gettler — ryan inc.

March 27, 1991

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

91 MAR 29 PM 12:12

Reference Former Shell Service Station
15275 Washington Street
San Leandro, California 94579
WIC 204-6852-1008

Ms. Evans:

As requested by Jack Brastad of Shell Oil Company, we are forwarding the March 22, 1991 Site Update report prepared for the referenced location. The report presents the results of the ground-water sampling conducted during the first quarter of 1991.

Should have any questions or comments please do not hesitate to call.

Sincerely,

John Werfal
Project Manager

enclosure

cc: Mr. Tom Callaghan, Regional Water Quality Control Board
Mr. Jack Brastad, Shell Oil Company.

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

GeoStrategies Inc.

SITE UPDATE

Former Shell Service Station
15275 Washington Avenue
San Leandro, California
WIC 204-6852-1008

761501-11

March 22, 1991

GeoStrategies Inc.
2140 WEST WINTON AVENUE
HAYWARD, CALIFORNIA 94545
(415) 352-4800

March 22, 1991

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

Attn: Mr. John Werfal

Re: SITE UPDATE
Former Shell Service Station
15275 Washington Avenue
San Leandro, California

Gentlemen:

This Site Update has been prepared by GeoStrategies Inc. (GSI) and presents the results of the 1991 first quarter ground-water sampling performed by Gettler-Ryan Inc. (G-R) for the above referenced site (Plate 1). The scope of work presented in this document was performed at the request of Shell Oil Company. Field work and laboratory analysis methods were performed to comply with current State of California Water Resources Control Board guidelines.

SITE BACKGROUND

There are currently sixteen monitoring wells in the site vicinity; Wells S-1, S-3, S-5 through S-17 and SR-1 (Plate 2). These wells were installed between 1985 and 1989 by EMCON Associates, Woodward-Clyde Consultants and GSI. The old underground storage tanks were removed and Wells S-2 and S-4 were destroyed in June 1987. Wells S-1 through S-7, S-16 and recovery well SR-1 are on site. Wells S-8 through S-17 are off-site. These wells have been installed to evaluate the vertical and horizontal extent of petroleum hydrocarbons in soils and shallow groundwater beneath the site.

Quarterly monitoring and sampling of wells began in September 1988. Ground-water samples have been analyzed for Total Petroleum Hydrocarbons calculated as Gasoline (TPH-Gasoline) according to EPA Method 8015 (Modified) and Benzene, Toluene, Ethylbenzene, and Xylenes (BTEX) according to EPA Method 8020.

CURRENT QUARTERLY SAMPLING RESULTS

Potentiometric Data

Prior to ground-water sampling, depth to water-level measurements were obtained in each monitoring well using an electronic oil-water interface probe. Static ground-water levels were measured from the surveyed top of well box and recorded to the nearest 0.01 foot. Corresponding 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 3). Shallow ground-water flow is to the south at a calculated gradient of 0.006.

Floating Product Measurements

Each well was checked for the presence of floating product using an electronic oil-water interface probe. A clear acrylic bailer was used to confirm probe results. **Floating product was not observed in the wells this quarter.**

Ground-water Analytical Data

Ground-water samples were collected on January 28, 1991. The samples were analyzed for TPH-Gasoline according to EPA Method 8015 (Modified) and BTEX according to EPA Method 8020 by International Technology (IT), a State of California certified laboratory located in Cerritos, California.

TPH-Gasoline was detected in Wells S-3, S-5, S-9, S-11 and S-14 at concentrations ranging from 0.063 to 64. parts per million (ppm). Benzene concentrations detected in Wells S-1, S-3, S-5, S-8, S-9 and S-14 ranged from 0.0045 to 4.090 ppm. These data are summarized in Table 1 and included in Appendix A. Chemical concentration maps for TPH-Gasoline and benzene are presented on Plates 4 and 5. Historical chemical analytical data are presented on Table 2.

Quality Control

Quality Control (QC) samples for this quarter's sampling included a trip blank, a field blank and a duplicate sample. The trip blank and field blank were prepared in the laboratory and field, respectively, using organic-free water to evaluate laboratory and field handling procedures of samples. The duplicate sample was collected in the field as a second (split) sample to assess laboratory analytical precision. The results of QC sample analyses are presented in Table 1.

If you have any questions, please call.

GeoStrategies Inc. by,

Tathyana A Pshevlozky

Tathyana A. Pshevlozky
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David H. Peterson

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TAP/DHP/kjj

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

Appendix A: Analytical Laboratory Report and Chain-of-Custody

QC Review: JFV

761501-11

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)	pH	TEMPERATURE (F)	CONDUCTIVITY (uMHOS/cm)
S-1	28-Jan-91	13-Feb-91	<0.05	0.0045	<0.0005	<0.0005	0.0020	21.55	13.03	----	8.52	7.49	70.1	1407
S-3	28-Jan-91	13-Feb-91	64.00	4.090	0.570	1.940	8.090	21.14	12.76	----	8.38	7.07	66.4	1354
S-5	28-Jan-91	13-Feb-91	2.550	0.410	0.015	0.110	0.060	21.41	12.61	----	8.80	7.27	66.3	1744
S-6	28-Jan-91	13-Feb-91	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	22.02	12.92	----	9.10	7.67	68.5	1255
S-7	28-Jan-91	13-Feb-91	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	21.47	12.70	----	8.77	7.51	69.5	1531
S-8	28-Jan-91	13-Feb-91	<0.05	0.055	0.0005	<0.0005	0.0014	20.72	12.44	----	8.28	7.21	67.7	1771
S-9	28-Jan-91	13-Feb-91	1.040	0.450	0.0046	0.085	0.097	20.96	12.67	----	8.29	7.08	67.5	1646
S-10	28-Jan-91	13-Feb-91	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	20.86	12.51	----	8.35	7.28	65.4	1076
S-11	28-Jan-91	13-Feb-91	0.063	<0.0005	0.0033	0.0009	0.0070	21.26	12.13	----	9.13	7.70	67.9	1267

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

CURRENT DHS ACTION LEVELS
Toluene 0.100 ppm

TPH-G = Total Petroleum Hydrocarbons as Gasoline
PPM = Parts Per Million
SR = Recovery Well
SRD = Recovery Well Duplicate Sample
SF = Field Blank
TB = Trip Blank

Note: 1. All data shown as <x are reported as ND (none detected).
2. Static Water Elevations referenced to mean sea level (MSL). Elevations are corrected for free product using a correction factor of 0.8.
3. DHS Action Levels and MCLs are subject to change pending State review.
4. pH reported in pH units.

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)	pH	TEMPERATURE (F)	CONDUCTIVITY (uMHOS/cm)
S-12	28-Jan-91	13-Feb-91	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	21.05	12.51	----	8.54	7.36	67.0	1239
S-13	28-Jan-91	13-Feb-91	<0.05	<0.0005	0.0009	<0.0005	0.0010	20.57	12.18	----	8.39	7.49	67.1	1756
S-14	28-Jan-91	13-Feb-91	0.720	0.200	0.036	0.021	0.078	20.44	12.40	----	8.04	7.30	66.0	1429
S-15	28-Jan-91	13-Feb-91	<0.05	<0.0005	0.0006	<0.0005	0.0008	22.22	13.09	----	9.13	7.85	68.9	1130
S-16	28-Jan-91	13-Feb-91	<0.05	<0.0005	0.0006	<0.0005	0.0009	21.82	13.27	----	8.55	7.48	65.8	1534
S-17	28-Jan-91	13-Feb-91	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	20.95	12.41	----	8.54	7.42	66.5	1240
SR-1	28-Jan-91	13-Feb-91	1.100	0.120	0.012	0.051	0.110	21.45	13.08	----	8.37	7.25	67.4	1827
SRD-1	28-Jan-91	13-Feb-91	1.040	0.110	0.010	0.049	0.096	----	----	----	----	----	----	----
SF-6	28-Jan-91	13-Feb-91	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	----	----	----	----	----	----	----
TB	18-Oct-90	30-Oct-90	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	----	----	----	----	----	----	----

TABLE 2

HISTORICAL GROUND-WATER QUALITY DATABASE

SAMPLE DATE	SAMPLE POINT	TPH-G (PPM)	BENZENE (PPM)	TOLUENE (PPM)	ETHYLBENZENE (PPM)	XYLENES (PPM)
08-Jul-85	S-1	0.52	N/A	N/A	N/A	N/A
06-Sep-88	S-1	<0.05	<0.0005	<0.001	<0.001	<0.003
16-Nov-88	S-1	<0.05	<0.0005	<0.001	<0.001	<0.003
27-Feb-89	S-1	<0.05	0.0005	<0.001	<0.001	<0.003
04-May-89	S-1	<0.05	0.001	<0.001	<0.001	<0.003
10-Aug-89	S-1	<0.05	0.0007	<0.001	<0.001	<0.003
10-Oct-89	S-1	<0.05	<0.0005	<0.001	<0.001	<0.003
25-Jan-90	S-1	<0.050	<0.0005	<0.0005	<0.0005	<0.001
18-Apr-90	S-1	<0.050	<0.0005	<0.0005	<0.0005	<0.001
23-Jul-90	S-1	<0.05	<0.0005	<0.0005	<0.0005	<0.0005
18-Oct-90	S-1	0.08	0.0050	<0.0005	<0.0005	0.0030
28-Jan-91	S-1	<0.05	.0045	<0.0005	<0.0005	0.002
08-Jul-85	S-2	2.20	N/A	N/A	N/A	N/A
06-Sep-88	S-3	96.	3.4	9.5	2.7	17.
16-Nov-88	S-3	70.	4.6	8.4	2.5	13.
27-Feb-89	S-3	32.	2.4	3.1	1.5	6.4
04-May-89	S-3	47.	4.4	6.3	2.4	15.
09-Aug-89	S-3	110.	5.7	5.7	3.2	19.
10-Oct-89	S-3	52.	4.6	3.3	2.6	15.
25-Jan-90	S-3	420.	5.2	4.1	6.7	34.
18-Apr-90	S-3	58.	3.8	1.4	2.4	12.
23-Jul-90	S-3	49.	3.4	1.8	2.3	12.
18-Oct-90	S-3	44.	3.5	0.65	2.4	11.
28-Jan-91	S-3	64.	4.09	0.57	1.94	8.09
08-Jul-85	S-4	32.	N/A	N/A	N/A	N/A
08-Jan-87	S-5	7.8	0.38	0.510	----	1.0
06-Sep-88	S-5	7.	2.6	0.06	0.4	0.7

TABLE 2

HISTORICAL GROUND-WATER QUALITY DATABASE

SAMPLE DATE	SAMPLE POINT	TPH-G (PPM)	BENZENE (PPM)	TOLUENE (PPM)	ETHYLBENZENE (PPM)	XYLENES (PPM)
16-Nov-88	S-5	3.	0.66	0.06	0.12	0.22
27-Feb-89	S-5	5.7	2.	0.22	0.26	0.32
04-May-89	S-5	9.	3.	0.6	0.63	1.7
09-Aug-89	S-5	5.1	1.1	<0.05	0.27	0.4
10-Oct-89	S-5	15.	3.3	0.16	0.83	2.2
25-Jan-90	S-5	12.	2.4	0.36	0.57	1.4
18-Apr-90	S-5	5.2	1.1	0.04	0.30	0.46
23-Jul-90	S-5	5.5	1.3	0.14	0.32	0.73
18-Oct-90	S-5	12.	3.2	0.04	0.72	0.90
28-Jan-91	S-5	2.55	0.41	.015	0.11	0.06
16-Nov-88	S-6	0.05	0.0007	<0.001	<0.001	<0.003
27-Feb-89	S-6	<0.05	<0.0005	<0.001	<0.001	<0.003
04-May-89	S-6	<0.05	<0.0005	<0.001	<0.001	<0.003
10-Aug-89	S-6	<0.05	<0.0005	<0.001	<0.001	<0.003
10-Oct-89	S-6	<0.05	<0.0005	<0.001	<0.001	<0.003
25-Jan-90	S-6	<0.050	<0.0005	<0.0005	<0.0005	<0.001
18-Apr-90	S-6	<0.050	<0.0005	0.0006	<0.0005	0.001
23-Jul-90	S-6	<0.05	<0.0005	0.0009	<0.0005	0.0018
18-Oct-90	S-6	<0.05	<0.0005	0.0007	<0.0005	0.0008
28-Jan-91	S-6	<0.05	<0.0005	<0.0005	<0.0005	<0.0005
16-Nov-88	S-7	0.1	0.0051	0.015	0.002	0.013
27-Feb-89	S-7	0.05	0.0005	0.003	0.001	0.011
04-May-89	S-7	<0.05	<0.0005	<0.001	<0.001	<0.003
10-Aug-89	S-7	<0.05	<0.0005	<0.001	<0.001	<0.003
10-Oct-89	S-7	<0.05	<0.0005	<0.001	<0.001	<0.003
25-Jan-90	S-7	<0.050	<0.0005	<0.0005	<0.0005	<0.001
18-Apr-90	S-7	<0.050	<0.0005	<0.0005	<0.0005	<0.001
23-Jul-90	S-7	<0.05	<0.0005	<0.0005	<0.0005	<0.0005
18-Oct-90	S-7	<0.05	<0.0005	<0.0005	0.0005	0.0041

TABLE 2

HISTORICAL GROUND-WATER QUALITY DATABASE

SAMPLE DATE	SAMPLE POINT	TPH-G (PPM)	BENZENE (PPM)	TOLUENE (PPM)	ETHYLBENZENE (PPM)	XYLENES (PPM)
28-Jan-91	S-7	<0.05	<0.0005	<0.0005	<0.0005	<0.0005
16-Nov-88	S-8	0.21	0.005	<0.001	0.001	0.005
27-Feb-89	S-8	<0.05	0.0024	<0.001	<0.001	<0.003
03-May-89	S-8	<0.05	0.0075	<0.001	0.002	<0.003
09-Aug-89	S-8	<0.05	0.0006	<0.001	<0.001	<0.003
09-Oct-89	S-8	<0.05	<0.0005	<0.001	<0.001	<0.003
25-Jan-90	S-8	<0.050	<0.0005	<0.0005	<0.0005	<0.001
18-Apr-90	S-8	<0.050	<0.0005	<0.0005	<0.0005	<0.001
23-Jul-90	S-8	<0.05	<0.0005	<0.0005	<0.0005	<0.0005
18-Oct-90	S-8	<0.05	<0.0005	<0.0005	<0.0005	<0.0005
28-Jan-91	S-8	<0.05	0.055	0.0005	<0.0005	0.0014
16-Nov-88	S-9	1.4	0.069	0.003	0.052	0.18
27-Feb-89	S-9	1.6	0.24	0.004	0.13	0.18
03-May-89	S-9	2.6	0.47	0.01	0.24	0.48
09-Aug-89	S-9	0.52	0.073	<0.01	0.04	<0.03
09-Oct-89	S-9	0.38	0.082	<0.001	0.046	0.013
25-Jan-90	S-9	0.75	0.14	0.0012	0.069	0.075
18-Apr-90	S-9	0.68	0.15	0.0017	0.050	0.037
23-Jul-90	S-9	0.49	0.094	0.0012	0.032	0.024
18-Oct-90	S-9	0.39	0.14	0.0007	0.0033	0.024
28-Jan-91	S-9	1.040	0.450	.0046	0.085	0.097
16-Nov-88	S-10	0.33	0.0005	<0.001	0.001	0.011
27-Feb-89	S-10	0.14	<0.0005	<0.003	0.002	0.006
03-May-89	S-10	0.22	<0.0005	0.001	0.002	0.007
09-Aug-89	S-10	<0.05	<0.0005	<0.001	<0.001	<0.003
09-Oct-89	S-10	0.17	<0.0005	<0.001	<0.001	<0.003
25-Jan-90	S-10	<0.050	<0.0005	<0.0005	0.0011	0.004
18-Apr-90	S-10	<0.050	<0.0005	0.0009	<0.0005	0.002

TABLE 2

HISTORICAL GROUND-WATER QUALITY DATABASE

SAMPLE DATE	SAMPLE POINT	TPH-G (PPM)	BENZENE (PPM)	TOLUENE (PPM)	ETHYLBENZENE (PPM)	XYLENES (PPM)
23-Jul-90	S-10	0.59	<0.0005	<0.0005	0.0019	0.019
18-Oct-90	S-10	0.14	<0.0005	0.0007	<0.0005	0.0070
28-Jan-91	S-10	<0.05	<0.0005	<0.0005	<0.0005	<0.0005
16-Nov-88	S-11	<0.05	<0.0005	<0.001	<0.001	<0.003
27-Feb-89	S-11	<0.05	<0.0005	<0.001	<0.001	<0.003
03-May-89	S-11	<0.05	<0.0005	<0.001	<0.001	<0.003
09-Aug-89	S-11	<0.05	<0.0005	<0.001	<0.001	<0.003
09-Oct-89	S-11	<0.05	<0.0005	<0.001	<0.001	<0.003
25-Jan-90	S-11	<0.050	<0.0005	<0.0005	<0.0005	<0.001
18-Apr-90	S-11	<0.050	<0.0005	<0.0005	<0.0005	<0.001
23-Jul-90	S-11	<0.05	<0.0005	0.0006	<0.0005	0.0011
18-Oct-90	S-11	<0.05	<0.0005	<0.0005	<0.0005	0.0005
28-Jan-91	S-11	.063	<0.0005	0.0033	0.0009	0.007
16-Nov-88	S-12	0.05	0.0035	<0.001	<0.001	<0.003
27-Feb-89	S-12	<0.05	0.0008	<0.001	<0.001	<0.003
03-May-89	S-12	<0.05	<0.0005	<0.001	<0.001	<0.003
09-Aug-89	S-12	<0.05	<0.0005	<0.001	<0.001	<0.003
09-Oct-89	S-12	<0.05	<0.0005	<0.001	<0.001	<0.003
25-Jan-90	S-12	<0.050	<0.0005	<0.0005	<0.0005	<0.001
18-Apr-90	S-12	<0.050	<0.0005	<0.0005	<0.0005	<0.001
23-Jul-90	S-12	<0.05	<0.0005	<0.0005	<0.0005	<0.0005
18-Oct-90	S-12	<0.05	<0.0005	<0.0005	<0.0005	<0.0005
28-Jan-91	S-12	<0.05	<0.0005	<0.0005	<0.0005	<0.0005
03-May-89	S-13	0.15	0.0049	0.004	0.002	0.014
09-Aug-89	S-13	0.11	0.0029	<0.001	<0.001	<0.003
09-Oct-89	S-13	0.077	0.0014	<0.001	<0.001	<0.003
25-Jan-90	S-13	0.051	0.0005	<0.0005	<0.0005	<0.001
18-Apr-90	S-13	0.085	0.0087	<0.0005	<0.0005	<0.001

TABLE 2

HISTORICAL GROUND-WATER QUALITY DATABASE

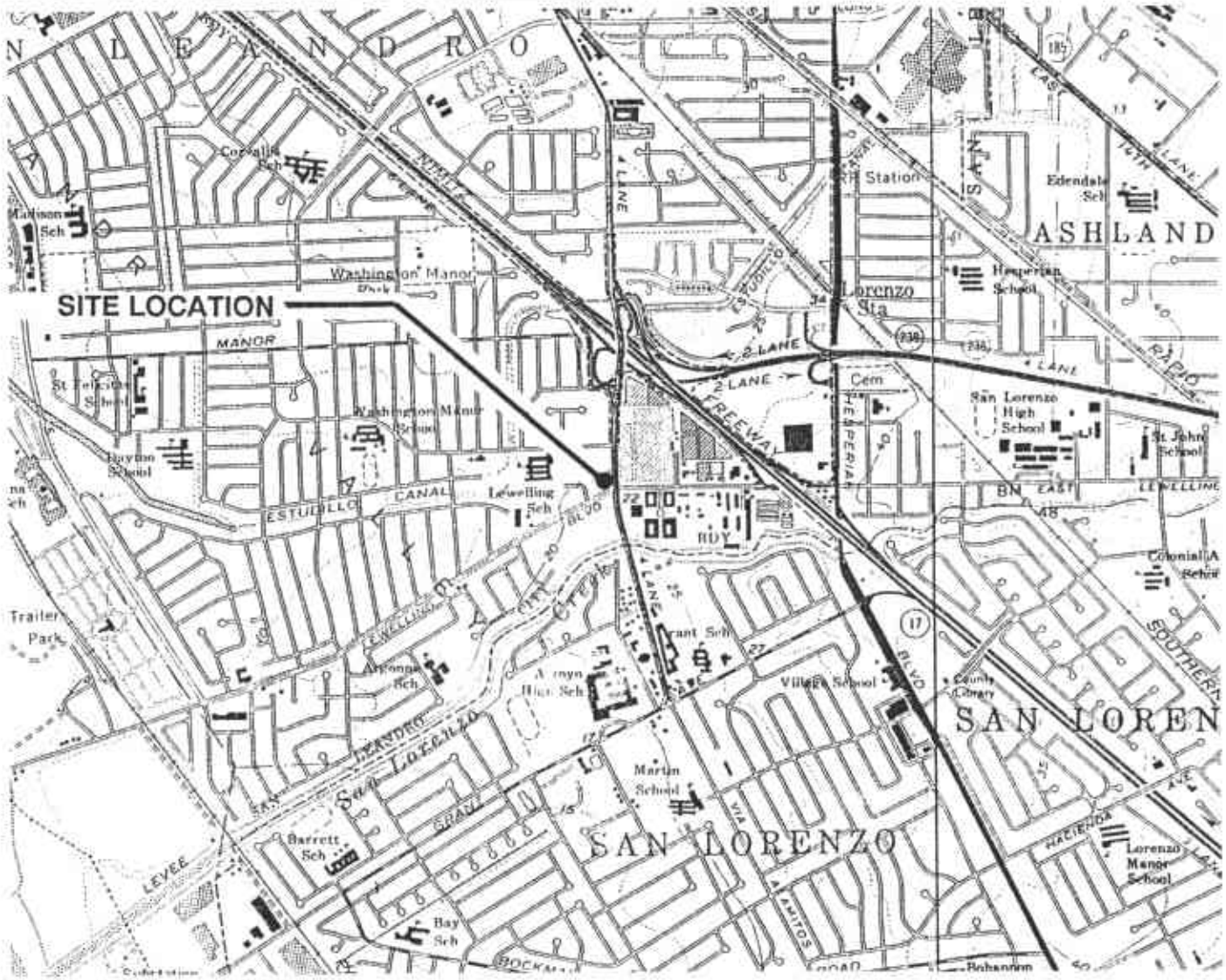
SAMPLE DATE	SAMPLE POINT	TPH-G (PPM)	BENZENE (PPM)	TOLUENE (PPM)	ETHYLBENZENE (PPM)	XYLENES (PPM)
23-Jul-90	S-13	0.08	0.0008	<0.0005	<0.0005	<0.0005
18-Oct-90	S-13	0.13	<0.0005	<0.0005	<0.0005	<0.0005
28-Jan-91	S-13	<0.05	<0.0005	0.0009	<0.0005	0.001
03-May-89	S-14	5.3	0.75	0.4	0.200	0.800
09-Aug-89	S-14	1.8	0.54	0.14	0.042	0.050
09-Oct-89	S-14	1.0	0.36	0.06	0.020	0.030
25-Jan-90	S-14	0.64	0.16	0.077	0.017	0.039
18-Apr-90	S-14	1.2	0.20	0.11	0.030	0.096
23-Jul-90	S-14	5.0	0.43	0.34	0.14	0.66
19-Oct-90	S-14	1.8	0.77	0.013	0.017	0.12
28-Jan-91	S-14	0.72	0.200	0.036	0.021	0.078
03-May-89	S-15	<0.05	<0.0005	<0.001	<0.001	<0.003
09-Aug-89	S-15	<0.05	<0.0005	<0.001	<0.001	<0.003
09-Oct-89	S-15	<0.05	<0.0005	<0.001	<0.001	<0.003
25-Jan-90	S-15	<0.050	<0.0005	<0.0005	<0.0005	<0.001
18-Apr-90	S-15	<0.050	<0.0005	<0.0005	<0.0005	<0.001
23-Jul-90	S-15	<0.05	<0.0005	<0.0005	<0.0005	<0.0005
18-Oct-90	S-15	<0.05	<0.0005	<0.0005	<0.0005	<0.0005
28-Jan-91	S-15	<0.05	<0.0005	0.0006	<0.0005	0.0008
04-May-89	S-16	0.38	0.044	0.003	0.002	<0.003
10-Aug-89	S-16	<0.05	0.0006	<0.001	<0.001	<0.003
10-Oct-89	S-16	<0.05	<0.0005	<0.001	<0.001	<0.003
25-Jan-90	S-16	0.24	0.16	0.0033	0.0008	0.011
18-Apr-90	S-16	<0.050	0.0010	<0.0005	<0.0005	<0.001
23-Jul-90	S-16	<0.05	0.0011	<0.0005	<0.0005	<0.0005
18-Oct-90	S-16	<0.05	<0.0005	<0.0005	<0.0005	<0.0005
28-Jan-91	S-16	<0.05	<0.0005	0.0006	<0.0005	0.0009

TABLE 2

HISTORICAL GROUND-WATER QUALITY DATABASE

SAMPLE DATE	SAMPLE POINT	TPH-G (PPM)	BENZENE (PPM)	TOLUENE (PPM)	ETHYLBENZENE (PPM)	XYLENES (PPM)
03-May-89	S-17	<0.05	<0.005	<0.001	<0.001	<0.003
09-Aug-89	S-17	<0.05	<0.0005	<0.001	<0.001	<0.003
09-Oct-89	S-17	<0.05	<0.0005	<0.001	<0.001	<0.003
25-Jan-90	S-17	<0.050	<0.0005	<0.0005	<0.0005	<0.001
18-Apr-90	S-17	<0.050	<0.0005	<0.0005	<0.0005	<0.001
23-Jul-90	S-17	<0.05	<0.0005	<0.0005	<0.0005	<0.0005
18-Oct-90	S-17	0.39	0.010	0.062	0.022	0.11
28-Jan-91	S-17	<0.05	<0.0005	<0.0005	<0.0005	<0.0005
22-Mar-89	SR-1	5.4	1.1	0.23	0.35	1.3
25-Jan-90	SR-1	2.2	0.47	0.12	0.11	0.51
18-Apr-90	SR-1	1.0	0.13	0.047	0.047	0.22
23-Jul-90	SR-1	3.2	0.47	0.32	0.17	0.87
18-Oct-90	SR-1	1.3	0.28	0.0066	0.11	0.13
28-Jan-91	SR-1	1.1	0.120	0.012	0.051	0.110

TPH-G = Total Petroleum Hydrocarbons calculated as Gasoline
PPM = Parts per million
N/A = Not analyzed
NOTE: All data shown as <X are reported as ND (none detected)



Base Map: USGS Topographic Map

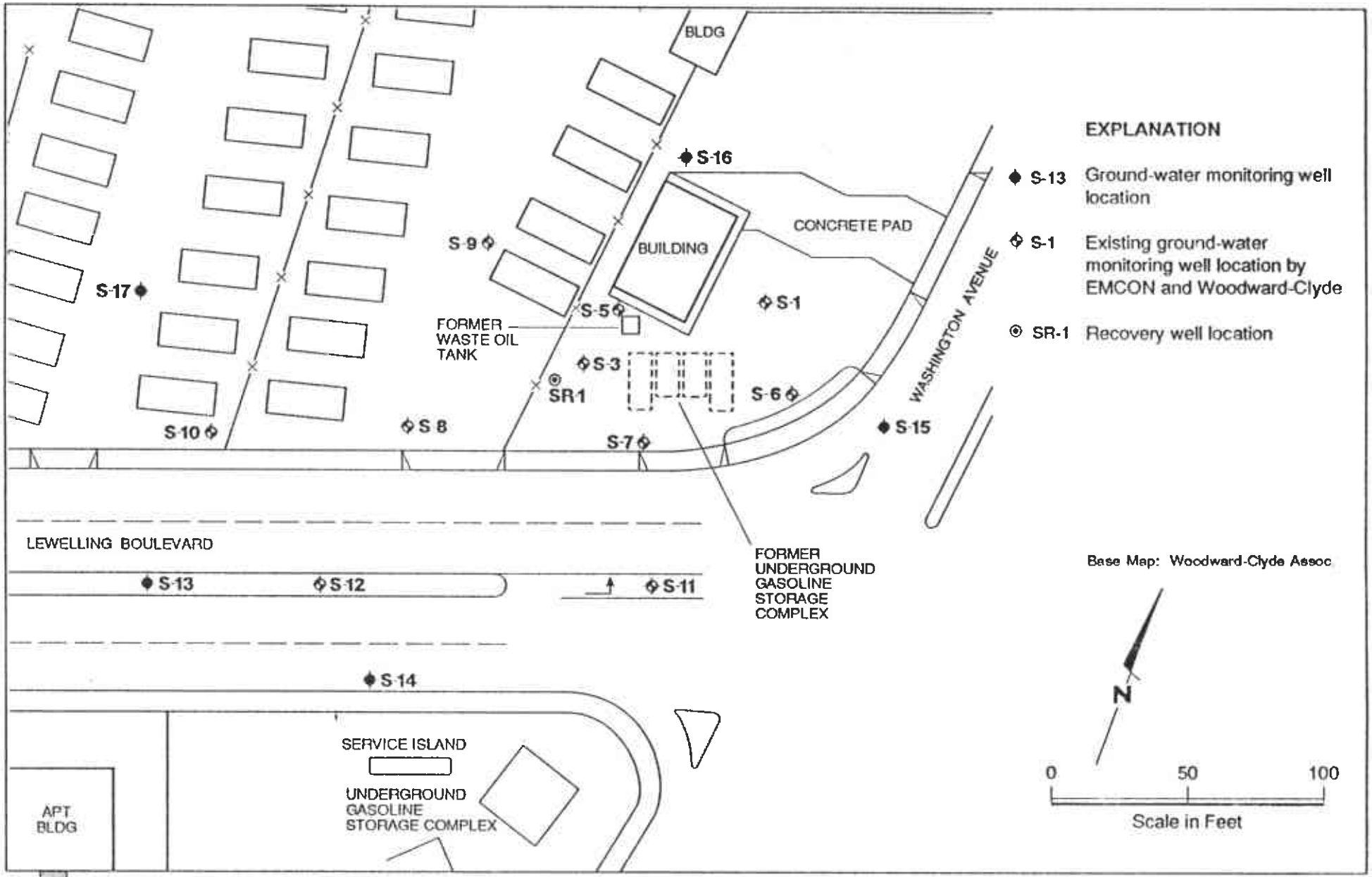
Approximate Scale : 1" = 2000'

GeoStrategies Inc.

Vicinity Map
Former Shell Service Station
15275 Washington Avenue
San Leandro, California

PLATE
1

JOB NUMBER	REVIEWED BY RG/CEG	DATE	REVISED DATE	REVISED DATE
7615		11/89		

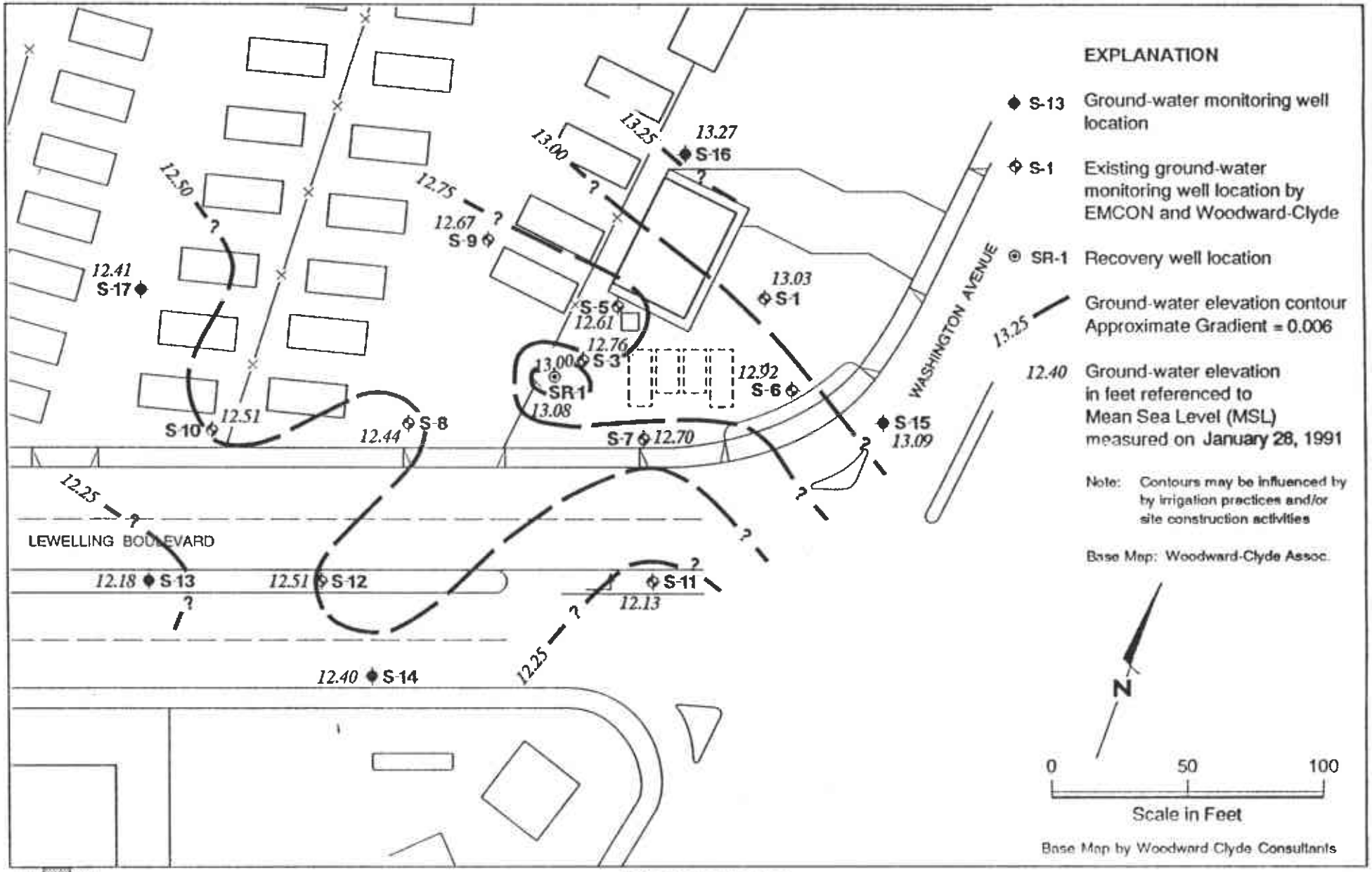


GeoStrategies Inc.

Site Plan
Former Shell Service Station
15275 Washington Avenue
San Leandro, California

PLATE
2

JOB NUMBER	REVIEWED BY	DATE	REVISED DATE	REVISED DATE
761501-11	JPV	3/91		

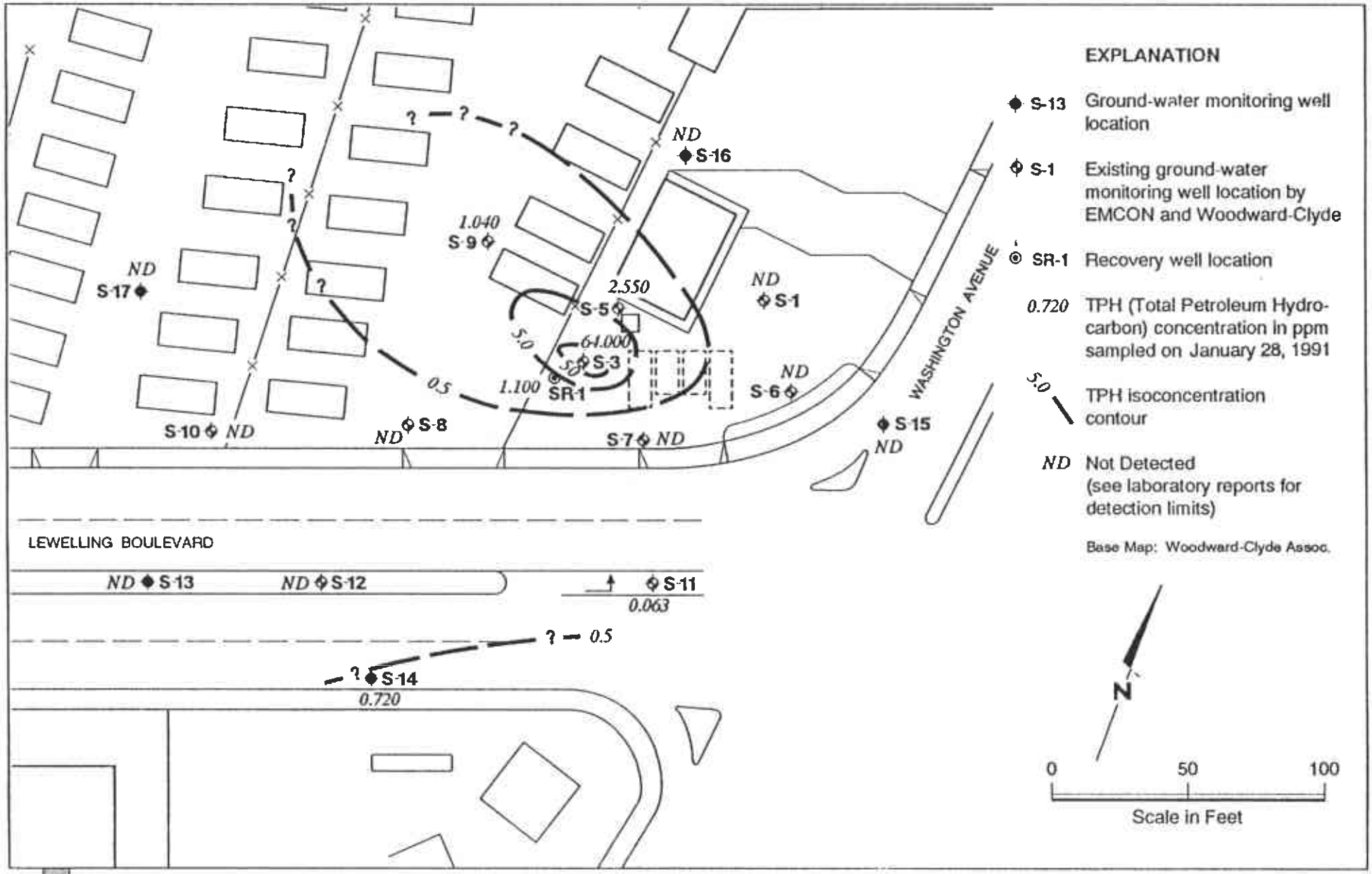


GeoStrategies Inc.

Potentiometric Map
Former Shell Service Station
15275 Washington Avenue
San Leandro, California

PLATE
3

JOB NUMBER	REVIEWED	DATE	REVISED DATE	REVISED DATE
761501-11	JTV	3/91		

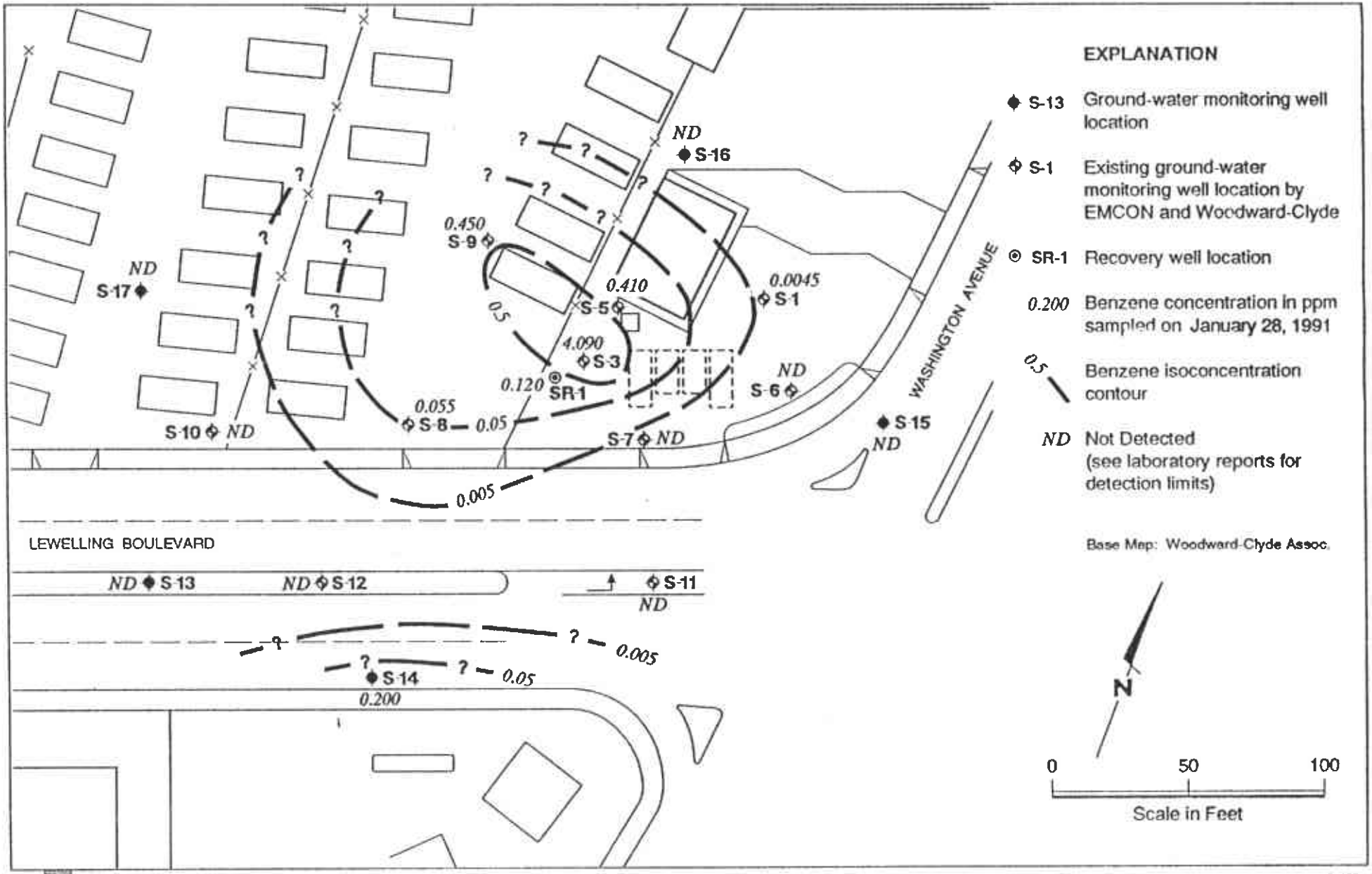


GeoStrategies Inc.

TPH Isoconcentration Map
Former Shell Service Station
15275 Washington Avenue
San Leandro, California

PLATE
4

JOB NUMBER	REVIEWED BY	DATE	REVISED DATE	REVISED DATE
761501-11	JPV	3/91		



GeoStrategies Inc.

Benzene Isoconcentration Map
Former Shell Service Station
15275 Washington Avenue
San Leandro, California

PLATE
5

JOB NUMBER	REVIEWED BY	DATE	REVISED DATE	REVISED DATE
761501-11		3/91		

APPENDIX A
ANALYTICAL LABORATORY REPORT
CHAIN-OF-CUSTODY

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYTICAL SERVICES

RECEIVED
FEB 15 1991
GETTLER-RYAN INC.
GENERAL CONTRACTORS

CERTIFICATE OF ANALYSIS

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

Date: 02/15/91

P.O. Number: MOH 880-021 Vendor #I0002402

This is the Certificate of Analysis for the following samples:

Client Work ID: GR3615, 15275 Wash., S.Lndro
Date Received: 01/29/91
Number of Samples: 10
Sample Type: aqueous

The results of the analysis for TPH Gas,BTEX by 8015/8020 performed by ITAS-Cerritos are attached. The sample identifications are as follows:

Client Sample ID	ITAS-San Jose Sample ID	ITAS-Cerritos Sample ID
S-1	T1-01-278-01	C1-02-004-01
S-3	T1-01-278-02	C1-02-004-02
S-5	T1-01-278-03	C1-02-004-03
S-6	T1-01-278-04	C1-02-004-04
S-7	T1-01-278-05	C1-02-004-05
S-11	T1-01-278-06	C1-02-004-06
S-13	T1-01-278-07	C1-02-004-07
S-15	T1-01-278-08	C1-02-004-08
S-16	T1-01-278-09	C1-02-004-09
SF-6	T1-01-278-10	C1-02-004-10
Matrix Spike	T1-01-278-MS	C1-02-004-11
Matrix Spike Dup.	T1-01-278-MSD	C1-02-004-12
Method Blank	T1-01-278-MB	C1-02-004-13

Reviewed and Approved:

Suzanne Veaudry
Project Manager

IT ANALYTICAL SERVICES
SAN JOSE, CA

Company: Shell Oil Company
Date: 02/15/91
Client Work ID: GR3615, 15275 Wash., S.Lndro

Client Sample ID	ITAS-San Jose Sample ID	ITAS-Cerritos Sample ID
S-8	T1-01-277-01	C1-02-001-01
S-9	T1-01-277-02	C1-02-001-02
S-10	T1-01-277-03	C1-02-001-03
S-12	T1-01-277-04	C1-02-001-04
S-14	T1-01-277-05	C1-02-001-05
S-17	T1-01-277-06	C1-02-001-06
SR-1	T1-01-277-07	C1-02-001-07
SRD-1	T1-01-277-08	C1-02-001-08
Trip	T1-01-277-09	C1-02-001-09
Matrix Spike	T1-01-277-MS	C1-02-001-10
Matrix Spike Dup.	T1-01-277-MSD	C1-02-001-11
Method Blank	T1-01-277-MB	C1-02-001-12

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYTICAL SERVICES

CERTIFICATE OF ANALYSIS

IT CORPORATION
2055 JUNCTION AVE
SAN JOSE CA 95131
S. VEAUDRY

Date: 02/13/91

Work Order: C1-02-004

Project/P.O.#: 4631-327
SHELL

This is the Certificate of Analysis for the following samples:
Client Work ID: SHELL #189993 - T1-01-278
Date Received: 02/01/91
Number of Samples: 13
Sample Type: LIQUID

Shell Site: 15275 Washington
San Leandro
Shell Engineer: J. Brastad
Wic No: 204-685-1008
Sample Type: 5440

Samples were labeled as follows:

SAMPLE IDENTIFICATION	LABORATORY #
S-1	C1-02-004-01
S-3	C1-02-004-02
S-5	C1-02-004-03
S-6	C1-02-004-04
S-7	C1-02-004-05
S-11	C1-02-004-06
S-13	C1-02-004-07
S-15	C1-02-004-08

Reviewed and Approved:

Regina A. Weist
Project Manager

Company: IT CORPORATION
Date: 02/13/91
Client Work ID: SHELL #189993 - T1-01-278

IT ANALYTICAL SERVICES
CERRITOS, CA

Work Order: C1-02-004

Samples, continued from above:

SAMPLE IDENTIFICATION	LABORATORY #
S-16	C1-02-004-09
SF-6	C1-02-004-10
MATRIX SPIKE	C1-02-004-11
MATRIX SPIKE DUPLICATE	C1-02-004-12
METHOD BLANK	C1-02-004-13

Company: IT CORPORATION
Date: 02/13/91
Client Work ID: SHELL #189993 - T1-01-278

IT ANALYTICAL SERVICES
CERRITOS, CA

Work Order: C1-02-004

CLIENT SAMPLE ID	S-1	S-3	S-5	
LAB SAMPLE ID	C1-02-004-01	C1-02-004-02	C1-02-004-03	
SAMPLED	01/28/91	01/28/91	01/28/91	
TEST				UNITS
VOLATILE FUEL HYDROCARBONS	ND [50] 02/07/91	64000 [5000] 02/07/91	2550 [1000] 02/07/91	ug/L

ND indicates the parameter was not detected.
Detection limits are specified in [].

Company: IT CORPORATION
Date: 02/13/91
Client Work ID: SHELL #189993 - T1-01-278

IT ANALYTICAL SERVICES
CERRITOS, CA

Work Order: C1-02-004

CLIENT SAMPLE ID	S-6	S-7	S-11	
LAB SAMPLE ID	C1-02-004-04	C1-02-004-05	C1-02-004-06	
SAMPLED	01/28/91	01/28/91	01/28/91	
TEST				UNITS
VOLATILE FUEL HYDROCARBONS	ND [50] 02/07/91	ND [50] 02/07/91	63 [50] 02/07/91	ug/L

ND indicates the parameter was not detected.
Detection limits are specified in [].

Company: IT CORPORATION
Date: 02/13/91
Client Work ID: SHELL #189993 - T1-01-278

IT ANALYTICAL SERVICES
CERRITOS, CA

Work Order: C1-02-004

CLIENT SAMPLE ID	S-13	S-15	S-16	
LAB SAMPLE ID	C1-02-004-07	C1-02-004-08	C1-02-004-09	
SAMPLED	01/28/91	01/28/91	01/28/91	
TEST				UNITS
VOLATILE FUEL HYDROCARBONS	ND [50] 02/07/91	ND [50] 02/07/91	ND [50] 02/07/91	ug/L

ND indicates the parameter was not detected.
Detection limits are specified in [].

Company: IT CORPORATION
Date: 02/13/91
Client Work ID: SHELL #189993 - T1-01-278

IT ANALYTICAL SERVICES
CERRITOS, CA

Work Order: C1-02-004

CLIENT SAMPLE ID	SF-6	MATRIX SPIKE	MATRIX SPIKE DUPLICATE	
LAB SAMPLE ID	C1-02-004-10	C1-02-004-11	C1-02-004-12	
SAMPLED	01/28/91			
TEST				UNITS
VOLATILE FUEL HYDROCARBONS	ND	102	104	
	[50]	[--]	[--]	
	02/07/91	01/09/91	01/09/91	
	ug/L	% Rec.	% Rec.	

ND indicates the parameter was not detected.
Detection limits are specified in [].

Company: IT CORPORATION
Date: 02/13/91
Client Work ID: SHELL #189993 - T1-01-278

IT ANALYTICAL SERVICES
CERRITOS, CA

Work Order: C1-02-004

CLIENT SAMPLE ID	METHOD BLANK	
LAB SAMPLE ID	C1-02-004-13	
SAMPLED		
TEST		UNITS
VOLATILE FUEL HYDROCARBONS	ND [50] 02/07/91	ug/L

ND indicates the parameter was not detected.
Detection limits are specified in [].

Company: IT CORPORATION
Date: 02/13/91
Client Work ID: SHELL #189993 - T1-01-278

IT ANALYTICAL SERVICES
CERRITOS, CA

Work Order: C1-02-004

TEST NAME: **BTEX BY METHOD 8020**

SAMPLE ID: **S-1**
LAB SAMPLE ID: **C102004-01A**
SAMPLE DATE: **01/28/91**
ANALYSIS DATE: 02/07/91

	Results in ug/L:	Detection Limit
Benzene	4.5	0.5
Toluene	ND	0.5
Ethylbenzene	ND	0.5
Xylenes (total)	2.0	0.5

Surrogate	% Recovery
A,A,A-Trifluorotoluene	103
1-Chloro-2-fluorobenzene	

Comments: 'ND' or '<' indicates that the compound is not detected at the specified limit.
'NA' indicates not applicable

Company: IT CORPORATION
Date: 02/13/91
Client Work ID: SHELL #189993 - T1-01-278

IT ANALYTICAL SERVICES
CERRITOS, CA

Work Order: C1-02-004

TEST NAME: **BTEX BY METHOD 8020**

SAMPLE ID: **S-3**
LAB SAMPLE ID: **C102004-02A**
SAMPLE DATE: **01/28/91**
ANALYSIS DATE: 02/07/91

	Results in ug/L:	Detection Limit
Benzene	4090	50
Toluene	570	50
Ethylbenzene	1940	50
Xylenes (total)	8090	100

Surrogate	% Recovery
A,A,A-Trifluorotoluene	114
1-Chloro-2-fluorobenzene	

Comments: 'ND' or '<' indicates that the compound is not detected at the specified limit.
'NA' indicates not applicable

Company: IT CORPORATION
Date: 02/13/91
Client Work ID: SHELL #189993 - T1-01-278

IT ANALYTICAL SERVICES
CERRITOS, CA

Work Order: C1-02-004

TEST NAME: **BTEX BY METHOD 8020**

SAMPLE ID: **S-5**
LAB SAMPLE ID: **C102004-03A**
SAMPLE DATE: **01/28/91**
ANALYSIS DATE: 02/07/91

	Results in ug/L:	Detection Limit
Benzene	410	10
Toluene	15	10
Ethylbenzene	110	10
Xylenes (total)	60	10

Surrogate	% Recovery
A,A,A-Trifluorotoluene	105
1-Chloro-2-fluorobenzene	

Comments: 'ND' or '<' indicates that the compound is not detected at the specified limit.
'NA' indicates not applicable

Company: IT CORPORATION
Date: 02/13/91
Client Work ID: SHELL #189993 - T1-01-278

IT ANALYTICAL SERVICES
CERRITOS, CA

Work Order: C1-02-004

TEST NAME: **BTEX BY METHOD 8020**

SAMPLE ID: **S-6**
LAB SAMPLE ID: **C102004-04A**
SAMPLE DATE: **01/28/91**
ANALYSIS DATE: 02/07/91

	Results in ug/L:	Detection Limit
Benzene	ND	0.5
Toluene	ND	0.5
Ethylbenzene	ND	0.5
Xylenes (total)	ND	0.5

Surrogate	% Recovery
A,A,A-Trifluorotoluene	96
1-Chloro-2-fluorobenzene	

Comments: 'ND' or '<' indicates that the compound is not detected at the specified limit.
'NA' indicates not applicable

Company: IT CORPORATION
Date: 02/13/91
Client Work ID: SHELL #189993 - T1-01-278

IT ANALYTICAL SERVICES
CERRITOS, CA

Work Order: C1-02-004

TEST NAME: **BTEX BY METHOD 8020**

SAMPLE ID: **S-7**
LAB SAMPLE ID: **C102004-05A**
SAMPLE DATE: **01/28/91**
ANALYSIS DATE: 02/07/91

	Results in ug/L:	Detection Limit
Benzene	ND	0.5
Toluene	ND	0.5
Ethylbenzene	ND	0.5
Xylenes (total)	ND	0.5

Surrogate	% Recovery
A,A,A-Trifluorotoluene	99
1-Chloro-2-fluorobenzene	

Comments: 'ND' or '<' indicates that the compound is not detected at the specified limit.
'NA' indicates not applicable

Company: IT CORPORATION
Date: 02/13/91
Client Work ID: SHELL #189993 - T1-01-278

IT ANALYTICAL SERVICES
CERRITOS, CA

Work Order: C1-02-004

TEST NAME: **BTEX BY METHOD 8020**

SAMPLE ID: **S-11**
LAB SAMPLE ID: **C102004-06A**
SAMPLE DATE: **01/28/91**
ANALYSIS DATE: 02/07/91

	Results in ug/L:	Detection Limit
Benzene	ND	0.5
Toluene	3.3	0.5
Ethylbenzene	0.9	0.5
Xylenes (total)	7.0	0.5

Surrogate	% Recovery
A,A,A-Trifluorotoluene	98
1-Chloro-2-fluorobenzene	

Comments: 'ND' or '<' indicates that the compound is not detected at the specified limit.
'NA' indicates not applicable

Company: IT CORPORATION
Date: 02/13/91
Client Work ID: SHELL #189993 - T1-01-278

IT ANALYTICAL SERVICES
CERRITOS, CA

Work Order: C1-02-004

TEST NAME: **BTEX BY METHOD 8020**

SAMPLE ID: **S-13**
LAB SAMPLE ID: **C102004-07A**
SAMPLE DATE: **01/28/91**
ANALYSIS DATE: 02/07/91

	Results in ug/L:	Detection Limit
Benzene	ND	0.5
Toluene	0.9	0.5
Ethylbenzene	ND	0.5
Xylenes (total)	1.0	0.5

Surrogate	% Recovery
A,A,A-Trifluorotoluene	106
1-Chloro-2-fluorobenzene	

Comments: 'ND' or '<' indicates that the compound is not detected at the specified limit.
'NA' indicates not applicable

Company: IT CORPORATION
Date: 02/13/91
Client Work ID: SHELL #189993 - T1-01-278

IT ANALYTICAL SERVICES
CERRITOS, CA

Work Order: C1-02-004

TEST NAME: **BTEX BY METHOD 8020**

SAMPLE ID: **S-15**
LAB SAMPLE ID: **C102004-08A**
SAMPLE DATE: **01/28/91**
ANALYSIS DATE: 02/07/91

	Results in ug/L:	Detection Limit
Benzene	ND	0.5
Toluene	0.6	0.5
Ethylbenzene	ND	0.5
Xylenes (total)	0.8	0.5

Surrogate	% Recovery
A,A,A-Trifluorotoluene	97
1-Chloro-2-fluorobenzene	

Comments: 'ND' or '<' indicates that the compound is not detected at the specified limit.
'NA' indicates not applicable

Company: IT CORPORATION
Date: 02/13/91
Client Work ID: SHELL #189993 - T1-01-278

IT ANALYTICAL SERVICES
CERRITOS, CA

Work Order: C1-02-004

TEST NAME: **BTEX BY METHOD 8020**

SAMPLE ID: **S-16**
LAB SAMPLE ID: **C102004-09A**
SAMPLE DATE: **01/28/91**
ANALYSIS DATE: 02/07/91

	Results in ug/L:	Detection Limit
Benzene	ND	0.5
Toluene	0.6	0.5
Ethylbenzene	ND	0.5
Xylenes (total)	0.9	0.5

Surrogate	% Recovery
A,A,A-Trifluorotoluene	94
1-Chloro-2-fluorobenzene	

Comments: 'ND' or '<' indicates that the compound is not detected at the specified limit.
'NA' indicates not applicable

Company: IT CORPORATION
Date: 02/13/91
Client Work ID: SHELL #189993 - T1-01-278

IT ANALYTICAL SERVICES
CERRITOS, CA

Work Order: C1-02-004

TEST NAME: **BTEX BY METHOD 8020**

SAMPLE ID: **SF-6**
LAB SAMPLE ID: **C102004-10A**
SAMPLE DATE: **01/28/91**
ANALYSIS DATE: 02/07/91

	Results in ug/L:	Detection Limit
Benzene	ND	0.5
Toluene	ND	0.5
Ethylbenzene	ND	0.5
Xylenes (total)	ND	0.5

Surrogate	% Recovery
A,A,A-Trifluorotoluene	94
1-Chloro-2-fluorobenzene	

Comments: 'ND' or '<' indicates that the compound is not detected at the specified limit.
'NA' indicates not applicable

Company: IT CORPORATION
Date: 02/13/91
Client Work ID: SHELL #189993 - T1-01-278

IT ANALYTICAL SERVICES
CERRITOS, CA

Work Order: C1-02-004

TEST NAME: **BTEX BY METHOD 8020**

SAMPLE ID: **MATRIX SPIKE**
LAB SAMPLE ID: **C102004-11A**
SAMPLE DATE: **not spec**
ANALYSIS DATE: 12/31/91

	Results in	% Rec.:	Detection Limit
Benzene		104	-
Toluene		98	-
Ethylbenzene		99	-
Xylenes (total)		100	-

Surrogate	% Recovery
A,A,A-Trifluorotoluene	93
1-Chloro-2-fluorobenzene	

Comments: 'ND' or '<' indicates that the compound is not detected at the specified limit.
'NA' indicates not applicable

Company: IT CORPORATION
Date: 02/13/91
Client Work ID: SHELL #189993 - T1-01-278

IT ANALYTICAL SERVICES
CERRITOS, CA

Work Order: C1-02-004

TEST NAME: **BTEX BY METHOD 8020**

SAMPLE ID: **MATRIX SPIKE DUPLICATE**
LAB SAMPLE ID: **C102004-12A**
SAMPLE DATE: **not spec**
ANALYSIS DATE: 12/31/91

	Results in	% Rec.:	Detection Limit
Benzene		95	-
Toluene		93	-
Ethylbenzene		94	-
Xylenes (total)		95	-

Surrogate	% Recovery
A,A,A-Trifluorotoluene	84
1-Chloro-2-fluorobenzene	

Comments: 'ND' or '<' indicates that the compound is not detected at the specified limit.
'NA' indicates not applicable

Company: IT CORPORATION
Date: 02/13/91
Client Work ID: SHELL #189993 - T1-01-278

IT ANALYTICAL SERVICES
CERRITOS, CA

Work Order: C1-02-004

TEST NAME: **BTEX BY METHOD 8020**

SAMPLE ID: **METHOD BLANK**
LAB SAMPLE ID: **C102004-13A**
SAMPLE DATE: **not spec**
ANALYSIS DATE: 02/07/91

	Results in ug/L:	Detection Limit
Benzene	ND	0.5
Toluene	ND	0.5
Ethylbenzene	ND	0.5
Xylenes (total)	ND	0.5

Surrogate	% Recovery
A,A,A-Trifluorotoluene	103
1-Chloro-2-fluorobenzene	

Comments: 'ND' or '<' indicates that the compound is not detected at the specified limit.
'NA' indicates not applicable

Company: IT CORPORATION
Date: 02/13/91
Client Work ID: SHELL #189993 - T1-01-278

IT ANALYTICAL SERVICES
CERRITOS, CA

Work Order: C1-02-004

Shell Summary

Client Sample ID	Volatile Fuel Hydrocarbons ug/L(50)	Benzene ug/L	Toluene ug/L	Ethyl-Benzene ug/L	Xylenes ug/L
S-1	ND	4.5(0.5)	ND(0.5)	ND(0.5)	2.0(0.5)
S-3	64000(5000)	4090(50)	570(50)	1940(50)	8090(2.5)
S-5	2550(1000)	410(10)	15(10)	110(10)	60(10)
S-6	ND	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
S-7	ND	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
S-11	63	ND(0.5)	3.3(0.5)	0.9(0.5)	7.0(0.5)
S-13	ND	ND(0.5)	0.9(0.5)	ND(0.5)	1.0(0.5)
S-15	ND	ND(0.5)	0.6(0.5)	ND(0.5)	0.8(0.5)
S-16	ND	ND(0.5)	0.6(0.5)	ND(0.5)	0.9(0.5)
SF-6	ND	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)

Company: IT CORPORATION
Date: 02/13/91
Client Work ID: SHELL #189993 - T1-01-278

IT ANALYTICAL SERVICES
CERRITOS, CA

Work Order: C1-02-004

TEST NAME **VOLATILE FUEL HYDROCARBONS** TEST CODE **8015L**

Low boiling fuel hydrocarbons are analyzed by methods established by the California DHS' LUFT manual. An aliquot of the sample is purged with helium and the volatile fuel hydrocarbons are transferred to the vapor phase. The vapor is swept through a sorbent column where the hydrocarbons are adsorbed. Upon completion, the sorbent column is heated and backflushed onto a gas chromatograph equipped with a 30 meter capillary column. Detection and quantitation is made by a flame ionization detector. Leaded gasoline is used as the calibration standard.

TEST NAME **BTEX BY METHOD 8020** TEST CODE **BTEX_W**

The sample was analyzed for benzene, toluene, ethylbenzene and total xylenes according to USEPA Methods 8020 and 5030. An aliquot of the sample is purged with helium and the volatile compounds are transferred to the vapor phase. The vapor is swept through a sorbent column where the aromatics are adsorbed. Upon completion the sorbent column is heated and backflushed onto a GC column. The trapped compounds are separated by the megabore column and detected by a photoionization detector.

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYTICAL SERVICES

CERTIFICATE OF ANALYSIS

IT CORPORATION
2055 JUNCTION AVE
SAN JOSE CA 95131
S. VEAUDRY

Date: 02/13/91

Work Order: C1-02-001

Project/P.O.#: 4631-326
SHELL

This is the Certificate of Analysis for the following samples:
Client Work ID: SHELL #189993 - T1-01-277
Date Received: 02/01/91
Number of Samples: 12
Sample Type: LIQUID

Shell Site: 15275 Washington
San Leandro, CA.
Shell Engineer: J. Brasdad
Wic No. 2004-6852-1008
Class Type: 5440

Samples were labeled as follows:

SAMPLE IDENTIFICATION	LABORATORY #
S-8	C1-02-001-01
S-9	C1-02-001-02
S-10	C1-02-001-03
S-12	C1-02-001-04
S-14	C1-02-001-05
S-17	C1-02-001-06
SR-1	C1-02-001-07
SRD-1	C1-02-001-08

Reviewed and Approved:

Regina A. Weist
Project Manager

Company: IT CORPORATION
Date: 02/13/91
Client Work ID: SHELL #189993 - T1-01-277

IT ANALYTICAL SERVICES
CERRITOS, CA

Work Order: C1-02-001

Samples, continued from above:

SAMPLE IDENTIFICATION	LABORATORY #
TRIP	C1-02-001-09
MATRIX SPIKE	C1-02-001-10
MATRIX SPIKE DUPLICATE	C1-02-001-11
METHOD BLANK	C1-02-001-12

Company: IT CORPORATION
Date: 02/13/91
Client Work ID: SHELL #189993 - T1-01-277

IT ANALYTICAL SERVICES
CERRITOS, CA

Work Order: C1-02-001

CLIENT SAMPLE ID	S-8	S-9	S-10	
LAB SAMPLE ID	C1-02-001-01	C1-02-001-02	C1-02-001-03	
SAMPLED	01/28/91	01/28/91	01/28/91	
TEST				UNITS
VOLATILE FUEL HYDROCARBONS	ND [50] 02/07/91	1040 [50] 02/07/91	ND [50] 02/07/91	ug/L

ND indicates the parameter was not detected.
Detection limits are specified in [].

Company: IT CORPORATION
Date: 02/13/91
Client Work ID: SHELL #189993 - T1-01-277

IT ANALYTICAL SERVICES
CERRITOS, CA

Work Order: C1-02-001

CLIENT SAMPLE ID	S-12	S-14	S-17	
LAB SAMPLE ID	C1-02-001-04	C1-02-001-05	C1-02-001-06	
SAMPLED	01/28/91	01/28/91	01/28/91	
TEST				UNITS
VOLATILE FUEL HYDROCARBONS	ND [50] 02/07/91	720 [50] 02/07/91	ND [50] 02/07/91	ug/L

ND indicates the parameter was not detected.
Detection limits are specified in [].

Company: IT CORPORATION
Date: 02/13/91
Client Work ID: SHELL #189993 - T1-01-277

IT ANALYTICAL SERVICES
CERRITOS, CA

Work Order: C1-02-001

CLIENT SAMPLE ID	SR-1	SRD-1	TRIP	
LAB SAMPLE ID	C1-02-001-07	C1-02-001-08	C1-02-001-09	
SAMPLED	01/28/91	01/28/91	01/28/91	
TEST				UNITS
VOLATILE FUEL HYDROCARBONS	**1100** [**50**] 02/07/91	**1040** [**50**] 02/07/91	**ND** [**50**] 02/07/91	ug/L

ND indicates the parameter was not detected.
Detection limits are specified in [].

Company: IT CORPORATION
Date: 02/13/91
Client Work ID: SHELL #189993 - T1-01-277

IT ANALYTICAL SERVICES
CERRITOS, CA

Work Order: C1-02-001

CLIENT SAMPLE ID	MATRIX SPIKE	MATRIX SPIKE DUPLICATE	METHOD BLANK	
LAB SAMPLE ID	C1-02-001-10	C1-02-001-11	C1-02-001-12	
SAMPLED				
TEST				UNITS
VOLATILE FUEL HYDROCARBONS	91 [--] 02/08/91 % Rec.	93 [--] 02/08/91 % Rec.	ND [50] 02/07/91 ug/L	

ND indicates the parameter was not detected.
Detection limits are specified in [].

Company: IT CORPORATION
Date: 02/13/91
Client Work ID: SHELL #189993 - T1-01-277

IT ANALYTICAL SERVICES
CERRITOS, CA

Work Order: C1-02-001

TEST NAME: **BTEX BY METHOD 8020**

SAMPLE ID: **S-8**
LAB SAMPLE ID: **C102001-01A**
SAMPLE DATE: **01/28/91**
ANALYSIS DATE: 02/07/91

	Results in ug/L:	Detection Limit
Benzene	55	0.5
Toluene	0.5	0.5
Ethylbenzene	ND	0.5
Xylenes (total)	1.4	0.5

Surrogate	% Recovery
A,A,A-Trifluorotoluene	103
1-Chloro-2-fluorobenzene	

Comments: 'ND' or '<' indicates that the compound is not detected at the specified limit.
'NA' indicates not applicable

Company: IT CORPORATION
Date: 02/13/91
Client Work ID: SHELL #189993 - T1-01-277

IT ANALYTICAL SERVICES
CERRITOS, CA

Work Order: C1-02-001

TEST NAME: **BTEX BY METHOD 8020**

SAMPLE ID: **S-9**
LAB SAMPLE ID: **C102001-02A**
SAMPLE DATE: **01/28/91**
ANALYSIS DATE: 02/08/91

	Results in ug/L:	Detection Limit
Benzene	450	2.5
Toluene	4.6	2.5
Ethylbenzene	85	2.5
Xylenes (total)	97	2.5

Surrogate	% Recovery
A,A,A-Trifluorotoluene	100
1-Chloro-2-fluorobenzene	

Comments: 'ND' or '<' indicates that the compound is not detected at the specified limit.
'NA' indicates not applicable

Company: IT CORPORATION
Date: 02/13/91
Client Work ID: SHELL #189993 - T1-01-277

IT ANALYTICAL SERVICES
CERRITOS, CA

Work Order: C1-02-001

TEST NAME: **BTEX BY METHOD 8020**

SAMPLE ID: **S-10**
LAB SAMPLE ID: **C102001-03A**
SAMPLE DATE: **01/28/91**
ANALYSIS DATE: 02/07/91

	Results in ug/L:	Detection Limit
Benzene	ND	0.5
Toluene	ND	0.5
Ethylbenzene	ND	0.5
Xylenes (total)	ND	0.5

Surrogate	% Recovery
A,A,A-Trifluorotoluene	96
1-Chloro-2-fluorobenzene	

Comments: 'ND' or '<' indicates that the compound is not detected at the specified limit.
'NA' indicates not applicable

Company: IT CORPORATION
Date: 02/13/91
Client Work ID: SHELL #189993 - T1-01-277

IT ANALYTICAL SERVICES
CERRITOS, CA

Work Order: C1-02-001

TEST NAME: **BTEX BY METHOD 8020**

SAMPLE ID: **S-12**
LAB SAMPLE ID: **C102001-04A**
SAMPLE DATE: **01/28/91**
ANALYSIS DATE: 02/07/91

	Results in	ug/L:	Detection Limit
Benzene		ND	0.5
Toluene		ND	0.5
Ethylbenzene		ND	0.5
Xylenes (total)		ND	0.5

Surrogate	% Recovery
A,A,A-Trifluorotoluene	97
1-Chloro-2-fluorobenzene	

Comments: 'ND' or '<' indicates that the compound is not detected at the specified limit.
'NA' indicates not applicable

Company: IT CORPORATION
Date: 02/13/91
Client Work ID: SHELL #189993 - T1-01-277

IT ANALYTICAL SERVICES
CERRITOS, CA

Work Order: C1-02-001

TEST NAME: **BTEX BY METHOD 8020**

SAMPLE ID: **S-14**
LAB SAMPLE ID: **C102001-05A**
SAMPLE DATE: **01/28/91**
ANALYSIS DATE: 02/08/91

	Results in ug/L:	Detection Limit
Benzene	200	2.5
Toluene	36	2.5
Ethylbenzene	21	2.5
Xylenes (total)	78	2.5

Surrogate	% Recovery
A,A,A-Trifluorotoluene	97
1-Chloro-2-fluorobenzene	

Comments: 'ND' or '<' indicates that the compound is not detected at the specified limit.
'NA' indicates not applicable

Company: IT CORPORATION
Date: 02/13/91
Client Work ID: SHELL #189993 - T1-01-277

IT ANALYTICAL SERVICES
CERRITOS, CA

Work Order: C1-02-001

TEST NAME: **BTEX BY METHOD 8020**

SAMPLE ID: **S-17**
LAB SAMPLE ID: **C102001-06A**
SAMPLE DATE: **01/28/91**
ANALYSIS DATE: 02/07/91

	Results in ug/L:	Detection Limit
Benzene	ND	0.5
Toluene	ND	0.5
Ethylbenzene	ND	0.5
Xylenes (total)	ND	0.5

Surrogate	% Recovery
A,A,A-Trifluorotoluene	95
1-Chloro-2-fluorobenzene	

Comments: 'ND' or '<' indicates that the compound is not detected at the specified limit.
'NA' indicates not applicable

Company: IT CORPORATION
Date: 02/13/91
Client Work ID: SHELL #189993 - T1-01-277

IT ANALYTICAL SERVICES
CERRITOS, CA

Work Order: C1-02-001

TEST NAME: **BTEX BY METHOD 8020**

SAMPLE ID: **SR-1**
LAB SAMPLE ID: **C102001-07A**
SAMPLE DATE: **01/28/91**
ANALYSIS DATE: 02/08/91

	Results in ug/L:	Detection Limit
Benzene	120	2.5
Toluene	12	2.5
Ethylbenzene	51	2.5
Xylenes (total)	110	2.5

Surrogate	% Recovery
A,A,A-Trifluorotoluene	95
1-Chloro-2-fluorobenzene	

Comments: 'ND' or '<' indicates that the compound is not detected at the specified limit.
'NA' indicates not applicable

Company: IT CORPORATION
Date: 02/13/91
Client Work ID: SHELL #189993 - T1-01-277

IT ANALYTICAL SERVICES
CERRITOS, CA

Work Order: C1-02-001

TEST NAME: **BTEX BY METHOD 8020**

SAMPLE ID: **SRD-1**
LAB SAMPLE ID: **C102001-08A**
SAMPLE DATE: **01/28/91**
ANALYSIS DATE: 02/08/91

	Results in ug/L:	Detection Limit
Benzene	110	2.5
Toluene	10	2.5
Ethylbenzene	49	2.5
Xylenes (total)	96	2.5

Surrogate	% Recovery
A,A,A-Trifluorotoluene	92
1-Chloro-2-fluorobenzene	

Comments: 'ND' or '<' indicates that the compound is not detected at the specified limit.
'NA' indicates not applicable

Company: IT CORPORATION
Date: 02/13/91
Client Work ID: SHELL #189993 - T1-01-277

IT ANALYTICAL SERVICES
CERRITOS, CA

Work Order: C1-02-001

TEST NAME: **BTEX BY METHOD 8020**

SAMPLE ID: **TRIP**
LAB SAMPLE ID: **C102001-09A**
SAMPLE DATE: **01/28/91**
ANALYSIS DATE: 02/07/91

	Results in ug/L:	Detection Limit
Benzene	ND	0.5
Toluene	ND	0.5
Ethylbenzene	ND	0.5
Xylenes (total)	ND	0.5

Surrogate	% Recovery
A,A,A-Trifluorotoluene	93
1-Chloro-2-fluorobenzene	

Comments: 'ND' or '<' indicates that the compound is not detected at the specified limit.
'NA' indicates not applicable

Company: IT CORPORATION
Date: 02/13/91
Client Work ID: SHELL #189993 - T1-01-277

IT ANALYTICAL SERVICES
CERRITOS, CA

Work Order: C1-02-001

TEST NAME: **BTEX BY METHOD 8020**

SAMPLE ID: **MATRIX SPIKE**
LAB SAMPLE ID: **C102001-10A**
SAMPLE DATE: **not spec**
ANALYSIS DATE: 02/08/91

	Results in	% Rec.:	Detection Limit
Benzene		102	-
Toluene		103	-
Ethylbenzene		101	-
Xylenes (total)		100	-

Surrogate	% Recovery
A,A,A-Trifluorotoluene	97
1-Chloro-2-fluorobenzene	

Comments: 'ND' or '<' indicates that the compound is not detected at the specified limit.
'NA' indicates not applicable

Company: IT CORPORATION
Date: 02/13/91
Client Work ID: SHELL #189993 - T1-01-277

IT ANALYTICAL SERVICES
CERRITOS, CA

Work Order: C1-02-001

TEST NAME: **BTEX BY METHOD 8020**

SAMPLE ID: **MATRIX SPIKE DUPLICATE**
LAB SAMPLE ID: **C102001-11A**
SAMPLE DATE: **not spec**
ANALYSIS DATE: 02/08/91

	Results in ug/L:	Detection Limit
Benzene	102	-
Toluene	103	-
Ethylbenzene	100	-
Xylenes (total)	101	-

Surrogate	% Recovery
A,A,A-Trifluorotoluene	95
1-Chloro-2-fluorobenzene	

Comments: 'ND' or '<' indicates that the compound is not detected at the specified limit.
'NA' indicates not applicable

Company: IT CORPORATION
Date: 02/13/91
Client Work ID: SHELL #189993 - T1-01-277

IT ANALYTICAL SERVICES
CERRITOS, CA

Work Order: C1-02-001

TEST NAME: **BTEX BY METHOD 8020**

SAMPLE ID: **METHOD BLANK**
LAB SAMPLE ID: **C102001-12A**
SAMPLE DATE: **not spec**
ANALYSIS DATE: 02/07/91

	Results in ug/L:	Detection Limit
Benzene	ND	0.5
Toluene	ND	0.5
Ethylbenzene	ND	0.5
Xylenes (total)	ND	0.5

Surrogate	% Recovery
A,A,A-Trifluorotoluene	95
1-Chloro-2-fluorobenzene	

Comments: 'ND' or '<' indicates that the compound is not detected at the specified limit.
'NA' indicates not applicable

Company: IT CORPORATION
Date: 02/13/91
Client Work ID: SHELL #189993 - T1-01-277

IT ANALYTICAL SERVICES
CERRITOS, CA

Work Order: C1-02-001

Shell Summary

Client Sample ID	Volatile Fuel Hydrocarbons ug/L(50)	Benzene ug/L	Toluene ug/L	Ethyl-Benzene ug/L	Xylenes ug/L
S-8	ND	55(0.5)	0.5(0.5)	ND(0.5)	1.4(0.5)
S-9	1040	450(2.5)	4.6(2.5)	85(2.5)	97(2.5)
S-10	ND	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
S-12	ND	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
S-14	720	200(2.5)	36(2.5)	21(2.5)	78(2.5)
S-17	ND	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
SR-1	1100	120(2.5)	12(2.5)	51(2.5)	110(2.5)
SRD-1	1040	110(2.5)	10(2.5)	49(2.5)	96(2.5)
TRIP	ND	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)

Company: IT CORPORATION
Date: 02/13/91
Client Work ID: SHELL #189993 - T1-01-277

IT ANALYTICAL SERVICES
CERRITOS, CA

Work Order: C1-02-001

TEST NAME **VOLATILE FUEL HYDROCARBONS** TEST CODE **8015L**

Low boiling fuel hydrocarbons are analyzed by methods established by the California DHS' LUFT manual. An aliquot of the sample is purged with helium and the volatile fuel hydrocarbons are transferred to the vapor phase. The vapor is swept through a sorbent column where the hydrocarbons are adsorbed. Upon completion, the sorbent column is heated and backflushed onto a gas chromatograph equipped with a 30 meter capillary column. Detection and quantitation is made by a flame ionization detector. Leaded gasoline is used as the calibration standard.

TEST NAME **BTEX BY METHOD 8020** TEST CODE **BTEX_W**

The sample was analyzed for benzene, toluene, ethylbenzene and total xylenes according to USEPA Methods 8020 and 5030. An aliquot of the sample is purged with helium and the volatile compounds are transferred to the vapor phase. The vapor is swept through a sorbent column where the aromatics are adsorbed. Upon completion the sorbent column is heated and backflushed onto a GC column. The trapped compounds are separated by the megabore column and detected by a photoionization detector.

Gettler - Ryan Inc. 771-01-278 ENVIRONMENTAL DIVISION — **Chain of Custody**

COMPANY SHELL JOB NO.

JOB LOCATION 15275 WASHINGTON

CITY SAN LEANDRO PHONE NO.

AUTHORIZED TOM DAVIDSON DATE 1-28-91 P.O. NO. 3615.01

SAMPLE ID	NO. OF CONTAINERS	SAMPLE MATRIX	DATE/TIME SAMPLED	ANALYSIS REQUIRED	SAMPLE CONDITION LAB ID
1 S.1	3	Liquid	1-28-91 11:29	TH Gas/BTEX	DK COOL JD
2 S.3	3		1304		
3 S.5	3		1243		
4 S.6	3		1152		
5 S.7	3		1225		
6 S.11	3		959		
7 S.13	3		936		
8 S.15	3		1036		
9 S.16	3		1112		
~~TRIP~~	~~1~~				
10 SF-6	3		1156		

RELINQUISHED BY: 1/28/91 14:40 RECEIVED BY: REFRIG #1 1/28/91 14:40

RELINQUISHED BY: Kering 1-29-91 08:00 RECEIVED BY: 1-28-91 08:00

RELINQUISHED BY: 1-29-91 11:40 RECEIVED BY LAB: Jason F. Koch 1-29-91 1140

DESIGNATED LABORATORY: IT | SCV DHS #: 2630

REMARKS: NORMAL TAT
WIC 204 6852 1008
EXP 5440
FEN6 9 BRASTAD

DATE COMPLETED 1-28-91 FOREMAN

ORIGINAL

Gettler - Ryan Inc. IT-01-277 (ENVIRONMENTAL DIVISION) — **Chain of Custody**

COMPANY SHELL — JOB NO.

JOB LOCATION 15775 WASHINGTON

CITY SAN LEANDRO — PHONE NO.

AUTHORIZED TOM PAULSON — DATE 1.28.91 — P.O. NO. 3615.01

SAMPLE ID	NO. OF CONTAINERS	SAMPLE MATRIX	DATE/TIME SAMPLED	ANALYSIS REQUIRED	SAMPLE CONDITION LAB ID
5.8	3	Liquid	1-28-91 1215	THC gas / BTEX	DIL LOOL (10)
2 5.9			1231		
3 5.10			1146		
4 5.12			942		
5 5.14			1008		
6 5.17			1124		
7 SR-1			1305		
8 SRD-1			—		
9 TRIP	1		—		

RELINQUISHED BY: Guadalupe Sanchez 1-28-91 16:00 — RECEIVED BY: REFRIG #1 1-28-91 16:00

RELINQUISHED BY: Rebrig 1-29-91 08:00 — RECEIVED BY: [signature] 1-29-91 08:00

RELINQUISHED BY: [signature] 1-29-91 11:41 — RECEIVED BY LAB: Jason J Koch 1/29/90 1141

DESIGNATED LABORATORY: IT / SCV — DHS #: E630

REMARKS: NORMAL TAT
WIC 2004 6852 1008
EXP 5440
ENG 9 BRASDAD

DATE COMPLETED 1.28.91 — FOREMAN Guadalupe Sanchez

ORIGINAL