in Wells S-2, S-4, S-5, S-6, S-8, S-9, SR-1, SR-2, and SR-3 at concentrations ranging from 0.0016 ppm in Well SR-2, to 7.6 ppm in Well S-5. These benzene concentrations are above the current Regional Water Quality Control Board (RWQCB) Maximum Contaminant Level (MCL). Well S-5 contained toluene at concentrations of 1.1 ppm, which is above the Department of Health Services (DHS) Action Level. TPH-Gasoline and benzene were reported as none detected (ND) for Wells S-3, S-7, and S-10. TPH-Gasoline and benzene concentrations in Well S-5 were reported at 25. and 7.6 ppm, respectively. The G-R Ground-water Sampling Reports, IT Analytical Services certified analytical reports and Chain-of-Custody Forms are included in Appendix A. Table 2 presents a historical summary of the available ground-water chemical analytical data for the site. TPH-Gasoline and benzene concentrations have been plotted and used to prepare isoconcentration contour maps (Plates 4 and 5).

Quality Control

Quality Control (QC) samples for this sampling included a trip blank (TB), a field blank (SF-2) and one duplicate sample (SD-5). The trip blank sample was prepared in the laboratory to evaluate sample handling and transport procedures. The field blank was prepared in the field using laboratory supplied organic-free water to evaluate field sampling procedures. The duplicate sample was collected as a split (second sample) from Well S-5 in order to quantitatively evaluate laboratory procedures and analytical precision.

The analyses performed on the trip blank and field blank did not detect measurable concentrations of hydrocarbons above established laboratory detection limits for the targeted chemical parameters. The chemical results for the blanks indicate that hydrocarbons were not introduced into the ground-water samples during sampling, transport or from ambient field conditions.

The analytical results for TPH-Gasoline and benzene from samples S-5 and SD-5 were evaluated for precision using the Relative Percent Difference (RPD) Method. The calculated RPD values for TPH-Gasoline and benzene were 8.33% and 1.3%, respectively.

SUMMARY

The summary of activities and findings associated with the fourth quarter report for 1990 is presented below:

- The monitoring well network was sampled by G-R on December 18, 1990.
- Ground-water elevations ranged from 310.34 to 314.67 feet above MSL.
- The calculated hydraulic gradient for this quarter is 0.018. Shallow ground-water flow is to the south.
- Floating product or product sheens were not observed in any of the monitoring wells.

- o TPH-Gasoline was detected in Wells S-2, S-4 through S-6 and SR-3 with concentrations ranging from 0.061 to 25. ppm. TPH-Gasoline was ND in Wells S-3, S-7, S-8, S-9, SR-1 and SR-2.

- o Benzene was detected in Wells S-2, S-4 through S-6, S-8, S-9, SR-1, SR-2, and SR-3 with concentrations ranging from 0.0016 to 7.6 ppm. These benzene concentrations are above the RWQCB MCL.

- o Both TPH-Gasoline and benzene were ND in Wells S-3, S-7 and S-10.

If you have any questions, please call.

GeoStrategies Inc. by,

Tathyana A. Pshevlozky
Geologist

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

REGISTERED GEOLOGIST
DAVID H. PETERSON
No. 1186
CERTIFIED
ENGINEERING
GEOLOGIST
STATE OF CALIFORNIA

TAP/DHP/mlg

Plate 1. Vicinity Map
Plate 2. Site Plan
Plate 3. Potentiometric Map
Plate 4. TPH-Gasoline Isoconcentration Map
Plate 5. Benzene Isoconcentration Map

Appendix A: Gettler-Ryan Groundwater Sampling Report

QC Review:
763201-8

TABLE 1

GROUND-WATER ANALYSIS DATA

WELL NO	SAMPLE DATE	ANALYSIS DATE	TPH-G (PPM)	BENZENE (PPM)	TOLUENE (PPM)	ETHYLBENZENE (PPM)	XYLENES (PPM)	WELL ELEV (FT)	STATIC WATER ELEV (FT)	PRODUCT THICKNESS (FT)	DEPTH TO WATER (FT)
S-2	18-Dec-90	29-Dec-90	0.061	0.018	0.0014	0.0022	0.0024	329.21	314.29	none	14.92
S-3	18-Dec-90	29-Dec-90	<0.05	<0.0005	0.0016	<0.0005	0.0020	327.67	314.67	none	13.00
S-4	18-Dec-90	29-Dec-90	1.4	0.18	0.0029	0.28	0.23	328.53	314.40	none	14.13
S-5	18-Dec-90	31-Dec-90	25.	7.6	1.1	1.3	2.3	329.66	312.84	none	16.82
S-6	18-Dec-90	29-Dec-90	0.43	0.010	0.0007	0.0016	0.0015	327.62	312.86	none	14.76
S-7	18-Dec-90	29-Dec-90	<0.05	<0.0005	<0.0005	<0.0005	0.00086	328.67	311.69	none	16.98
S-8	18-Dec-90	29-Dec-90	<0.05	0.0029	0.0070	0.0010	0.0064	327.00	312.03	none	14.97
S-9	18-Dec-90	31-Dec-90	<0.05	0.020	0.027	0.0071	0.035	328.24	310.34	none	17.90

CURRENT REGIONAL WATER QUALITY CONTROL BOARD MAXIMUM CONTAMINANT LEVELS
Benzene 0.001 ppm Xylenes 1.750 ppm Ethylbenzene 0.68 ppm

CURRENT DHS ACTION LEVELS
Toluene 0.100 ppm

TPH = Total Petroleum Hydrocarbons as Gasoline
PPM = Parts Per Million SD = Duplicate Sample SF = Field Blank TB = Trip Blank

Note: 1. For chemical parameter detection limits, refer to I.T. Laboratory reports.
2. Static Water Elevations referenced to mean sea level (MSL).
3. DHS Action Levels and MCLs are subject to change pending State review.

TABLE 1

GROUND-WATER ANALYSIS DATA

WELL NO	SAMPLE DATE	ANALYSIS DATE	TPH-G (PPM)	BENZENE (PPM)	TOLUENE (PPM)	ETHYLBENZENE (PPM)	XYLENES (PPM)	WELL ELEV (FT)	STATIC WATER ELEV (FT)	PRODUCT THICKNESS (FT)	DEPTH TO WATER (FT)
S-10	18-Dec-90	29-Dec-90	<0.05	<0.0005	<0.0005	<0.0005	0.0014	326.55	312.53	none	14.02
SR-1	18-Dec-90	31-Dec-90	<0.05	0.028	0.0055	0.0045	0.0045	329.78	313.46	none	16.32
SR-2	18-Dec-90	31-Dec-90	<0.05	0.0016	0.0014	0.0016	0.0027	328.35	313.75	none	14.60
SR-3	18-Dec-90	29-Dec-90	0.14	0.010	0.0008	0.0075	0.014	329.11	314.11	none	15.00
SD-5	18-Dec-90	01-Jan-90	23.	7.5	1.2	1.2	2.4	----	----	----	----
SF-2	18-Dec-90	29-Dec-90	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	----	----	----	----
TB	18-Dec-90	29-Dec-90	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	----	----	----	----

TABLE 2

HISTORICAL GROUNDWATER QUALITY DATABASE

SAMPLE DATE	SAMPLE POINT	TPH-G (PPM)	BENZENE (PPM)	TOLUENE (PPM)	E.B. (PPM)	XYLENES (PPM)
11-Oct-89	SR-1	0.20	0.10	<0.001	0.010	0.010
14-Dec-89	SR-1	0.5	0.21	<0.0005	0.016	0.016
05-Mar-90	SR-1	0.064	0.020	<0.0005	0.0015	0.004
14-Jun-90	SR-1	0.06	0.017	<0.0005	0.0019	0.001
02-Oct-90	SR-1	<0.05	0.0050	<0.0005	<0.0005	<0.0005
18-Dec-90	SR-1	<0.05	0.028	0.0055	0.0045	0.0045
11-Oct-89	SR-2	0.88	<0.01	0.001	0.029	0.033
14-Dec-89	SR-2	1.1	0.017	<0.0005	0.10	0.067
05-Mar-90	SR-2	0.14	0.0030	<0.0005	0.012	0.007
14-Jun-90	SR-2	<0.05	<0.0005	<0.0005	0.0026	<0.001
02-Oct-90	SR-2	<0.05	<0.0005	<0.0005	0.0005	<0.0005
18-Dec-90	SR-2	<0.05	0.0016	0.0014	0.0016	0.0027
11-Oct-89	SR-3	0.50	0.092	0.010	0.043	0.10
14-Dec-89	SR-3	2.4	0.31	0.027	0.17	0.34
05-Mar-90	SR-3	0.070	0.015	0.0008	0.0058	0.010
14-Jun-90	SR-3	0.47	0.059	0.0023	0.035	0.05
02-Oct-90	SR-3	1.7	0.091	0.0062	0.0070	0.10
18-Dec-90	SR-3	0.14	0.010	0.0008	0.0075	0.014
06-Nov-87	S-1	0.92	0.230	<0.005	0.150	0.150
14-Feb-88	S-1	3.5	1.3	<0.04	0.5	0.5
06-Nov-87	S-2	16.0	0.87	0.10	2.7	2.7
14-Feb-88	S-2	1.8	0.44	<0.01	0.14	0.14
13-Oct-88	S-2	0.55	0.11	0.001	0.045	0.015
31-Jan-89	S-2	0.62	0.17	0.002	0.062	0.014
07-Mar-89	S-2	1.90	0.26	0.27	0.13	0.26
26-Jun-89	S-2	0.32	0.088	0.001	0.032	0.010
08-Sep-89	S-2	0.23	0.08	0.001	0.030	0.015
14-Dec-89	S-2	0.16	0.056	0.0005	0.021	0.003
05-Mar-90	S-2	0.71	0.057	<0.0005	<0.0005	0.088
14-Jun-90	S-2	0.11	0.039	0.0005	0.011	0.002
02-Oct-90	S-2	0.29	0.084	0.0017	0.16	0.0081
18-Dec-90	S-2	0.061	0.018	0.0014	0.0022	0.0024
14-Feb-88	S-3	<0.05	<0.0005	<0.001	<0.004	<0.004
13-Oct-88	S-3	<0.05	<0.0005	<0.001	<0.001	<0.003
31-Jan-89	S-3	<0.05	<0.0005	<0.001	<0.001	<0.003
07-Mar-89	S-3	<0.05	<0.0005	<0.001	<0.001	<0.003
26-Jun-89	S-3	<0.05	<0.0005	<0.001	<0.001	<0.003
08-Sep-89	S-3	<0.05	<0.0005	<0.001	<0.001	<0.003
14-Dec-89	S-3	<0.05	<0.0005	<0.0005	<0.0005	<0.001

TABLE 2

HISTORICAL GROUNDWATER QUALITY DATABASE

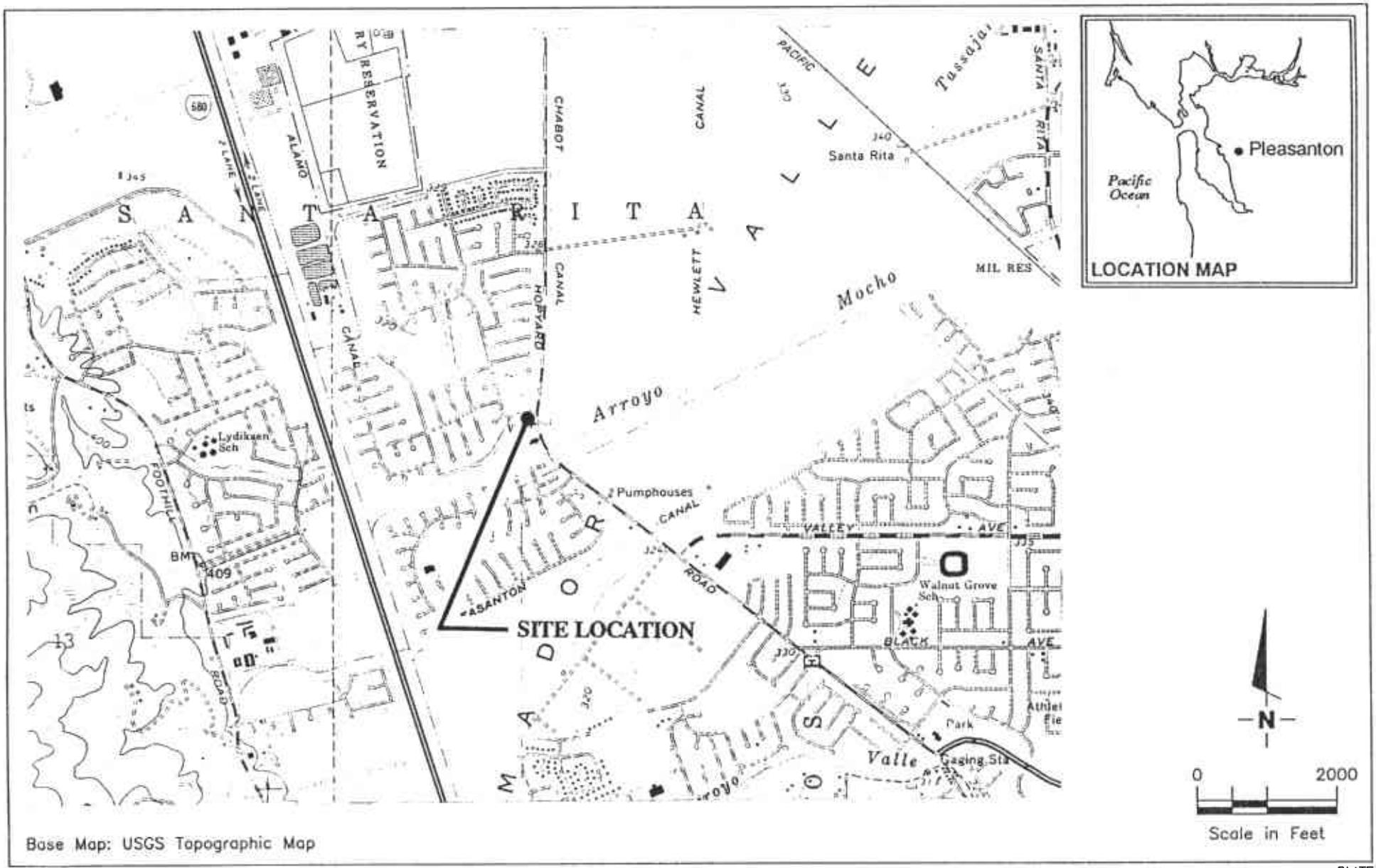
SAMPLE DATE	SAMPLE POINT	TPH-G (PPM)	BENZENE (PPM)	TOLUENE (PPM)	E.B. (PPM)	XYLENES (PPM)
05-Mar-90	S-3	<0.050	<0.0005	<0.0005	<0.0005	<0.001
14-Jun-90	S-3	<0.5	<0.0005	<0.0005	<0.0005	<0.001
02-Oct-90	S-3	<0.05	<0.0005	<0.0005	<0.0005	0.0010
18-Dec-90	S-3	<0.05	<0.0005	0.0016	<0.0005	0.0020
14-Feb-88	S-4	5.1	0.16	0.008	0.73	0.73
13-Oct-88	S-4	0.53	0.024	0.001	0.025	0.016
31-Jan-89	S-4	1.1	0.033	0.002	0.020	0.024
07-Mar-89	S-4	0.65	0.037	0.001	0.035	0.027
26-Jun-89	S-4	0.67	0.11	<0.001	0.085	0.071
08-Sep-89	S-4	0.38	0.032	<0.001	0.036	0.026
14-Dec-89	S-4	0.21	0.021	<0.0005	0.030	0.023
05-Mar-90	S-4	0.35	0.043	<0.0005	0.024	0.047
14-Jun-90	S-4	0.43	0.074	<0.0005	0.071	0.046
02-Oct-90	S-4	0.70	0.074	0.0022	0.10	0.055
18-Dec-90	S-4	1.4	0.18	0.0029	0.28	0.23
14-Feb-88	S-5	1.0	0.04	0.086	0.180	0.180
13-Oct-88	S-5	0.56	0.066	0.020	0.018	0.036
31-Jan-89	S-5	0.18	0.027	0.008	0.009	0.013
07-Mar-89	S-5	3.8	0.52	0.53	0.26	0.57
26-Jun-89	S-5	<0.05	0.0038	<0.001	0.002	<0.003
08-Sep-89	S-5	0.11	0.025	0.002	0.002	0.012
14-Dec-89	S-5	1.7	0.30	0.086	0.067	0.14
05-Mar-90	S-5	1.1	0.10	0.11	0.079	0.24
14-Jun-90	S-5	0.6	0.094	0.036	0.04	0.062
02-Oct-90	S-5	4.5	1.4	0.16	0.26	0.30
20-Nov-90	S-5	16.	4.6	0.72	0.79	1.0
18-Dec-90	S-5	25.	7.6	1.1	1.3	2.3
13-Oct-88	S-6	1.1	0.0130	0.001	0.042	0.033
31-Jan-89	S-6	0.34	0.0038	<0.001	0.008	0.003
07-Mar-89	S-6	0.19	0.0038	<0.001	0.007	0.003
26-Jun-89	S-6	0.48	0.015	<0.001	0.006	<0.003
08-Sep-89	S-6	0.27	0.0013	0.001	0.007	<0.003
15-Dec-89	S-6	0.32	0.0010	<0.0005	0.0026	<0.001
06-Mar-90	S-6	0.42	0.0031	<0.0005	0.014	<0.001
14-Jun-90	S-6	0.37	0.0037	0.0009	0.0048	0.003
02-Oct-90	S-6	0.19	0.0066	0.0016	0.0019	0.0028
18-Dec-90	S-6	0.43	0.010	0.0007	0.0016	0.0015
13-Oct-88	S-7	<0.05	0.0006	0.001	<0.001	<0.003
31-Jan-89	S-7	<0.05	<0.0005	<0.001	<0.001	<0.003

TABLE 2

HISTORICAL GROUNDWATER QUALITY DATABASE

SAMPLE DATE	SAMPLE POINT	TPH-G (PPM)	BENZENE (PPM)	TOLUENE (PPM)	E.B. (PPM)	XYLENES (PPM)
07-Mar-89	S-7	<0.05	<0.0005	<0.001	<0.001	<0.003
26-Jun-89	S-7	<0.05	<0.0005	<0.001	<0.001	<0.003
08-Sep-89	S-7	<0.05	<0.0005	<0.001	<0.001	<0.003
15-Dec-89	S-7	<0.05	<0.0005	<0.0005	<0.0005	<0.001
06-Mar-90	S-7	<0.050	<0.0005	<0.0005	<0.0005	<0.001
14-Jun-90	S-7	<0.05	<0.0005	<0.0005	<0.0005	<0.001
02-Oct-90	S-7	<0.05	<0.0005	0.0006	<0.0005	0.0009
18-Dec-90	S-7	<0.05	0.0005	<0.0005	<0.0005	0.00086
07-Mar-89	S-8	<0.05	0.0012	0.001	<0.001	<0.003
26-Jun-89	S-8	<0.05	0.0008	0.001	<0.001	<0.003
08-Sep-89	S-8	<0.05	<0.0005	<0.001	<0.001	<0.003
14-Dec-89	S-8	<0.05	<0.0005	<0.0005	<0.0005	<0.001
05-Mar-90	S-8	<0.050	<0.0005	0.0005	<0.0005	<0.001
14-Jun-90	S-8	<0.05	<0.0005	<0.0005	<0.0005	<0.001
02-Oct-90	S-8	<0.05	<0.0005	<0.0005	<0.0005	<0.0005
18-Dec-90	S-8	<0.05	0.0029	0.0070	0.0010	0.0064
07-Mar-89	S-9	<0.05	<0.0005	<0.001	<0.001	<0.003
26-Jun-89	S-9	<0.05	<0.0005	<0.001	<0.001	<0.003
08-Sep-89	S-9	<0.05	0.0017	0.002	<0.001	<0.003
15-Dec-89	S-9	<0.05	0.0005	<0.0005	<0.0005	<0.001
06-Mar-90	S-9	<0.050	<0.0005	<0.0005	<0.0005	<0.001
14-Jun-90	S-9	<0.05	<0.0005	<0.0005	<0.0005	<0.001
02-Oct-90	S-9	<0.05	<0.0005	<0.0005	<0.0005	<0.0005
18-Dec-90	S-9	<0.05	0.020	0.027	0.0071	0.035
11-Aug-89	S-10	<0.05	<0.0005	<0.001	<0.001	<0.003
08-Sep-89	S-10	<0.05	<0.0005	<0.001	<0.001	<0.003
15-Dec-89	S-10	<0.05	<0.0005	<0.0005	<0.0005	<0.001
06-Mar-90	S-10	<0.050	<0.0005	<0.0005	<0.0005	<0.001
14-Jun-90	S-10	<0.05	<0.0005	<0.0005	<0.0005	<0.001
02-Oct-90	S-10	<0.05	<0.0005	<0.0005	<0.0005	0.0010
18-Dec-90	S-10	<0.05	<0.0005	<0.0005	<0.0005	0.0014

TPH-G = Total Petroleum Hydrocarbons as Gasoline
PPM = Parts per million
E.B. = Ethylbenzene
---- = Not analyzed
NOTE: 1. All data shown as <X are reported as ND (none detected)
2. Ethylbenzene and Xylenes were combined prior to October 1988

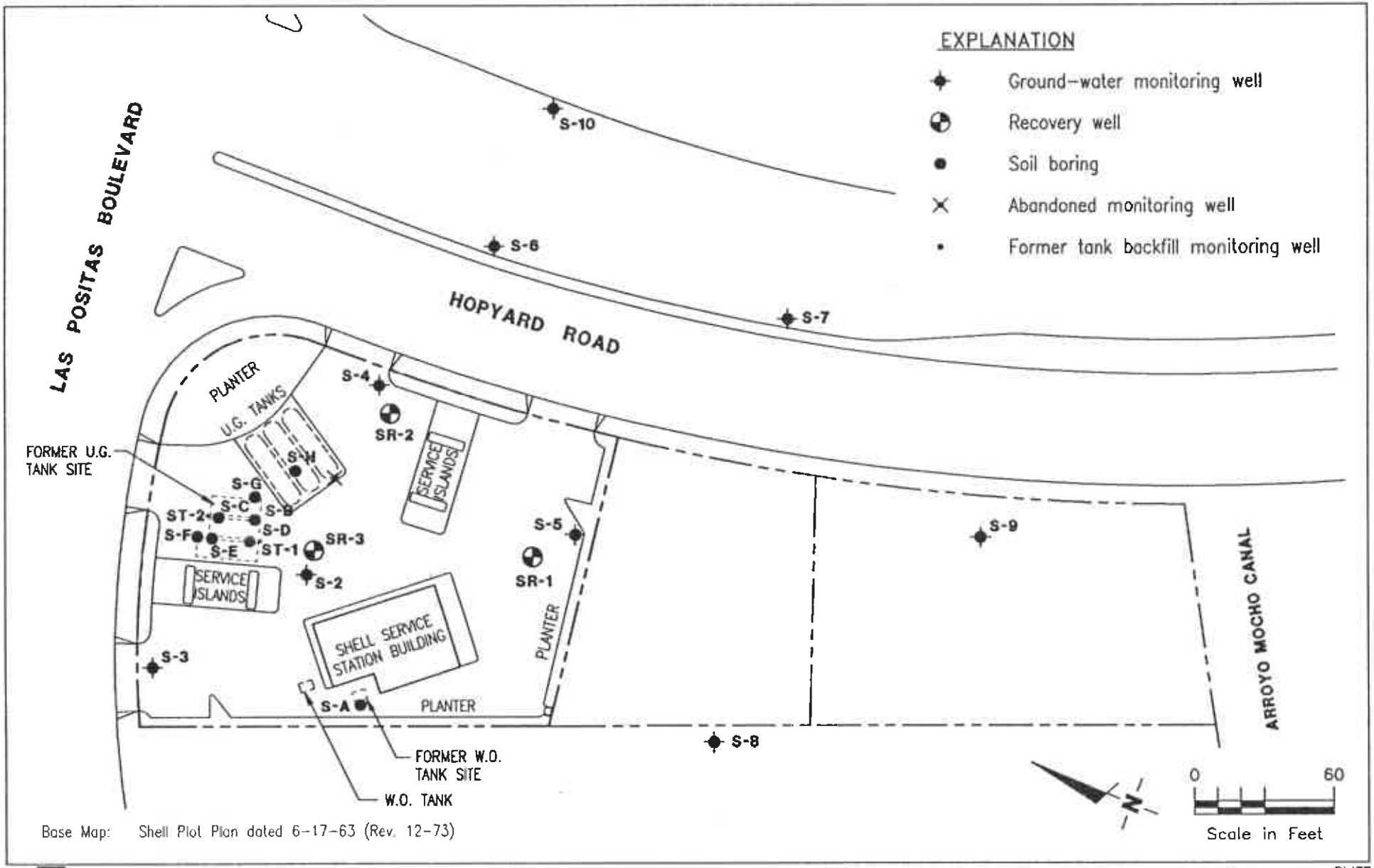


GeoStrategies Inc.

VICINITY MAP
Shell Service Station
3790 Hopyard Road
Pleasanton, California

PLATE
1

JOB NUMBER	REVIEWED BY	DATE	REVISED DATE
7632		2/91	



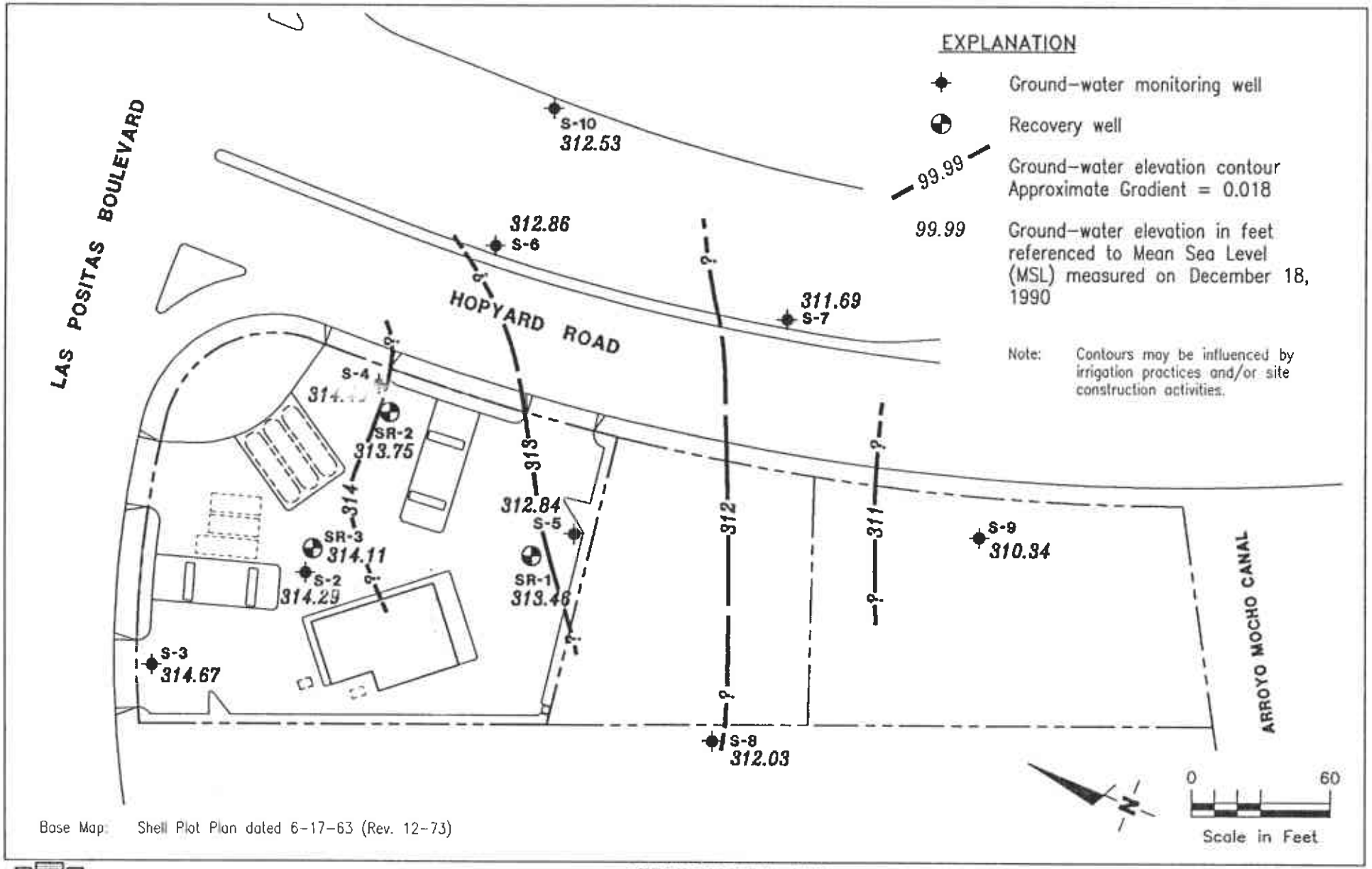
Base Map: Shell Plot Plan dated 6-17-63 (Rev. 12-73)

GeoStrategies Inc.

SITE PLAN
Shell Service Station
3790 Hopyard Road
Pleasanton, California

PLATE
2

JOB NUMBER	REVIEWED BY	DATE	REVISED DATE
763201-8	JPV	2/91	



GeoStrategies Inc.

POTENTIOMETRIC MAP
Shell Service Station
3790 Hopyard Road
Pleasanton, California

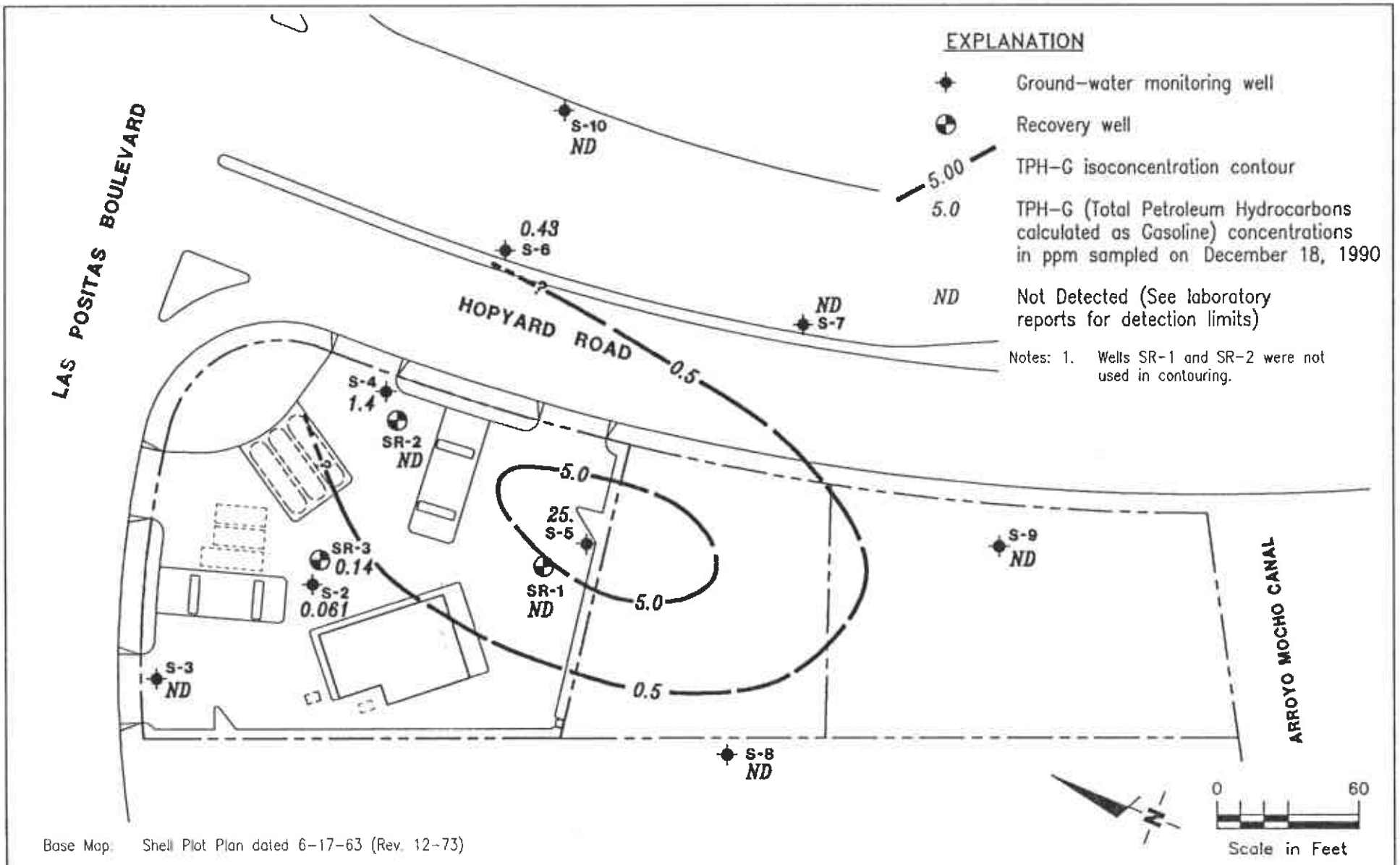
PLATE
3

JOB NUMBER
763201-8

REVIEWED BY

DATE
2/91

REVISED DATE



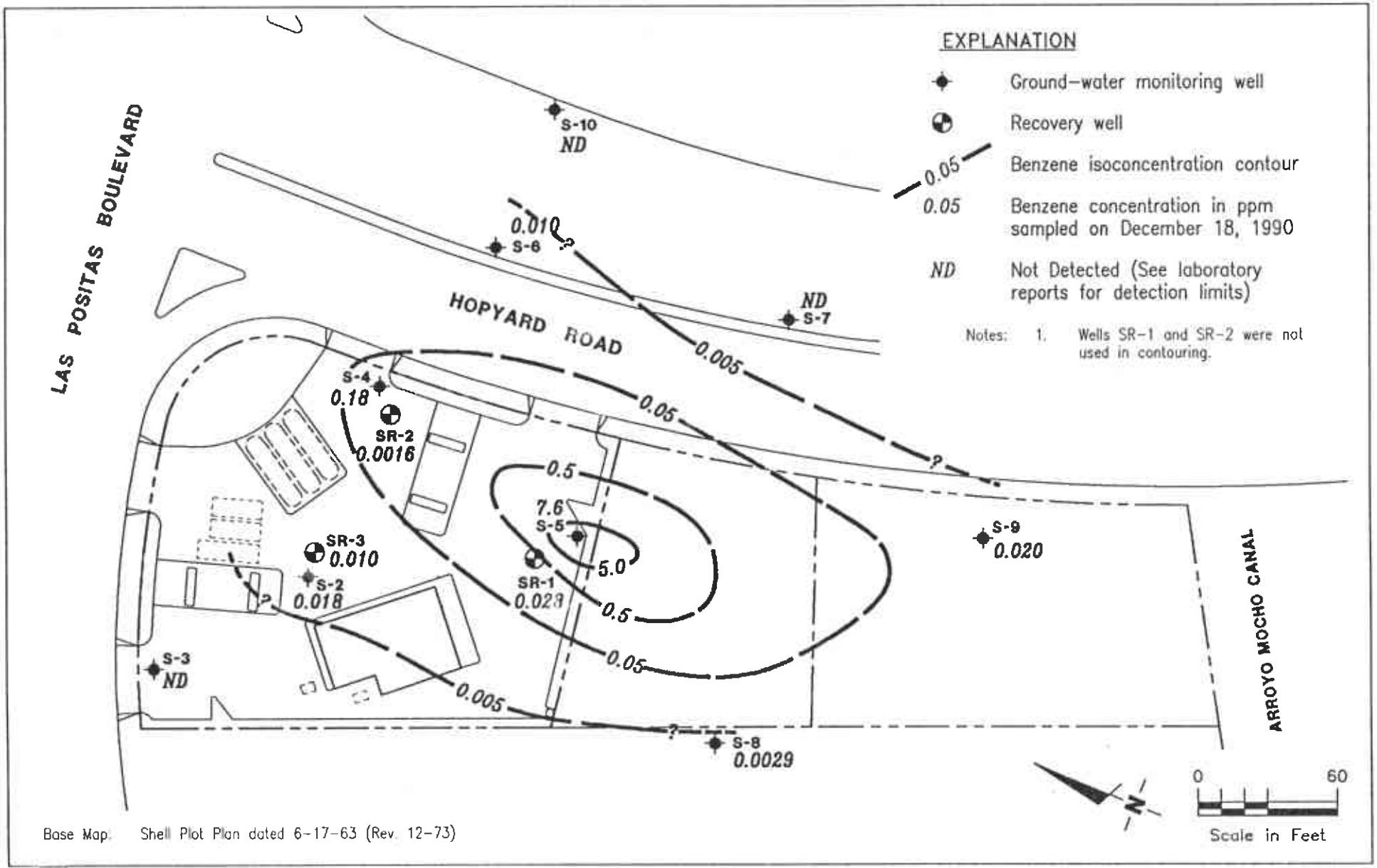
Base Map: Shell Plot Plan dated 6-17-63 (Rev. 12-73)

GeoStrategies Inc.

TPH-G ISOCONCENTRATION MAP
Shell Service Station
3790 Hopyard Road
Pleasanton, California

PLATE
4

JOB NUMBER	REVIEWED BY	DATE	REVISED DATE
763201-8		2/91	



GeoStrategies Inc.

BENZENE ISOCONCENTRATION MAP
Shell Service Station
3790 Hopyard Road
Pleasanton, California

PLATE 5

JOB NUMBER	REVIEWED BY	DATE	REVISED DATE
763201-8	JPV	2/91	

APPENDIX A

GETTLER-RYAN INC.

GROUNDWATER SAMPLING REPORT

gettler — ryan inc.

January 9, 1991

GROUNDWATER SAMPLING REPORT

Referenced Site: Shell Service Station
3790 Hopyard Road/Las Positas Boulevard
Pleasanton, California

Sampling Date: December 18, 1990

This report presents the results of the groundwater sampling and analytical program conducted by Gettler-Ryan Inc. on December 18, 1990 at the referenced location. The site is occupied by an operating service station located on the southwest corner of Hopyard Road and Los Positas Boulevard. The service station has underground storage tanks containing regular leaded, unleaded and super unleaded gasoline products and waste oil.

There are currently four groundwater monitoring wells on site, five off site, and three on-site recovery wells at the locations shown on the attached site map. Prior to sampling, all wells were inspected for total well depth, water levels, and presence of separate phase product using an electronic interface probe. A clean acrylic bailer was used to visually detect the presence of separate phase hydrocarbons. Groundwater depths ranged from 13.00 to 17.90 feet below grade. Separate phase product was not observed in any monitoring well.

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

Samples were collected, using Teflon bailers, in properly cleaned and laboratory prepared containers. All sampling equipment was thoroughly cleaned after each well was sampled and steam cleaned upon completion of work at the site. The samples were labeled, stored on blue ice, and transported to the laboratory for analysis. A trip blank and a field bland (SF-2), supplied by the laboratory, were included and analyzed to assess quality control. A duplicate sample (SD-5), was submitted without well designation, to assess laboratory performance. Analytical results for the blank are included in the Certified Analytical Report (CAR's). Chain of custody records were established noting sample identification numbers, time, date, and custody signatures.

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

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

Tom Paulson
Sampling Manager

attachments

TABLE OF MONITORING DATA
GROUNDWATER WELL SAMPLING REPORT

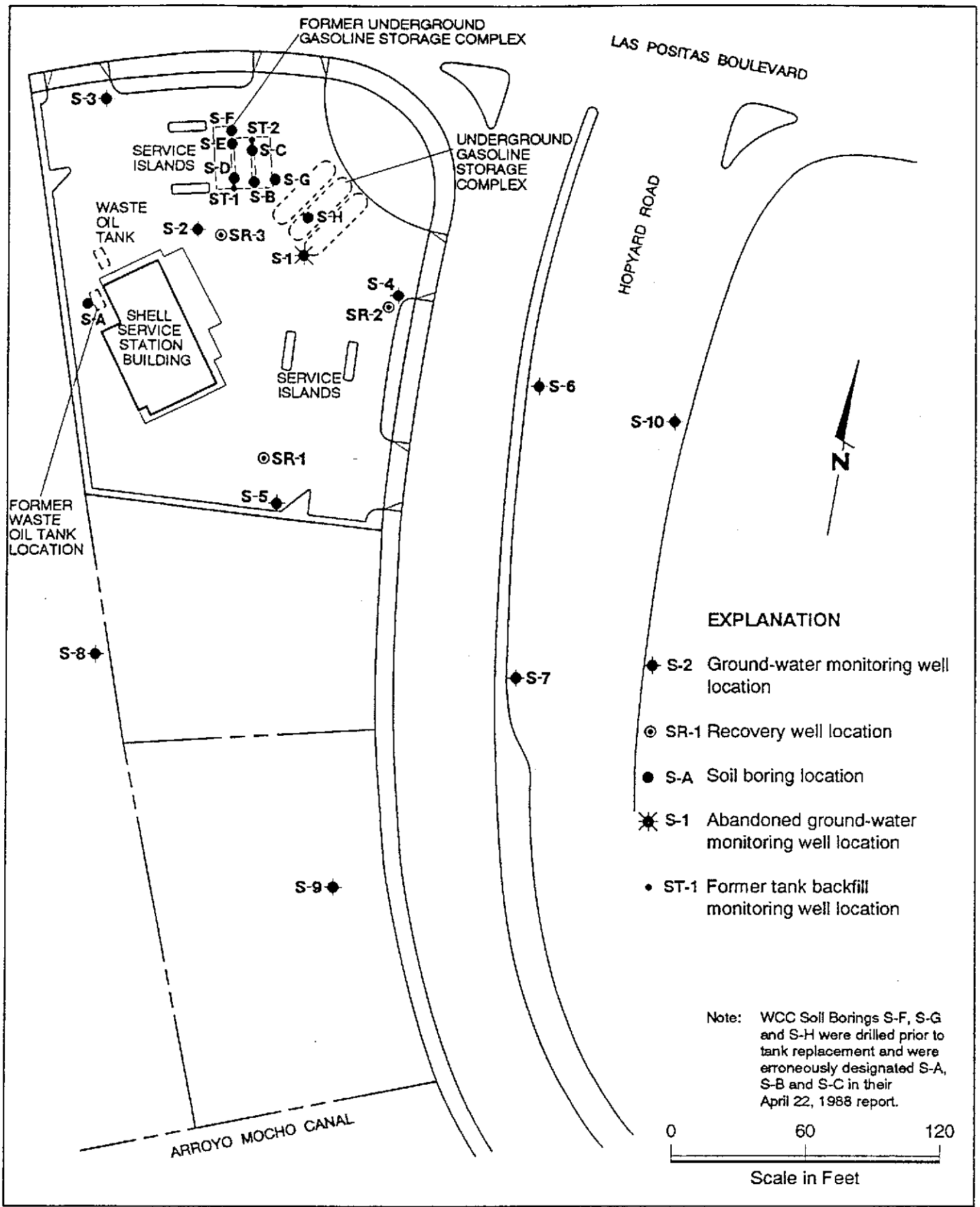
WELL I.D.	S-2	S-3	S-4	S-5 SD-5	S-6	S-7
Casing Diameter (inches)	3	3	3	3	3	3
Total Well Depth (feet)	33.9	34.7	35.5	34.2	33.9	34.6
Depth to Water (feet)	14.92	13.00	14.13	16.82	14.76	16.98
Free Product (feet)	none	none	none	none	none	none
Reason Not Sampled	----	----	----	----	----	----
Calculated 4 Case Vol.(gal.)	28.8	32.9	56.4	26.4	29.1	26.8
Did Well Dewater?	yes	no	yes	yes	yes	yes
Volume Evacuated (gal.)	16.0	42.0	21.0	19.0	16.0	16.0
Purging Device	Suction	Suction	Diaphram	Diaphram	Suction	Suction
Sampling Device	Bailer	Bailer	Bailer	Bailer	Bailer	Bailer
Time	11:37	11:17	12:20	11:46	09:38	09:09
Temperature (F)*	67.1	67.8	66.3	66.0	65.8	65.7
pH*	5.41	5.42	6.59	6.38	5.63	5.50
Conductivity (umhos/cm)*	2600	2680	2440	2450	1092	1927

* Indicates Stabilized Value

TABLE OF MONITORING DATA
GROUNDWATER WELL SAMPLING REPORT

WELL I.D.	S-8	S-9	S-10	SR-1	SR-2	SR-3
Casing Diameter (inches)	3	3	3	3	4	4
Total Well Depth (feet)	33.7	34.7	32.1	35.2	35.2	34.1
Depth to Water (feet)	14.97	17.90	14.02	16.32	14.60	15.00
Free Product (feet)	none	none	none	none	none	none
Reason Not Sampled	----	----	----	----	----	----
Calculated 4 Case Vol.(gal.)	17.1	25.5	27.5	28.7	54.3	50.4
Did Well Dewater?	no	yes	no	no	no	no
Volume Evacuated (gal.)	22.0	13.0	35.0	37.0	68.0	64.0
Purging Device	Diaphram	Diaphram	Suction	Diaphram	Diaphram	Suction
Sampling Device	Bailer	Bailer	Bailer	Bailer	Bailer	Bailer
Time	09:30	08:30	10:19	11:20	12:43	12:14
Temperature (F)*	65.6	66.1	64.8	66.7	66.0	67.1
pH*	5.47	5.75	5.52	6.53	6.54	5.33
Conductivity (umhos/cm)*	1913	1795	1230	3000	2510	2490

* Indicates Stabilized Value



GeoStrategies Inc.

Site Plan
Shell Service Station
3790 Hopyard Road
Pleasanton, California

PLATE
2

JOB NUMBER	REVIEWED BY RG/CEG	DATE	REVISED DATE	REVISED DATE
7632				

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYTICAL SERVICES

RECEIVED
JAN 7 1991
GENERAL CONTRACTORS

CERTIFICATE OF ANALYSIS

Date: 01/07/91

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

Work Order: TO-12-207 P.O. Number: MOH 880-021 Vendor #I0002402

This is the Certificate of Analysis for the following samples:

Client Work ID: GR3632, 3790 Hopyard, Plsntn
Date Received: 12/18/90
Number of Samples: 15
Sample Type: aqueous

TABLE OF CONTENTS FOR ANALYTICAL RESULTS

Reviewed and Approved:

Suzanne Veaudry
Project Manager

IT ANALYTICAL SERVICES
SAN JOSE, CA

Company: Shell Oil Company
Date: 01/07/91
Client Work ID: GR3632, 3790 Hopyard, Plsntn

Work Order: TO-12-207

TEST NAME: **Petroleum Hydrocarbons**

SAMPLE ID: **S-2**
SAMPLE DATE: **12/18/90**
LAB SAMPLE ID: **TO12207-01**
SAMPLE MATRIX: **aqueous**
RECEIPT CONDITION: **Cool pH < 2**

RESULTS in Milligrams per Liter:

	METHOD	EXTRACTION DATE	ANALYSIS DATE
BTEX	8020		12/29/90
Low Boiling Hydrocarbons	Mod.8015		12/29/90

PARAMETER	DETECTION LIMIT	DETECTED
Low Boiling Hydrocarbons calculated as Gasoline	0.05	0.061
BTEX		
Benzene	0.0005	0.018
Toluene	0.0005	0.0014
Ethylbenzene	0.0005	0.0022
Xylenes (total)	0.0005	0.0024

IT ANALYTICAL SERVICES
SAN JOSE, CA

Company: Shell Oil Company
Date: 01/07/91
Client Work ID: GR3632, 3790 Hopyard, Plsntn

Work Order: TO-12-207

TEST NAME: **Petroleum Hydrocarbons**

SAMPLE ID: **S-3**
SAMPLE DATE: **12/18/90**
LAB SAMPLE ID: **T012207-02**
SAMPLE MATRIX: **aqueous**
RECEIPT CONDITION: **Cool pH < 2**

RESULTS in Milligrams per Liter:

	METHOD	EXTRACTION DATE	ANALYSIS DATE
BTEX	8020		12/29/90
Low Boiling Hydrocarbons	Mod.8015		12/29/90

PARAMETER	DETECTION LIMIT	DETECTED
Low Boiling Hydrocarbons calculated as Gasoline	0.05	None
BTEX		
Benzene	0.0005	None
Toluene	0.0005	0.0016
Ethylbenzene	0.0005	None
Xylenes (total)	0.0005	0.0020

IT ANALYTICAL SERVICES
SAN JOSE, CA

Company: Shell Oil Company
Date: 01/07/91
Client Work ID: GR3632, 3790 Hopyard, Plsntn

Work Order: TO-12-207

TEST NAME: **Petroleum Hydrocarbons**

SAMPLE ID: **S-6**
SAMPLE DATE: **12/18/90**
LAB SAMPLE ID: **TO12207-03**
SAMPLE MATRIX: **aqueous**
RECEIPT CONDITION: **Cool pH < 2**

RESULTS in Milligrams per Liter:

	METHOD	EXTRACTION DATE	ANALYSIS DATE
BTEX	8020		12/29/90
Low Boiling Hydrocarbons	Mod.8015		12/29/90

PARAMETER	DETECTION LIMIT	DETECTED
Low Boiling Hydrocarbons calculated as Gasoline	0.05	0.43
BTEX		
Benzene	0.0005	0.010
Toluene	0.0005	0.0007
Ethylbenzene	0.0005	0.0016
Xylenes (total)	0.0005	0.0015

IT ANALYTICAL SERVICES
SAN JOSE, CA

Company: Shell Oil Company
Date: 01/07/91
Client Work ID: GR3632, 3790 Hopyard, Plsntn

Work Order: T0-12-207

TEST NAME: **Petroleum Hydrocarbons**

SAMPLE ID: **S-7**
SAMPLE DATE: **12/18/90**
LAB SAMPLE ID: **T012207-04**
SAMPLE MATRIX: **aqueous**
RECEIPT CONDITION: **Cool pH < 2**

RESULTS in Milligrams per Liter:

	METHOD	EXTRACTION DATE	ANALYSIS DATE
BTEX	8020		12/29/90
Low Boiling Hydrocarbons	Mod.8015		12/29/90

PARAMETER	DETECTION LIMIT	DETECTED
Low Boiling Hydrocarbons calculated as Gasoline	0.05	None
BTEX		
Benzene	0.0005	None
Toluene	0.0005	None
Ethylbenzene	0.0005	None
Xylenes (total)	0.0005	0.00086

IT ANALYTICAL SERVICES
SAN JOSE, CA

Company: Shell Oil Company
Date: 01/07/91
Client Work ID: GR3632, 3790 Hopyard, Plsntn

Work Order: TO-12-207

TEST NAME: **Petroleum Hydrocarbons**

SAMPLE ID: **S-10**
SAMPLE DATE: **12/18/90**
LAB SAMPLE ID: **T012207-05**
SAMPLE MATRIX: **aqueous**
RECEIPT CONDITION: **Cool pH < 2**

RESULTS in Milligrams per Liter:

	METHOD	EXTRACTION DATE	ANALYSIS DATE
BTEX	8020		12/29/90
Low Boiling Hydrocarbons	Mod.8015		12/29/90

PARAMETER	DETECTION LIMIT	DETECTED
Low Boiling Hydrocarbons calculated as Gasoline	0.05	None
BTEX		
Benzene	0.0005	None
Toluene	0.0005	None
Ethylbenzene	0.0005	None
Xylenes (total)	0.0005	0.0014

IT ANALYTICAL SERVICES
SAN JOSE, CA

Company: Shell Oil Company
Date: 01/07/91
Client Work ID: GR3632, 3790 Hopyard, Plsntn

Work Order: TO-12-207

TEST NAME: **Petroleum Hydrocarbons**

SAMPLE ID: **SR-3**
SAMPLE DATE: **12/18/90**
LAB SAMPLE ID: **TO12207-06**
SAMPLE MATRIX: **aqueous**
RECEIPT CONDITION: **Cool pH < 2**

RESULTS in Milligrams per Liter:

	METHOD	EXTRACTION DATE	ANALYSIS DATE
BTEX	8020		12/29/90
Low Boiling Hydrocarbons	Mod.8015		12/29/90

PARAMETER	DETECTION LIMIT	DETECTED
Low Boiling Hydrocarbons calculated as Gasoline	0.05	**0.14**
BTEX		
Benzene	0.0005	**0.010**
Toluene	0.0005	**0.0008**
Ethylbenzene	0.0005	**0.0075**
Xylenes (total)	0.0005	**0.014**

IT ANALYTICAL SERVICES
SAN JOSE, CA

Company: Shell Oil Company
Date: 01/07/91
Client Work ID: GR3632, 3790 Hopyard, Plsntn

Work Order: TO-12-207

TEST NAME: **Petroleum Hydrocarbons**

SAMPLE ID: **SF-2**
SAMPLE DATE: **12/18/90**
LAB SAMPLE ID: **TO12207-07**
SAMPLE MATRIX: **aqueous**
RECEIPT CONDITION: **Cool pH < 2**

RESULTS in Milligrams per Liter:

	METHOD	EXTRACTION DATE	ANALYSIS DATE
BTEX	8020		12/29/90
Low Boiling Hydrocarbons	Mod.8015		12/29/90

PARAMETER	DETECTION LIMIT	DETECTED
Low Boiling Hydrocarbons calculated as Gasoline	0.05	None
BTEX		
Benzene	0.0005	None
Toluene	0.0005	None
Ethylbenzene	0.0005	None
Xylenes (total)	0.0005	None

IT ANALYTICAL SERVICES
SAN JOSE, CA

Company: Shell Oil Company
Date: 01/07/91
Client Work ID: GR3632, 3790 Hopyard, Plsntn

Work Order: TO-12-207

TEST NAME: **Petroleum Hydrocarbons**

SAMPLE ID: **Trip Blank**
SAMPLE DATE: **not spec**
LAB SAMPLE ID: **TO12207-08**
SAMPLE MATRIX: **aqueous**
RECEIPT CONDITION: **Cool pH < 2**

RESULTS in Milligrams per Liter:

	METHOD	EXTRACTION DATE	ANALYSIS DATE
BTEX	8020		12/29/90
Low Boiling Hydrocarbons	Mod.8015		12/29/90

PARAMETER	DETECTION LIMIT	DETECTED
Low Boiling Hydrocarbons calculated as Gasoline	0.05	None
BTEX		
Benzene	0.0005	None
Toluene	0.0005	None
Ethylbenzene	0.0005	None
Xylenes (total)	0.0005	None

IT ANALYTICAL SERVICES
SAN JOSE, CA

Company: Shell Oil Company
Date: 01/07/91
Client Work ID: GR3632, 3790 Hopyard, Plsntn

Work Order: TO-12-207

TEST NAME: **Petroleum Hydrocarbons**

SAMPLE ID: **S-4**
SAMPLE DATE: **12/18/90**
LAB SAMPLE ID: **TO12207-09**
SAMPLE MATRIX: **aqueous**
RECEIPT CONDITION: **Cool pH < 2**

RESULTS in Milligrams per Liter:

	METHOD	EXTRACTION DATE	ANALYSIS DATE
BTEX	8020		12/29/90
Low Boiling Hydrocarbons	Mod.8015		12/29/90

PARAMETER	DETECTION LIMIT	DETECTED
Low Boiling Hydrocarbons calculated as Gasoline	0.05	1.4
BTEX		
Benzene	0.0005	0.18
Toluene	0.0005	0.0029
Ethylbenzene	0.0005	0.28
Xylenes (total)	0.0005	0.23

IT ANALYTICAL SERVICES
SAN JOSE, CA

Company: Shell Oil Company
Date: 01/07/91
Client Work ID: GR3632, 3790 Hopyard, Plsntn

Work Order: TO-12-207

TEST NAME: **Petroleum Hydrocarbons**

SAMPLE ID: **S-5**
SAMPLE DATE: **12/18/90**
LAB SAMPLE ID: **T012207-10**
SAMPLE MATRIX: **aqueous**
RECEIPT CONDITION: **Cool pH < 2**

RESULTS in Milligrams per Liter:

	METHOD	EXTRACTION DATE	ANALYSIS DATE
BTEX	8020		12/31/90
Low Boiling Hydrocarbons	Mod.8015		12/31/90

PARAMETER	DETECTION LIMIT	DETECTED
Low Boiling Hydrocarbons calculated as Gasoline	5.	25.
BTEX		
Benzene	0.05	7.6
Toluene	0.05	1.1
Ethylbenzene	0.05	1.3
Xylenes (total)	0.05	2.3

IT ANALYTICAL SERVICES
SAN JOSE, CA

Company: Shell Oil Company
Date: 01/07/91
Client Work ID: GR3632, 3790 Hopyard, Plsntn

Work Order: TO-12-207

TEST NAME: **Petroleum Hydrocarbons**

SAMPLE ID: **S-8**
SAMPLE DATE: **12/18/90**
LAB SAMPLE ID: **TO12207-11**
SAMPLE MATRIX: **aqueous**
RECEIPT CONDITION: **Cool pH < 2**

RESULTS in Milligrams per Liter:

	METHOD	EXTRACTION DATE	ANALYSIS DATE
BTEX	8020		12/29/90
Low Boiling Hydrocarbons	Mod.8015		12/29/90

PARAMETER	DETECTION LIMIT	DETECTED
Low Boiling Hydrocarbons calculated as Gasoline	0.05	**None**
BTEX		
Benzene	0.0005	**0.0029**
Toluene	0.0005	**0.0070**
Ethylbenzene	0.0005	**0.0010**
Xylenes (total)	0.0005	**0.0064**

IT ANALYTICAL SERVICES
SAN JOSE, CA

Company: Shell Oil Company
Date: 01/07/91
Client Work ID: GR3632, 3790 Hopyard, Plsntn

Work Order: TO-12-207

TEST NAME: **Petroleum Hydrocarbons**

SAMPLE ID: **S-9**
SAMPLE DATE: **12/18/90**
LAB SAMPLE ID: **TO12207-12**
SAMPLE MATRIX: **aqueous**
RECEIPT CONDITION: **Cool pH < 2**

RESULTS in Milligrams per Liter:

	METHOD	EXTRACTION DATE	ANALYSIS DATE
BTEX	8020		12/31/90
Low Boiling Hydrocarbons	Mod.8015		12/31/90

PARAMETER	DETECTION LIMIT	DETECTED
Low Boiling Hydrocarbons calculated as Gasoline	0.05	None
BTEX		
Benzene	0.0005	0.020
Toluene	0.0005	0.027
Ethylbenzene	0.0005	0.0071
Xylenes (total)	0.0005	0.035

IT ANALYTICAL SERVICES
SAN JOSE, CA

Company: Shell Oil Company
Date: 01/07/91
Client Work ID: GR3632, 3790 Hopyard, Plsntn

Work Order: TO-12-207

TEST NAME: **Petroleum Hydrocarbons**

SAMPLE ID: **SR-2**
SAMPLE DATE: **12/18/90**
LAB SAMPLE ID: **T012207-13**
SAMPLE MATRIX: **aqueous**
RECEIPT CONDITION: **Cool pH < 2**

RESULTS in Milligrams per Liter:

	METHOD	EXTRACTION DATE	ANALYSIS DATE
BTEX	8020		12/31/90
Low Boiling Hydrocarbons	Mod.8015		12/31/90

PARAMETER	DETECTION LIMIT	DETECTED
Low Boiling Hydrocarbons calculated as Gasoline	0.05	None
BTEX		
Benzene	0.0005	0.0016
Toluene	0.0005	0.0014
Ethylbenzene	0.0005	0.0016
Xylenes (total)	0.0005	0.0027

IT ANALYTICAL SERVICES
SAN JOSE, CA

Company: Shell Oil Company
Date: 01/07/91
Client Work ID: GR3632, 3790 Hopyard, Plsntn

Work Order: T0-12-207

TEST NAME: **Petroleum Hydrocarbons**

SAMPLE ID: **SR-1**
SAMPLE DATE: **12/18/90**
LAB SAMPLE ID: **T012207-14**
SAMPLE MATRIX: **aqueous**
RECEIPT CONDITION: **Cool pH < 2**

RESULTS in Milligrams per Liter:

	METHOD	EXTRACTION DATE	ANALYSIS DATE
BTEX	8020		12/31/90
Low Boiling Hydrocarbons	Mod.8015		12/31/90

PARAMETER	DETECTION LIMIT	DETECTED
Low Boiling Hydrocarbons calculated as Gasoline	0.05	None
BTEX		
Benzene	0.0005	0.028
Toluene	0.0005	0.0055
Ethylbenzene	0.0005	0.0045
Xylenes (total)	0.0005	0.0045

IT ANALYTICAL SERVICES
SAN JOSE, CA

Company: Shell Oil Company
Date: 01/07/91
Client Work ID: GR3632, 3790 Hopyard, Plsntn

Work Order: TO-12-207

TEST NAME: **Petroleum Hydrocarbons**

SAMPLE ID: **SD-5**
SAMPLE DATE: **12/18/90**
LAB SAMPLE ID: **TO12207-15**
SAMPLE MATRIX: **aqueous**
RECEIPT CONDITION: **Cool pH < 2**

RESULTS in Milligrams per Liter:

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

PARAMETER	DETECTION LIMIT	DETECTED
Low Boiling Hydrocarbons calculated as Gasoline	5.	23.
BTEX		
Benzene	0.05	7.5
Toluene	0.05	1.2
Ethylbenzene	0.05	1.2
Xylenes (total)	0.05	2.4

IT ANALYTICAL SERVICES
SAN JOSE, CA

Company: Shell Oil Company
Date: 01/07/91
Client Work ID: GR3632, 3790 Hopyard, Plsntn

Work Order: TO-12-207

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

The method of analysis for low boiling hydrocarbons is taken from E.P.A. Methods 8015, 8020 and 5030. The sample is examined using the purge and trap technique. Final detection is by gas chromatograhy using a flame ionization detector as well as a photoionization detector. The result for total low boiling hydrocarbons is calculated as gasoline and includes benzene, toluene, ethylbenzene and xylenes.

Gettler - Ryan Inc. TO-12-207
ENVIRONMENTAL DIVISION

Chain of Custody

COMPANY Shell Oil Co. JOB NO.

JOB LOCATION 3790 Hopyard Rd

CITY Pleasanton PHONE NO. 783-7500

AUTHORIZED Tom Paulson DATE P.O. NO. 3632

SAMPLE ID	NO. OF CONTAINERS	SAMPLE MATRIX	DATE/TIME SAMPLED	ANALYSIS REQUIRED	SAMPLE CONDITION LAB ID
S-2	3	liquid	12-18-90/11:37	TH(gas) BTXE	cool (B)
S-3			/11:17		
S-6			/9:38		
S-7			/9:09		
S-10			/10:19		
SR-3			/12:14		
SF-2			/11:37		
Trip			—		

RELINQUISHED BY: John P. Zwerzyk 12:48 12-18-90

RECEIVED BY: 1248 12/18/90

RELINQUISHED BY: 1350 12-18-90

RECEIVED BY:

RELINQUISHED BY:

RECEIVED BY LAB: 12/18/90 1350

DESIGNATED LABORATORY: IT (SCV) DHS #: 137

REMARKS: WIC # 204-6138-0501
Exp. Code 5440
Eng. Diane Lundquist
Normal TAT

DATE COMPLETED 12-18-90 FOREMAN John P. Zwerzyk

ORIGINAL

Gettler - Ryan Inc. — TO-12-207 — ENVIRONMENTAL DIVISION — **Chain of Custody**

COMPANY Shell Oil Co. JOB NO.

JOB LOCATION 3790 Hopyard Rd

CITY Pleasanton PHONE NO. 783-7500

AUTHORIZED Tom Paulsen DATE 12-18-90 P.O. NO. 3632

SAMPLE ID	NO. OF CONTAINERS	SAMPLE MATRIX	DATE/TIME SAMPLED	ANALYSIS REQUIRED	SAMPLE CONDITION LAB ID
S-4	3	liquid	12-18-90/1220	THC(EPA) BTXE	Cool
S-5			/1146		
S-8			/0930		
S-9			/0830		
SR-2			/1243		
SR-1			/1120		
~~SD-5~~	2		/ —		
~~Trip Blank~~	(1 / 1 Broken		X		

RELINQUISHED BY: 12-18-90 1350 RECEIVED BY:

RELINQUISHED BY: RECEIVED BY:

RELINQUISHED BY: RECEIVED BY LAB: 12/18/90 1350

DESIGNATED LABORATORY: IT (Sco) DHS #: 137

REMARKS: WIC # 209-6138-0501
Exp. Code 5440
Eng Diane Lundquist
Normal TAT

DATE COMPLETED 12-18-90 FOREMAN

ORIGINAL