

**Shell Oil Company**



**EAST BAY  
MARKETING DISTRICT**

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

August 28, 1990

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 Site Update report, dated August 16, 1990, which documents the results of the groundwater sampling conducted during the second quarter of 1990 at the subject location.

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

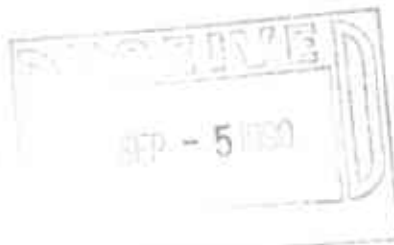
Very truly yours,

A handwritten signature in cursive script that reads "Diane M. Lundquist".

Diane M. Lundquist  
District 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

Report No. 7632-6

SF 1 - 5

August 16, 1990

RECEIVED

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NATIONAL CREDIT UNION



**GeoStrategies Inc.**

2140 WEST WINTON AVENUE  
HAYWARD, CALIFORNIA 94545

(415) 352-4800

August 16, 1990

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) and presents the results of the second quarterly groundwater sampling for 1990, which took place at the above referenced location (Plate 1). Initial investigations at the site began in October 1987. There are currently nine ground-water monitoring wells (S-2 through S-10) and three recovery wells (SR-1 through SR-3) at the site. The locations of the wells are presented on Plate 2. The field and chemical analytical data discussed in this report were collected by Gettler-Ryan Inc. (G-R) between April 1 and June 30, 1990, in accordance with the current quarterly groundwater sampling plan for the site. Potentiometric map and chemical isoconcentration maps have been included in this report.

**CURRENT QUARTER SAMPLING RESULTS**

Potentiometric Data

Prior to ground-water sampling, depth to ground-water levels were measured in each well using an electronic oil-water interface probe. Water level data were collected on June 14, 1990 by G-R. 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 between 12.43 feet and 17.93 feet below the top of the well box.

Report No. 7632-6

## GeoStrategies Inc.

Gettler-Ryan Inc.  
August 16, 1990  
Page 2

Ground-water elevation data for this sampling have been plotted and contoured and are presented on Plate 3. Water-level data indicate an approximate hydraulic gradient of 0.014 with shallow groundwater flow toward the south. A summary of the potentiometric data are presented on Table 1.

Each well was monitored for the presence of separate-phase hydrocarbons using an electronic oil-water interface probe. All wells were visually checked using a clean, clear acrylic bailer to confirm interface probe results and to check for the presence of a sheen.

### Chemical Analytical Data

Ground-water samples were collected from monitoring wells on June 14, 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 environmental laboratory located in San Jose, California. G-R ground-water sampling procedures are presented in Appendix A.

TPH-Gasoline was detected in Wells S-2, S-4, S-5, S-6, SR-1 and SR-3 at concentrations ranging from 0.06 parts per million (ppm) in Well SR-1, to 0.6 ppm in Well S-5. Benzene was identified in Wells S-2, S-4, S-5, S-6, SR-1 and SR-3 at concentrations ranging from 0.0037 ppm in Well S-6, to 0.094 ppm in Well S-5. TPH-Gasoline and benzene were reported as none detected (ND) for Wells S-3, S-7, S-8, S-9, S-10 and SR-2. Chemical analytical data are summarized on Table 1. The G-R Ground-water Sampling Report, IT Analytical Services certified analytical report and Chain-of-Custody Forms are included in Appendix B.

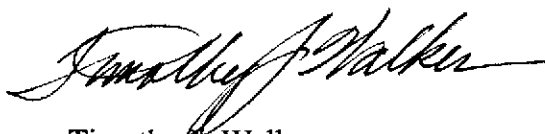
Table 2 presents a historical summary of the available ground-water chemical analytical data for the site. Chemical analytical data from Well SR-2 indicate a decrease and Well SR-3 an increase in concentrations of TPH-Gasoline and BTEX from the previous sampling. Results from the remaining wells appear to be consistent with historical chemical analytical data.

**GeoStrategies Inc.**

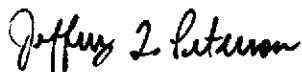
Gettler-Ryan Inc.  
August 16, 1990  
Page 3

If you have any questions, please call.

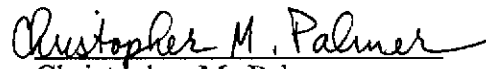
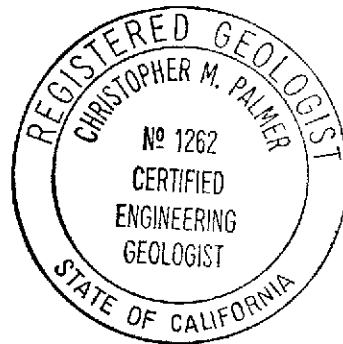
GeoStrategies Inc. by,



Timothy J. Walker  
Geologist



Jeffrey L. Peterson  
Senior Hydrogeologist  
R.E.A. 1021

  
Christopher M. Palmer  
C.E.G. 1262, R.E.A. 285

TJW/JLP/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 Procedures  
Appendix B: Gettler-Ryan Groundwater Sampling Report

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	14-Jun-90	21-Jun-90	0.11	0.039	0.0005	0.011	0.002	329.21	314.69	----	14.52
S-3	14-Jun-90	21-Jun-90	<0.05	<0.0005	<0.0005	<0.0005	<0.001	327.67	315.24	----	12.43
S-4	14-Jun-90	20-Jun-90	0.43	0.074	<0.0005	0.071	0.046	328.53	314.26	----	14.27
S-5	14-Jun-90	20-Jun-90	0.6	0.094	0.036	0.04	0.062	329.66	313.30	----	16.36
S-6	14-Jun-90	20-Jun-90	0.37	0.0037	0.0009	0.0048	0.003	327.62	313.46	----	14.16
S-7	14-Jun-90	20-Jun-90	<0.05	<0.0005	<0.0005	<0.0005	<0.001	328.67	311.90	----	16.77
S-8	14-Jun-90	20-Jun-90	<0.05	<0.0005	<0.0005	<0.0005	<0.001	327.00	311.92	----	15.08
S-9	14-Jun-90	20-Jun-90	<0.05	<0.0005	<0.0005	<0.0005	<0.001	328.24	310.31	----	17.93
S-10	14-Jun-90	20-Jun-90	<0.05	<0.0005	<0.0005	<0.0005	<0.001	326.55	312.94	----	13.61
SR-1	14-Jun-90	21-Jun-90	0.06	0.017	<0.0005	0.0019	0.001	329.78	313.48	----	16.30

## 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

SR = Recovery Well

SF = Field Blank

TB = Trip Blank

- Note: 1. All data shown as <x are reported as ND (none detected).  
 2. Water Level 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)
SR-2	14-Jun-90	21-Jun-90	<0.05	<0.0005	<0.0005	0.0026	<0.001	328.35	314.04	----	14.31
SR-3	14-Jun-90	21-Jun-90	0.47	0.059	0.0023	0.035	0.05	329.11	314.62	----	14.49
SRD-1	14-Jun-90	21-Jun-90	<0.05	0.013	<0.0005	0.0014	<0.001	----	----	----	----
SF-2	14-Jun-90	20-Jun-90	<0.05	<0.0005	<0.0005	<0.0005	<0.001	----	----	----	----
TB	----	20-Jun-90	<0.05	<0.0005	<0.0005	<0.0005	<0.001	----	----	----	----

TABLE 3

SAMPLE DATE	SAMPLE POINT	TPH (PPM)	BENZENE (PPM)	TOLUENE (PPM)	E.B. (PPM)	XYLENES (PPM)
DETECTION LIMITS -----		0.05	0.0005	0.001	0.001	0.003
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
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
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
06-Nov-87	S-1	0.92	0.230	<0.005	----	0.150
14-Feb-88	S-1	3.5	1.3	<0.04	----	0.5
06-Nov-87	S-2	16.0	0.87	0.10	----	2.7
14-Feb-88	S-2	1.8	0.44	<0.01	----	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
14-Feb-88	S-3	<0.05	<0.0005	<0.001	----	<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
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
14-Feb-88	S-4	5.1	0.16	0.008	----	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



TABLE 3

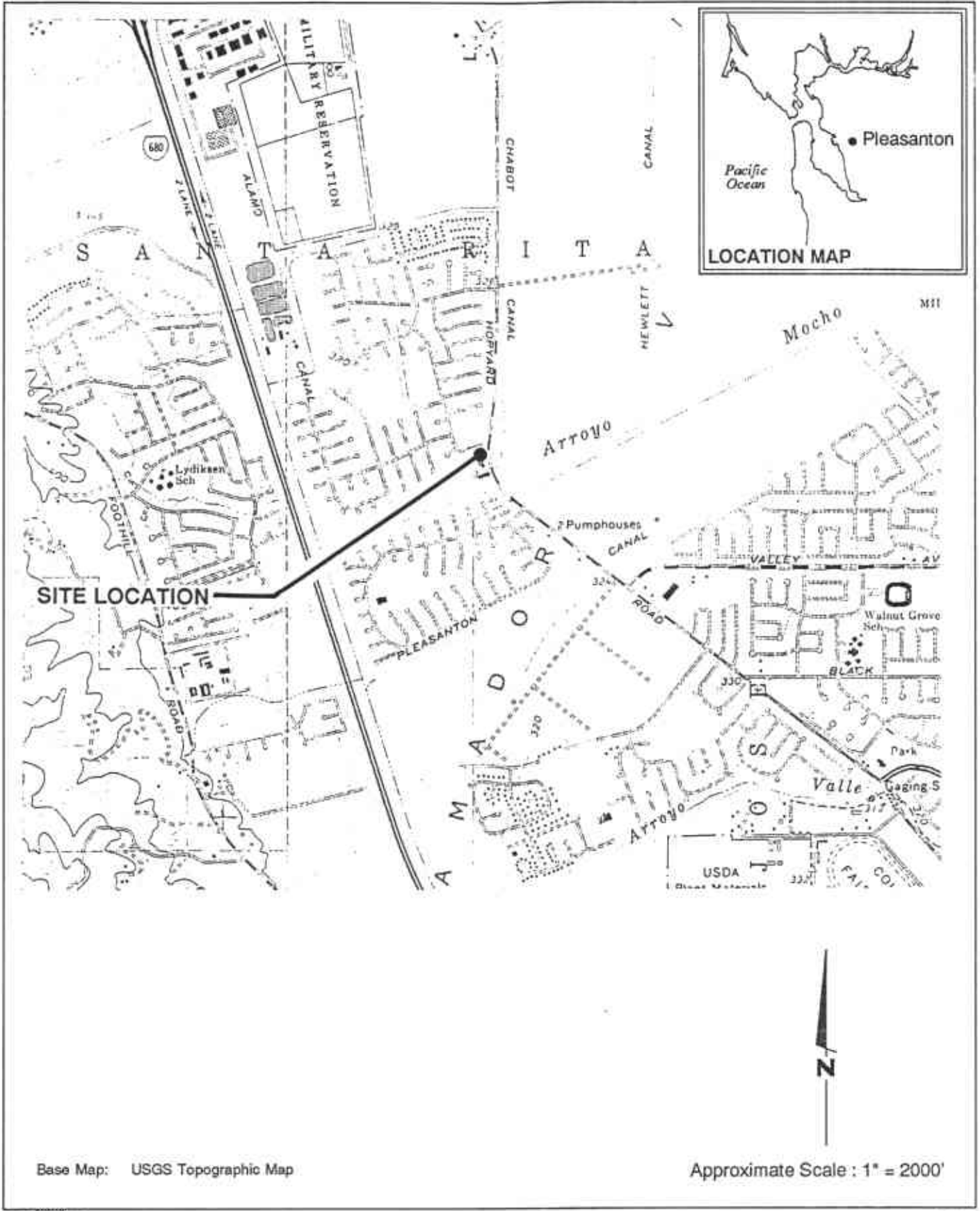
SAMPLE DATE	SAMPLE POINT	TPH (PPM)	BENZENE (PPM)	TOLUENE (PPM)	E.B. (PPM)	XYLENES (PPM)
DETECTION LIMITS		0.05	0.0005	0.001	0.001	0.003
14-Dec-89	S-4	0.21	0.021	<0.0005	0.030	0.023
05-Mar-90	S-4	0.35	0.043	<0.0005	0.024	0.047
14-Jun-90	S-4	0.43	0.074	<0.0005	0.071	0.046
14-Feb-88	S-5	1.0	0.04	0.086	----	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
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
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
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
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
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

TABLE 3

SAMPLE DATE	SAMPLE POINT	TPH (PPM)	BENZENE (PPM)	TOLUENE (PPM)	E.B. (PPM)	XYLENES (PPM)
DETECTION LIMITS -----		0.05	0.0005	0.001	0.001	0.003
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

ALL DATA SHOWN AS <X ARE REPORTED AS ND (NONE DETECTED)

ETHYLBENZENE AND XYLENES WERE COMBINED PRIOR TO OCTOBER 1988



Base Map: USGS Topographic Map

Approximate Scale : 1" = 2000'

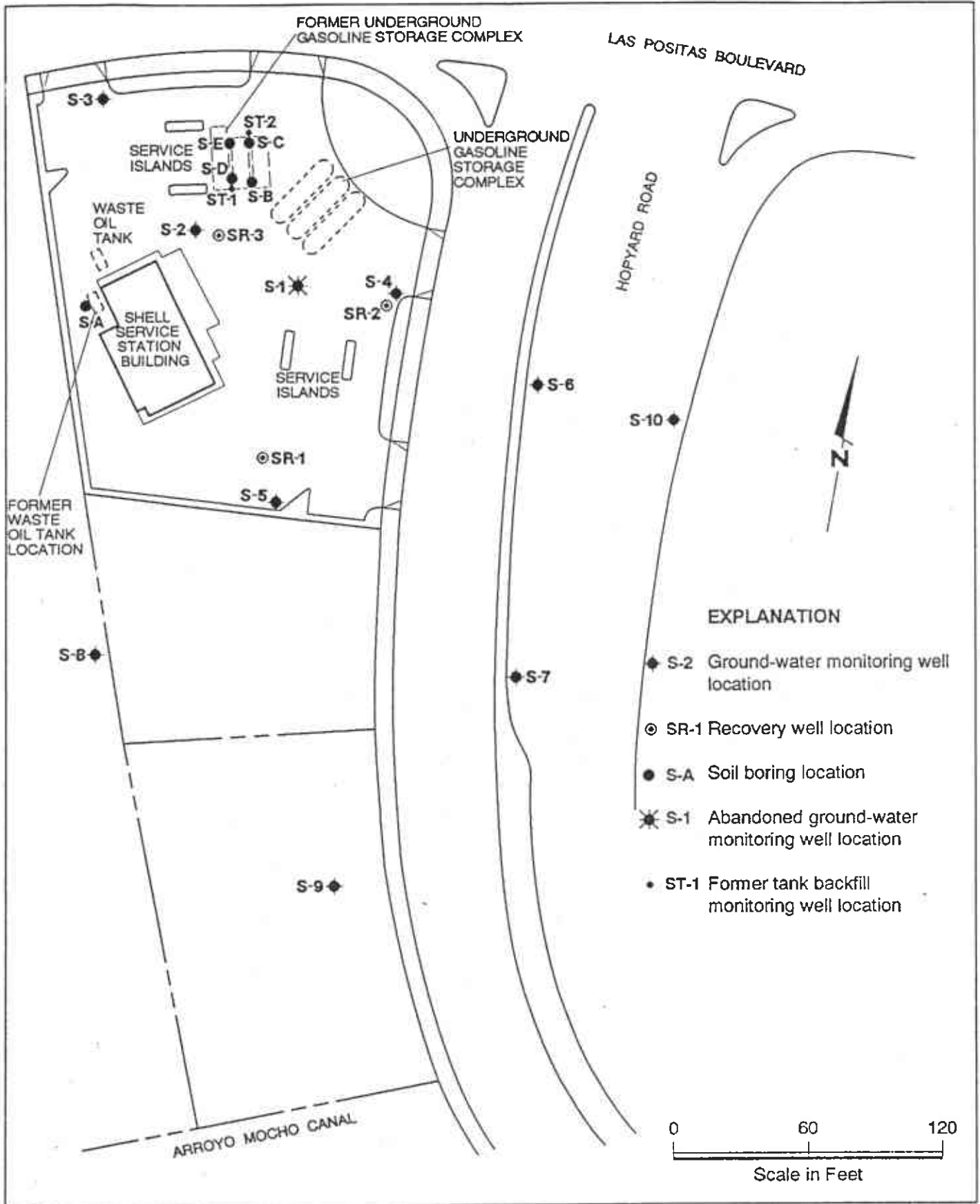


GeoStrategies Inc.

Vicinity Map  
 Shell Service Station  
 3790 Hopyard Road  
 Pleasanton, California

PLATE

1

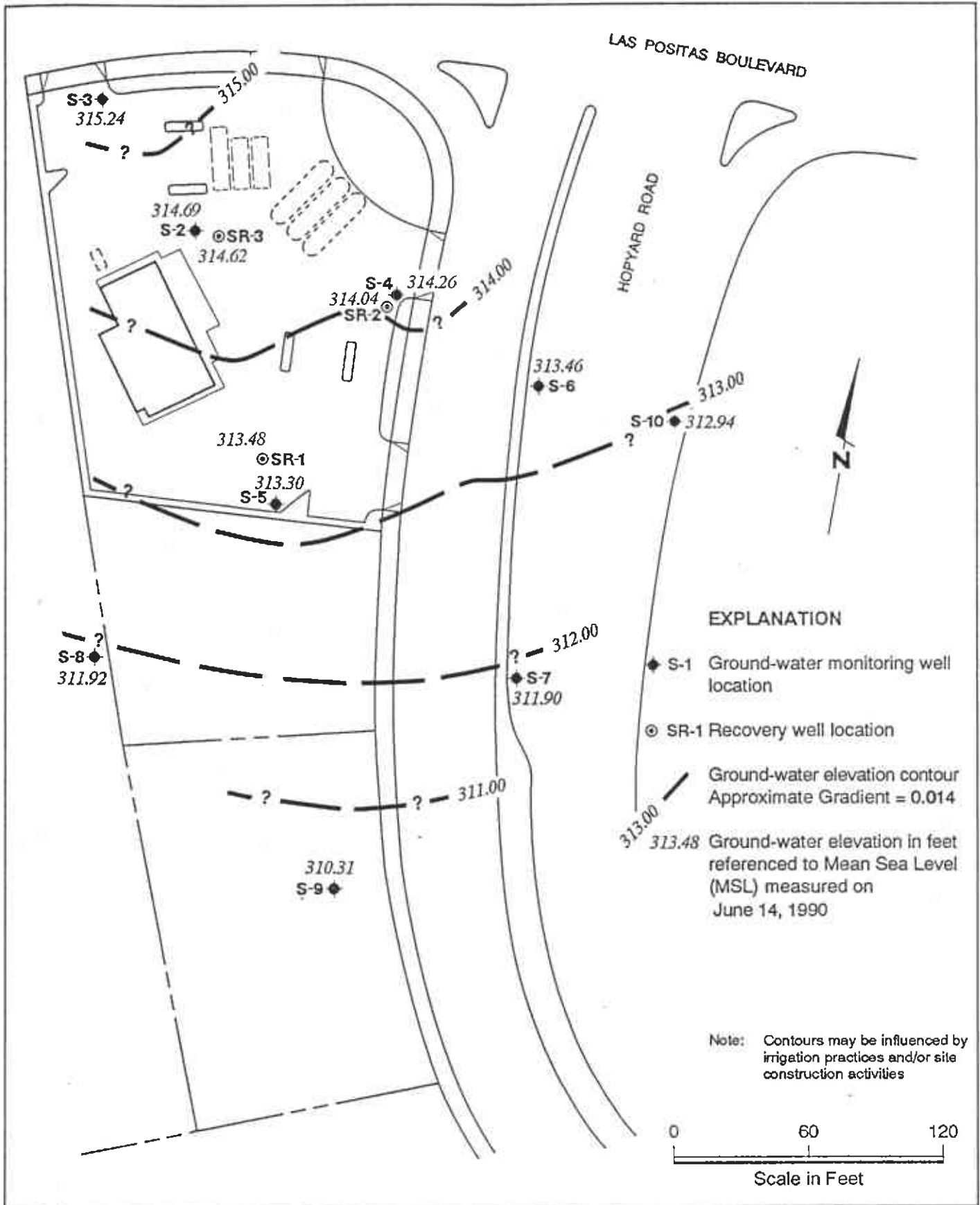


GeoStrategies Inc.

Site Plan  
 Shell Service Station  
 3790 Hopyard Road  
 Pleasanton, California

PLATE

2



GeoStrategies Inc.

Potentiometric Map  
Shell Service Station  
3790 Hopyard Road  
Pleasanton, California

PLATE

**3**

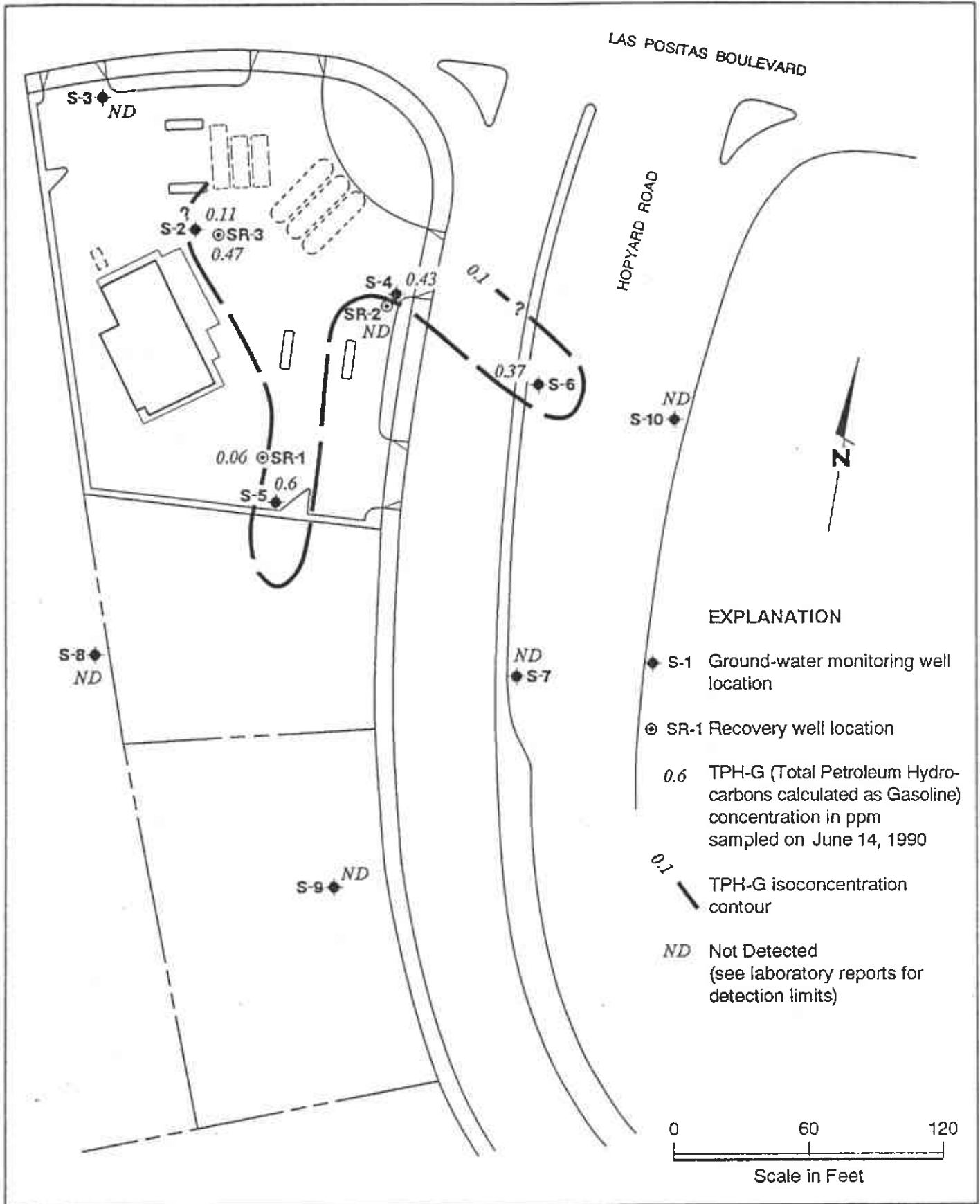
JOB NUMBER  
7632

REVIEWED BY RG/CEG  
CAMP 0691262

DATE  
7/90

REVISED DATE

REVISED DATE



GeoStrategies Inc.

**TPH-G Isoconcentration Map**  
 Shell Service Station  
 3790 Hopyard Road  
 Pleasanton, California

PLATE

**4**

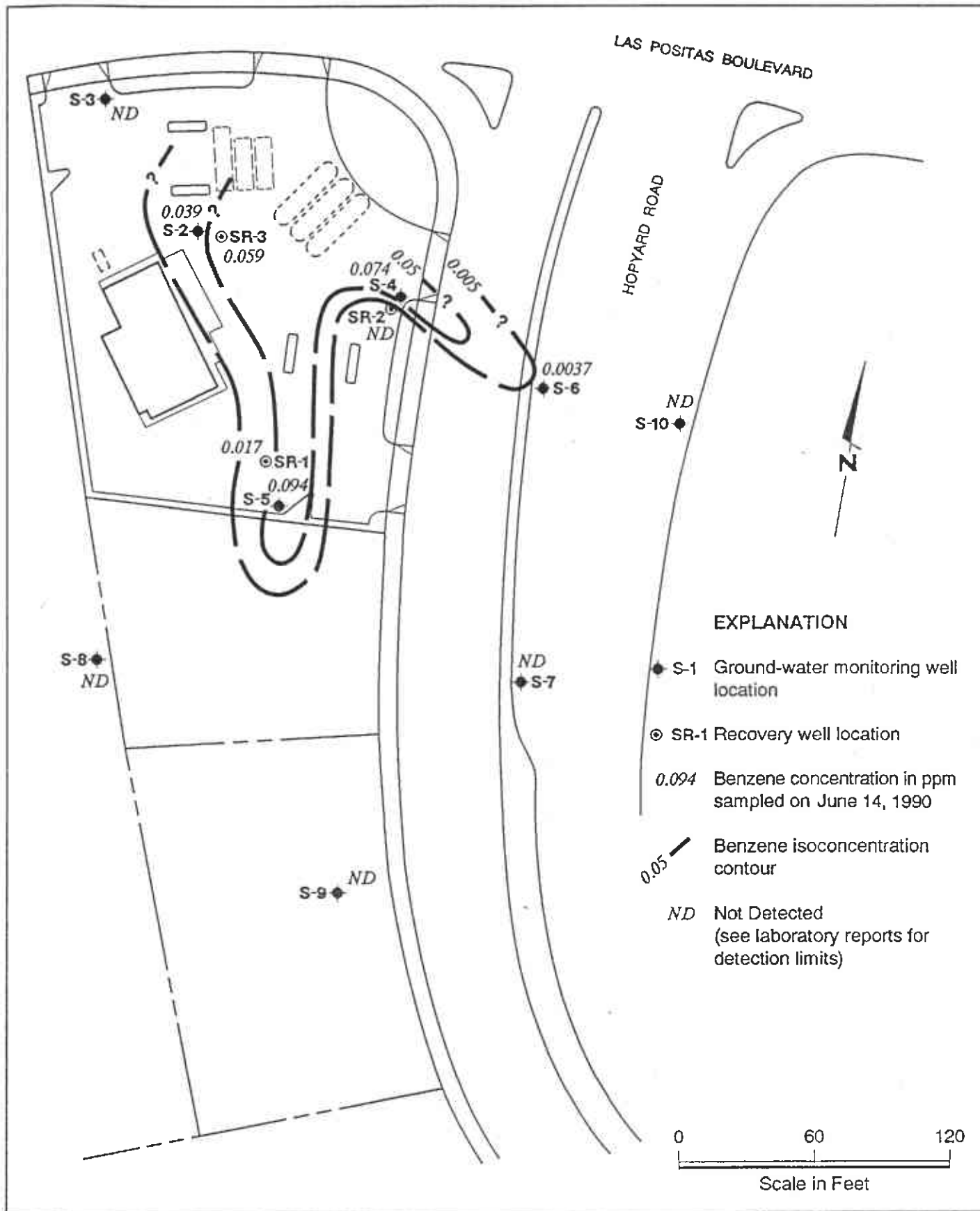
JOB NUMBER  
7632

REVIEWED BY RG/CEG  
 OMP 06/12/92

DATE  
7/90

REVISED DATE

REVISED DATE



**EXPLANATION**

- ◆ S-1 Ground-water monitoring well location
- ⊙ SR-1 Recovery well location
- 0.094 Benzene concentration in ppm sampled on June 14, 1990
- 0.05 Benzene isoconcentration contour
- ND Not Detected (see laboratory reports for detection limits)



GeoStrategies Inc.

**Benzene Isoconcentration Map**  
 Shell Service Station  
 3790 Hopyard Road  
 Pleasanton, California

PLATE

**5**

**GeoStrategies Inc.**

**APPENDIX A**

**G-R GROUND-WATER SAMPLING PROCEDURES**



GROUND-WATER SAMPLING AND ANALYSISQuality Assurance/Quality Control Objectives

The sampling and analysis procedures employed by Gettler-Ryan Inc. (G-R) for ground-water sampling and monitoring follow specific Quality Assurance/Quality Control (QA/QC) guidelines. Quality Assurance objectives have been established by G-R to develop and implement procedures for obtaining and evaluating water quality and field data in an accurate, precise, and complete manner so that sampling procedures and field measurements provide information that is comparable and representative of actual field conditions. Quality Control (QC) is maintained by G-R by using specific field protocols and requiring the analytical laboratory to perform internal and external QC checks. It is the goal of G-R to provide data that are accurate, precise, complete, comparable, and representative. The definitions for accuracy, precision, completeness, comparability, and representativeness are as follows:

- Accuracy - the degree of agreement of a measurement with an accepted referenced or true value.
- Precision - a measure of agreement among individual measurements under similar conditions. Usually expressed in terms of the standard deviation.
- Completeness - the amount of valid data obtained from a measurement system compared to the amount that was expected to meet the project data goals.
- Comparability - expresses the confidence with which one data set can be compared to another.
- Representativeness - a sample or group of samples that reflects the characteristics of the media at the sampling point. It also includes how well the sampling point represents the actual parameter variations which are under study.

As part of the G-R QA/QC program, applicable federal, state, and local reference guidance documents are followed. The procedures outlined in these regulations, manuals, handbooks, guidance documents, and journals are incorporated into the G-R sampling procedures to assure that; (1) ground-water samples are properly collected, (2) ground-water samples are identified, preserved, and transported in a manner such that they are representative of field conditions, and (3) chemical analysis of samples are accurate and reproducible.

Guidance and Reference Documents Used to Collect Groundwater Samples

These documents are used to verify G-R sampling procedures and are consistent with current regulatory guidance. If site specific work and sampling plans are required, those plans will be developed from these documents, and newly received applicable documents.

U.S.E.P.A. - 330/9-51-002	NEIC Manual for Groundwater/Subsurface Investigation at Hazardous Waste Sites
U.S.E.P.A. - 530/SW611	Procedures Manual for Groundwater Monitoring at Solid Waste Disposal Facilities (August, 1977)
U.S.E.P.A. - 600/4-79-020	Methods for Chemical Analysis of Water and Wastes (1983)
U.S.E.P.A. - 600/4-82-029	Handbook for Sampling and Sample Preservation of Water and Wastewater (1982)
U.S.E.P.A. - 600/4-82-057	Test Methods for Organic Chemical Analysis of Municipal and Industrial Wastewater (July, 1982)
U.S.E.P.A. - SW-846#, 3rd Edition	Test Methods for Evaluating Solid Waste - Physical/Chemical Methods (November, 1986)
40 CFR 136.3e, Table II (Code of Federal Regulations)	Required Containers, Preservation Techniques, and Holding Times
Resources Conservation and Recover Act (OSWER 9950.1)	Groundwater Monitoring Technical Enforcement Guidance Document (September, 1986)
California Regional Water Quality Control Board (Central Valley Region)	A Compilation of Water Quality Goals (September, 1988); Updates (October, 1988)
California Regional Water Quality Control Board (North Coast, San Francisco Bay, and Central Valley)	Regional Board Staff Recommendations for Initial Evaluations and Investigation of Underground Tanks: Tri-Regional Recommendations (June, 1988)

Guidance and Reference Documents Used to Collect Groundwater Samples (cont.)

Regional Water Quality Control Board (Central Valley Region)

Memorandum: Disposal, Treatment, and Refuse of Soils Contaminated with Petroleum Fractions (August, 1986)

State of California Department of Health Services

Hazardous Waste Testing Laboratory Certification List (March, 1987)

State of California Water Resources Control Board

Leaking Underground Fuel Tank (LUFT) Field Manual (May, 1988), and LUFT Field Manual Revision (April, 1989)

State of California Water Resources Control Board

Title 23, (Register #85.#33-8-17-85), Subchapter 16: Underground Tank Regulations; Article 3, Sections 2632 and 2634; Article 4, Sections 2645, 2646, 2647, and 2648; Article 7, Sections 2670, 2671, and 2672 (October, 1986: including 1988 Amendments)

Alameda County Water District

Groundwater Protection Program: Guidelines for Groundwater and Soil Investigations at Leaking Underground Fuel Tank Sites (November, 1988)

American Public Health Association

Standard Methods for the Examination of Water and Wastewaters, 16th Edition

Analytical Chemistry (journal)

Principles of Environmental Analysis, Volume 55, Pages 2212-2218 (December, 1983)

Napa County

Napa County Underground Storage Tank Program: Guidelines for Site Investigations; February 1989.

Santa Clara Valley Water District

Guidelines for Preparing or Reviewing Sampling Plans for Soil and Groundwater Investigation of Fuel Contamination Sites (January, 1989)

Guidance and Reference Documents Used to Collect Groundwater Samples (cont.)

Santa Clara Valley Water District	Investigation and Remediation at Fuel Leak sites: Guidelines for Investigation and Technical Report Preparation (March 1989)
Santa Clara Valley Water District American Petroleum Institute	Revised Well Standards for Santa Clara County (July 18, 1989) Groundwater Monitoring & Sample Bias; API Publication 4367, Environmental Affairs Department, June 1983
American Petroleum Institute	A Guide to the Assessment and Remediation of Underground Petroleum Releases; API Publication 1628, February 1989
American Petroleum Institute	Literature Summary: Hydrocarbon Solubilities and Attenuations Mechanisms, API Publication 4414, August 1985
Site Specific (as needed)	General and specific regulatory documents as required.

Because ground-water samples collected by G-R are analyzed to the parts per billion (ppb) range for many compounds, extreme care is exercised to prevent contamination of samples. When volatile or semi-volatile organic compounds are included for analysis, G-R sampling crew members will adhere to the following precautions in the field:

1. A clean pair of new, disposable gloves are worn for each well being sampled.
2. When possible, samples are collected from known or suspected wells that are least contaminated (i.e. background) followed by wells in increasing order of contamination.
3. Ambient conditions are continually monitored to maintain sample integrity.

When known or potential organic compounds are being sampled for, the following additional precautions are taken:

1. All sample bottles and equipment are kept away from fuels and solvents. When possible, gasoline (used in generators) is stored away from bailers, sample bottles, purging pumps, etc.
2. Bailers are made of Teflon or Stainless Steel. Other materials such as plastic may contaminate samples with phthalate esters which interfere with many Gas Chromatography (GC) analyses.
3. Volatile organic ground-water samples are collected so that air passage through the sample does not occur or is minimal (to prevent volatiles from being stripped from the samples): sample bottles are filled by slowly running the sample down the side of the bottle until there is a positive convex meniscus over the neck of the bottle; the Teflon side of the septum (in cap) is positioned against the meniscus, and the cap screwed on tightly; the sample is inverted and the bottle lightly tapped. The absence of an air bubble indicates a successful seal; if a bubble is evident, the cap is removed, more sample is added, and the bottle is resealed.
4. Extra Teflon seals are brought into the field in case seals are difficult to handle and/or are dropped. Dropped seals are considered contaminated and are not used. When replacing seals or if seals become flipped, care is taken to assure that the Teflon seal faces down.

Sample analysis methods, containers, preservatives and holding times are shown on Table 1.



Laboratory and field handling procedures of samples are monitored by including QC samples for analysis with every submitted sample lot from a project site. QC samples may include any combination of the following:

- A. Trip Blank: Used for purgeable organic compounds only; QC samples are collected in 40 milliliter (ml) sample vials filled in the analytical laboratory with organic-free water. Trip blanks are sent to the project site, and travel with project site samples. Trip blanks are not opened, and are returned from a project site with the project site samples for analysis.
- B. Field Blank: Prepared in the field using organic-free water. These QC samples accompany project site samples to the laboratory and are analyzed for specific chemical parameters unique to the project site where they were prepared.
- C. Duplicates: Duplicated samples are collected "second samples" from a selected well and project site. They are collected as either split samples or second-run samples collected from the same well.
- D. Equipment Blank: Periodic QC sample collected from field equipment rinsate to verify decontamination procedures.

The number and types of QC samples are determined as follows:

- A. Up to 2 wells - Trip Blank Only
- B. 2 to 5 Wells - 1 Field Blank and 1 Trip Blank
- C. 5 to 10 Wells - 1 Field blank, 1 Trip Blank, and 1 Duplicate
- D. More than 10 Wells - 1 Field Blank, 1 Trip Blank, and 1 Duplicate per each 12 wells
- E. If sampling extends beyond one day, quality control samples will be collected for each day.

Additional QC is performed through ongoing and random reviews of duplicate samples to evaluate the precision of the field sampling procedures and analytical laboratory. Precision of QC data is accomplished by calculating the Relative Percent Difference (RPD). The RPD is evaluated to assess whether values are within an acceptable range (typically  $\pm 20\%$  of duplicate sample).

## SAMPLE COLLECTION

This section describes the routine procedures followed by G-R while collecting ground-water samples for chemical analysis. These procedures include decontamination, water-level measurements, well purging, physical parameter measurements, sample collection, sample preservation, sample handling, and sample documentation. Critical sampling objectives for G-R are to:

1. Collect ground-water samples that are representative of the sampled matrix and,
2. Maintain sample integrity from the time of sample collection to receipt by the analytical laboratory.

Sample analyses methods, containers, preservation, and holding times are presented in Table 1.

### Decontamination Procedures

All physical parameter measuring and sampling equipment are decontaminated prior to sample collection using Alconox or equivalent detergent followed by steam cleaning with deionized water. Any sampling equipment surfaces or parts that might absorb specific contaminants, such as plastic pump valves, impellers, etc., are cleaned in the same manner.

Sample bottles, bottle caps, and septa used for sampling volatile organics are thoroughly cleaned and prepared in the laboratory. Sample bottles, bottle caps, and septa are protected from all potential chemical contact before actual usage at a sample location.

During field sampling, equipment placed in a well are decontaminated before purging or sampling the next well. The equipment are decontaminated by cleaning with Alconox or equivalent detergent followed by steam cleaning with deionized water.

### Water-Level Measurements

Prior to purging and sampling a well, the static-water levels are measured in all wells at a project site using an electric sounder and/or calibrated portable oil-water interface probe (Figure 4). Both static water-level and separate-phase product thickness are measured to the nearest  $\pm 0.01$  foot. The presence of separate-phase product is confirmed using a clean, acrylic or polyvinylchloride (PVC) bailer, measured to the nearest  $\pm 0.01$  foot with a decimal scale tape.



### Water-Level Measurements (continued)

The monofilament line used to lower the bailer is replaced between wells with new line to preclude the possibility of cross-contamination. Field observations (e.g. well integrity, product color, turbidity, water color, odors, etc.) are noted on the G-R Well Sampling Field Data Sheet shown in Figure 4. Before and after each use, the electric sounder, interface probe and bailer are decontaminated by washing with Alconox or equivalent detergent followed by rinsing with deionized water to prevent cross-contamination.

As mentioned previously, water-levels are measured in wells with known or suspected lowest dissolved chemical concentrations to the highest dissolved concentrations.

### Well Purging

Before sampling occurs, well casing storage water and interstitial water in the artificial sand pack will be purged using (1) a positive displacement bladder pump constructed of inert, non-wetting, Teflon and stainless steel, (2) a pneumatic-airlift pumping system, (3) a centrifugal pumping system, or (4) a Teflon or Stainless steel bailer (Figure 5). Methods of purging will be assessed based on well size, location, accessibility, and known chemical conditions. Individual well purge volumes are calculated from borehole volumes which take into account the sand packed interval in the well annular space. As a general rule, a minimum of 3 and a maximum of 10 borehole volumes will be purged. Wells which dewater or demonstrate slow recharge periods (i.e. low-yield wells) during purging activities may be sampled after fewer purging cycles. If a low-yield (low recovery) well is to be sampled, sampling will not take place until at least 80 percent of the previously measured water column has been replaced by recharge, or as per local requirements. Physical parameter measurements (temperature, pH, and specific conductance) are closely monitored throughout the well purging process and are used by the G-R sampling crew as indicators for assessing sufficient purging. Purging is continued until all three physical parameters have stabilized. Specific conductance (conductivity) meters are read to the nearest  $\pm 10$  umhos/cm, and are calibrated daily. pH meters are read to the nearest  $\pm 0.1$  pH units and are calibrated daily. Temperature is read to the nearest 0.1 degree F. Calibration of physical parameter meters will follow manufacturers specifications. Monitoring wells will be purged according to the protocol presented in Figure 5. Collected field data during purging activities will be entered on the G-R Well Sampling Field Data Sheet shown in Figure 4. Copies of the G-R Field Data Sheets will be reviewed by the G-R Sampling Manager for accuracy and completeness.



**DOCUMENTATION**

**Sample Container Labels**

Each sample container will be labeled by an adhesive label, noted in permanent ink immediately after the sample is collected. Label information will include:

- Sample point designation (i.e. well number or code)
- Sampler's identification
- Project number
- Date and time of collection
- Type of preservation used

**Well Sampling Data Forms**

In the field, the G-R sampling crew will record the following information on the Well Sampling Data Sheet for each sample collected:

- Project number
- Client
- Location
- Source (i.e. well number)
- Time and date
- Well accessibility and integrity
- Pertinent well data (e.g. depth, product thickness, static water-level, pH, specific conductance, temperature)
- Calculated and actual purge volumes

Chain-of-Custody

A Chain-of-Custody record (Figure 6) shall be completed and accompany every sample and every shipment of samples to the analytical laboratory in order to establish the documentation necessary to trace sample possession from time of collections. The record will contain the following information:

- Sample or station number or sample identification (ID)
- Signature of collector, sampler, or recorder
- Date and time of collection
- Place of collection
- Sample type
- Signatures of persons involved in chain of possession
- Inclusive dates of possession

Samples shall always be accompanied by a Chain-of-Custody record. When transferring the samples, the individual relinquishing and receiving the samples will sign, date, and note the time on the Chain-of-Custody record. G-R will be responsible for notifying the laboratory coordinator when and how many samples will be sent to the laboratory for analysis, and what types of analyses shall be performed.

TABLE 1

## SAMPLE ANALYSIS METHODS, CONTAINERS, PRESERVATIONS, AND HOLDING TIMES

Parameter	Analytical Method	Reporting Units	Container	Preservation	Maximum Holding Time
Total Petroleum Hydrocarbons (Gasoline)	EPA 8015 (modified)	mg/l ug/l	40 ml. vial glass, Teflon	cool, 4 C HCl to pH<2	14 days (maximum)
Benzene	EPA 8020	mg/l	50 ml. vial	cool, 4 C	7 days (w/o preservative)
Toluene		ug/l	glass, Teflon lined septum	HCl to pH<2	14 days (w preservative)
Ethylbenzene					
Xylenes (BTEX)					
Oil & Grease	SM 503E	mg/l ug/l	1 l glass, Teflon lined septum	H2SO4 or HCl to pH<2	28 days (maximum)
Total Petroleum Hydrocarbons (Diesel)	EPA 8015 (modified)	mg/l ug/l	40 ml. vial glass, Teflon lined septum	cool, 4 C	14 days (maximum)
Halogenated Volatile Organics (chlorinated solvents)	8010	mg/l ug/l	40 ml. vial glass, Teflon lined septum	cool, 4 C	14 days (maximum)
Non chlorinated solvents	8020	mg/l ug/l	40 ml. vial glass, Teflon lined septum	cool, 4 C HCl to pH<2	14 days (maximum)
Volatile Organics	8240	mg/l ug/l	40 ml. vial glass, Teflon lined septum	cool, 4 C HCl to pH<2	14 days (maximum)
Semi-Volatile Organics	8270	mg/l ug/l	1 l amber glass, Teflon lined septum	cool, 4 C	7 days extract 40 days (maximum to analyze)
Specific Conductance (Field test)		umhos/cm			
pH (Field test)		pH units			
Temperature (Field test)		Deg F			

WELL DEVELOPMENT FORM

FIGURE 3

Page \_\_\_\_\_ of \_\_\_\_\_

(to be filled out in office)

Client \_\_\_\_\_ SS# \_\_\_\_\_ Job# \_\_\_\_\_

Name \_\_\_\_\_ Location \_\_\_\_\_

Well# \_\_\_\_\_ Screened Interval \_\_\_\_\_ Depth \_\_\_\_\_

Aquifer Material \_\_\_\_\_ Installation Date \_\_\_\_\_

Drilling Method \_\_\_\_\_ Borehole Diameter \_\_\_\_\_

Comments regarding well installation: \_\_\_\_\_

(to be filled out in the field) Name \_\_\_\_\_

Date \_\_\_\_\_ Development Method \_\_\_\_\_

Total Depth \_\_\_\_\_ - Depth to liquid \_\_\_\_\_ = Water Column \_\_\_\_\_

Product thickness \_\_\_\_\_

\_\_\_\_\_ x \_\_\_\_\_ x \_\_\_\_\_ x 0.0408 = \_\_\_\_\_ gals  
Water Column                  Diameter (in.)                  #Vol

Purge Start \_\_\_\_\_ Stop \_\_\_\_\_ Rate \_\_\_\_\_ gpm

Gallons	Time	Clarity	Temp.	pH	Conductivity
0	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____

Total gallons removed \_\_\_\_\_ Development stop time \_\_\_\_\_

Depth to liquid \_\_\_\_\_ at \_\_\_\_\_ (time)

Odor of water \_\_\_\_\_ Water discharged to \_\_\_\_\_

Comments \_\_\_\_\_

# GETTLER-RYAN INC.

General and Environmental Contractors

## WELL SAMPLING FIELD DATA SHEET

FIGURE 4

COMPANY \_\_\_\_\_ JOB # \_\_\_\_\_

LOCATION \_\_\_\_\_ DATE \_\_\_\_\_

CITY \_\_\_\_\_ TIME \_\_\_\_\_

Well ID. \_\_\_\_\_ Well Condition \_\_\_\_\_

Well Diameter \_\_\_\_\_ in. Hydrocarbon Thickness \_\_\_\_\_ ft.

Total Depth \_\_\_\_\_ ft.

Volume Factor (VF)	2" = 0.17	6" = 1.50	12" = 5.80
	3" = 0.38	8" = 2.80	
	4" = 0.66	10" = 4.10	

Depth to Liquid- \_\_\_\_\_ ft.

(# of casing volumes) \_\_\_\_\_ x \_\_\_\_\_ x(VF) \_\_\_\_\_ = (Estimated Purge Volume) \_\_\_\_\_ gal.

Purging Equipment \_\_\_\_\_

Sampling Equipment \_\_\_\_\_

Starting Time \_\_\_\_\_ Purging Flow Rate \_\_\_\_\_ gpm.

(Estimated Purge Volume) \_\_\_\_\_ gal. / (Purging Flow Rate) \_\_\_\_\_ gpm. = (Anticipated Purging Time) \_\_\_\_\_ min.

Time	pH	Conductivity	Temperature	Volume
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

Did well dewater? \_\_\_\_\_ If yes, time \_\_\_\_\_ Volume \_\_\_\_\_

Sampling Time \_\_\_\_\_ Weather Conditions \_\_\_\_\_

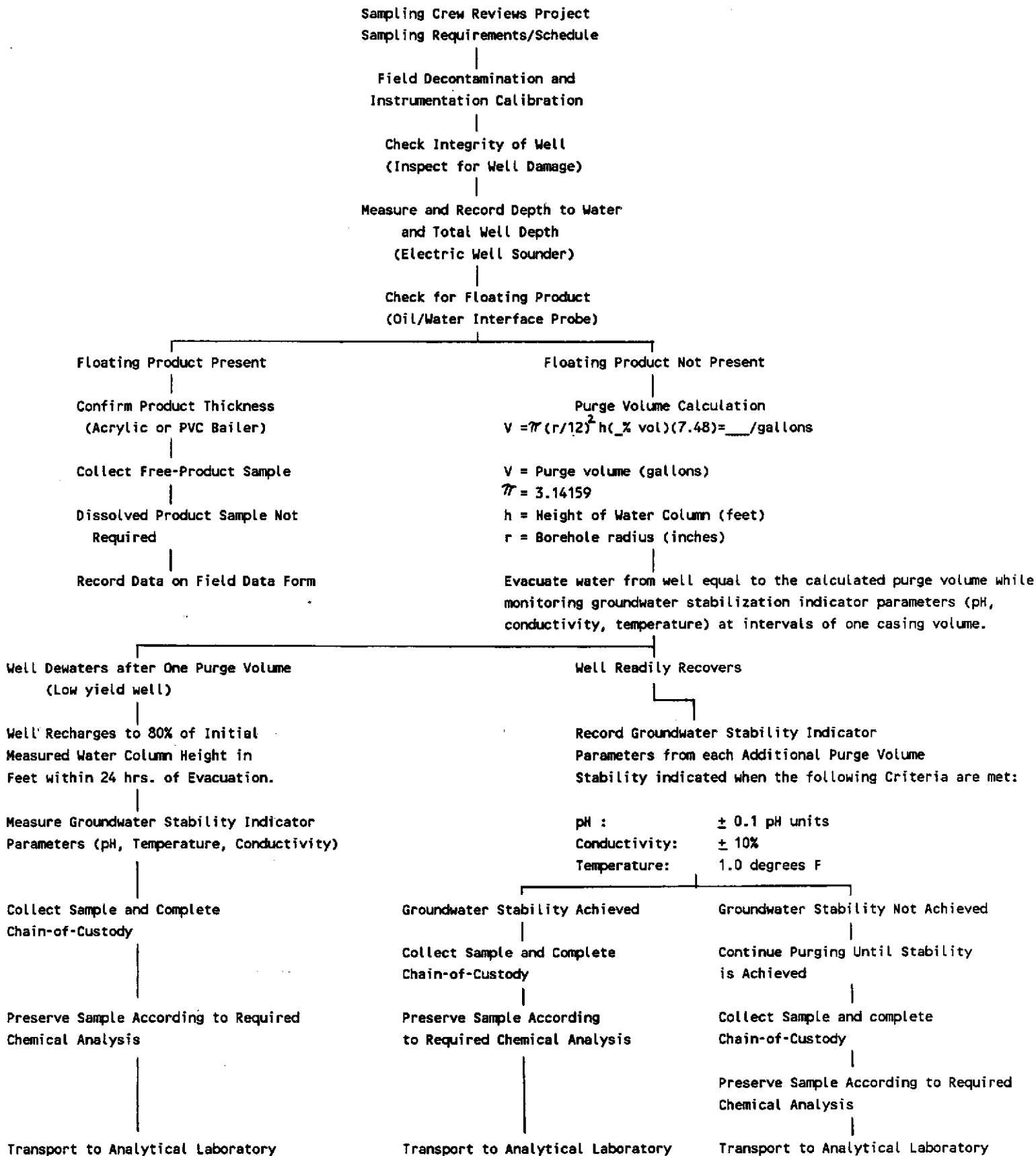
Analysis \_\_\_\_\_ Bottles Used \_\_\_\_\_

Chain of Custody Number \_\_\_\_\_

COMMENTS \_\_\_\_\_

FOREMAN \_\_\_\_\_ ASSISTANT \_\_\_\_\_

Monitoring Well Sampling Protocol Schematic





**GeoStrategies Inc.**

**APPENDIX B  
GETTLER-RYAN INC.  
GROUNDWATER SAMPLING REPORT**





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 137. 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

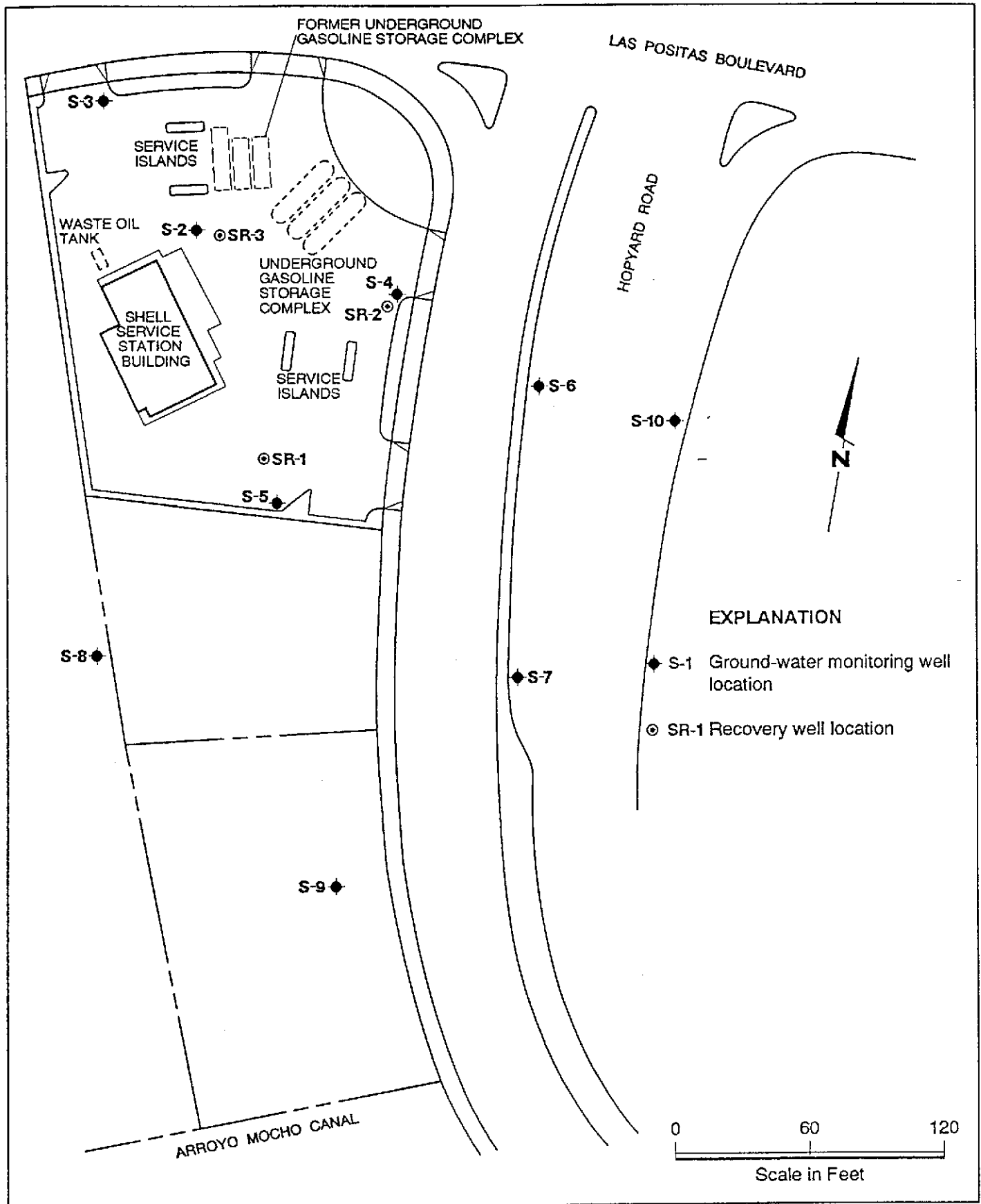
<u>WELL I.D.</u>	S-2 SF-2	S-3	S-4	S-5	S-6	S-7
Casing Diameter (inches)	3	3	3	3	3	3
Total Well Depth (feet)	34.0	34.7	35.3	34.2	34.0	34.6
Depth to Water (feet)	14.52	12.43	14.27	16.36	14.16	16.77
Free Product (feet)	none	none	none	none	none	none
Reason Not Sampled	----	----	----	----	----	----
Calculated 4 Case Vol.(gal.)	29.6	33.8	32.0	27.1	30.2	27.2
Did Well Dewater?	no	no	yes	no	no	no
Volume Evacuated (gal.)	32.4	42.0	11.0	34.0	40.0	36.0
Purging Device	Bladder	Bladder	Suction	Bladder	Suction	Suction
Sampling Device	Bladder	Bladder	Bailer	Bladder	Bailer	Bailer
Time	11:51	13:00	11:29	10:39	10:27	10:29
Temperature (F)*	69.0	68.7	65.2	65.2	67.7	67.2
pH*	7.01	7.07	6.12	6.51	6.95	6.83
Conductivity (umhos/cm)*	5110	4620	4000	2300	2390	4800

\* Indicates Stabilized Value

TABLE OF MONITORING DATA  
GROUNDWATER WELL SAMPLING REPORT

<u>WELL I.D.</u>	S-8	S-9	S-10	SR-1 SRD-1	SR-2	SR-3
Casing Diameter (inches)	3	3	3	4	4	4
Total Well Depth (feet)	33.6	34.6	34.3	35.1	35.2	35.0
Depth to Water (feet)	15.08	17.93	13.61	16.30	14.31	14.49
Free Product (feet)	none	none	none	none	none	none
Reason Not Sampled	----	----	----	----	----	----
Calculated 4 Case Vol.(gal.)	28.2	25.4	31.6	49.6	55.1	54.2
Did Well Dewater?	no	no	no	yes	yes	no
Volume Evacuated (gal.)	35.0	31.7	39.5	36.0	41.0	67.0
Purging Device	Bladder	Bladder	Bladder	Suction	Suction	Suction
Sampling Device	Bladder	Bladder	Bladder	Bailer	Bailer	Bailer
Time	09:30	08:37	11:45	13:05	12:07	11:55
Temperature (F)*	63.8	64.1	66.0	65.8	65.1	68.6
pH*	6.41	6.75	7.01	6.26	6.26	6.78
Conductivity (umhos/cm)*	4400	3800	2470	4400	4000	4950

\* Indicates Stabilized Value



**EXPLANATION**

- ◆ S-1 Ground-water monitoring well location
- ⊙ SR-1 Recovery well location



GeoStrategies Inc.

Site Plan  
 Shell Service Station  
 3790 Hopyard Road  
 Pleasanton, California

PLATE



INTERNATIONAL  
TECHNOLOGY  
CORPORATION

# ANALYTICAL SERVICES

RECEIVED

JUN 30 1990

GETTLER-RYAN  
GENERAL CHEMISTRY

## CERTIFICATE OF ANALYSIS

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

Date: 06/30/90

Work Order: TO-06-116

P.O. Number: MOH 880-021

This is the Certificate of Analysis for the following samples:

Client Work ID: GR3632, 3790 Hopyard, Plsntn

Date Received: 06/14/90

Number of Samples: 7

Sample Type: aqueous

### TABLE OF CONTENTS FOR ANALYTICAL RESULTS

<u>PAGES</u>	<u>LABORATORY #</u>	<u>SAMPLE IDENTIFICATION</u>
2	TO-06-116-01	S-2
3	TO-06-116-02	S-3
4	TO-06-116-03	S-4
5	TO-06-116-04	S-5
6	TO-06-116-05	S-6
7	TO-06-116-06	S-7
8	TO-06-116-07	S-8

Reviewed and Approved:

  
Suzanne Veaudry  
Project Manager

American Council of Independent Laboratories  
International Association of Environmental Testing Laboratories  
American Association for Laboratory Accreditation

Company: Shell Oil Company

Date: 06/30/90

Client Work ID: GR3632, 3790 Hopyard, Plsntn

Work Order: T0-06-116

## TEST NAME: Petroleum Hydrocarbons

SAMPLE ID: S-2

SAMPLE DATE: 06/14/90

LAB SAMPLE ID: T006116-01

SAMPLE MATRIX: aqueous

RECEIPT CONDITION: Cool pH &lt; 2

## RESULTS in Milligrams per Liter:

	METHOD	EXTRACTION DATE	ANALYSIS DATE
BTEX	8020		06/21/90
Low Boiling Hydrocarbons	Mod.8015		06/21/90

PARAMETER	DETECTION LIMIT	DETECTED
Low Boiling Hydrocarbons calculated as Gasoline	0.05	0.11
BTEX		
Benzene	0.0005	0.039
Toluene	0.0005	0.0005
Ethylbenzene	0.0005	0.011
Xylenes (total)	0.001	0.002

Company: Shell Oil Company

Date: 06/30/90

Client Work ID: GR3632, 3790 Hopyard, Plsntn

Work Order: T0-06-116

## TEST NAME: Petroleum Hydrocarbons

SAMPLE ID: S-3

SAMPLE DATE: 06/14/90

LAB SAMPLE ID: T006116-02

SAMPLE MATRIX: aqueous

RECEIPT CONDITION: Cool pH &lt; 2

## RESULTS in Milligrams per Liter:

	METHOD	EXTRACTION DATE	ANALYSIS DATE
BTEX	8020		06/21/90
Low Boiling Hydrocarbons	Mod.8015		06/21/90

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)	0.001	None



Company: Shell Oil Company

Date: 06/30/90

Client Work ID: GR3632, 3790 Hopyard, Plsntn

Work Order: T0-06-116

## TEST NAME: Petroleum Hydrocarbons

SAMPLE ID: S-4

SAMPLE DATE: 06/14/90

LAB SAMPLE ID: T006116-03

SAMPLE MATRIX: aqueous

RECEIPT CONDITION: Cool pH &lt; 2

## RESULTS in Milligrams per Liter:

	METHOD	EXTRACTION DATE	ANALYSIS DATE
BTEX	8020		06/20/90
Low Boiling Hydrocarbons	Mod.8015		06/20/90

PARAMETER	DETECTION LIMIT	DETECTED
Low Boiling Hydrocarbons calculated as Gasoline	0.05	0.43
BTEX		
Benzene	0.0005	0.074
Toluene	0.0005	None
Ethylbenzene	0.0005	0.071
Xylenes (total)	0.001	0.046

Company: Shell Oil Company

Date: 06/30/90

Client Work ID: GR3632, 3790 Hopyard, Plsntn

Work Order: T0-06-116

## TEST NAME: Petroleum Hydrocarbons

SAMPLE ID: S-5

SAMPLE DATE: 06/14/90

LAB SAMPLE ID: T006116-04

SAMPLE MATRIX: aqueous

RECEIPT CONDITION: Cool pH &lt; 2

## RESULTS in Milligrams per Liter:

	<u>METHOD</u>	<u>EXTRACTION DATE</u>	<u>ANALYSIS DATE</u>
BTEX	8020		06/20/90
Low Boiling Hydrocarbons	Mod.8015		06/20/90

<u>PARAMETER</u>	<u>DETECTION LIMIT</u>	<u>DETECTED</u>
Low Boiling Hydrocarbons calculated as Gasoline	0.05	0.6
BTEX		
Benzene	0.0005	0.094
Toluene	0.0005	0.036
Ethylbenzene	0.0005	0.04
Xylenes (total)	0.001	0.062

Company: Shell Oil Company

Date: 06/30/90

Client Work ID: GR3632, 3790 Hopyard, Plsntn

Work Order: T0-06-116

## TEST NAME: Petroleum Hydrocarbons

SAMPLE ID: S-6

SAMPLE DATE: 06/14/90

LAB SAMPLE ID: T006116-05

SAMPLE MATRIX: aqueous

RECEIPT CONDITION: Cool pH &lt; 2

## RESULTS in Milligrams per Liter:

	METHOD	EXTRACTION DATE	ANALYSIS DATE
BTEX	8020		06/20/90
Low Boiling Hydrocarbons	Mod.8015		06/20/90

PARAMETER	DETECTION LIMIT	DETECTED
Low Boiling Hydrocarbons calculated as Gasoline	0.05	0.37
BTEX		
Benzene	0.0005	0.0037
Toluene	0.0005	0.0009
Ethylbenzene	0.0005	0.0048
Xylenes (total)	0.001	0.003

Company: Shell Oil Company

Date: 06/30/90

Client Work ID: GR3632, 3790 Hopyard, Plsntn

Work Order: T0-06-116

## TEST NAME: Petroleum Hydrocarbons

SAMPLE ID: S-7

SAMPLE DATE: 06/14/90

LAB SAMPLE ID: T006116-06

SAMPLE MATRIX: aqueous

RECEIPT CONDITION: Cool pH &lt; 2

## RESULTS in Milligrams per Liter:

	METHOD	EXTRACTION DATE	ANALYSIS DATE
BTEX	8020		06/20/90
Low Boiling Hydrocarbons	Mod.8015		06/20/90

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)	0.001	None

Company: Shell Oil Company

Date: 06/30/90

Client Work ID: GR3632, 3790 Hopyard, Plsntn

Work Order: T0-06-116

## TEST NAME: Petroleum Hydrocarbons

SAMPLE ID: S-8

SAMPLE DATE: 06/14/90

LAB SAMPLE ID: T006116-07

SAMPLE MATRIX: aqueous

RECEIPT CONDITION: Cool pH &lt; 2

## RESULTS in Milligrams per Liter:

	METHOD	EXTRACTION DATE	ANALYSIS DATE
BTEX	8020		06/20/90
Low Boiling Hydrocarbons	Mod.8015		06/20/90

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)	0.001	None

Company: Shell Oil Company

Date: 06/30/90

Client Work ID: GR3632, 3790 Hopyard, Plsntn

Work Order: T0-06-116

---

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

The method of analysis for low boiling hydrocarbons is taken from EPA Methods 8015, 8020 and 5030. The sample is examined using the purge and trap technique. Final detection is by gas chromatography 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.

**CERTIFICATE OF ANALYSIS**

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

Date: 06/30/90

Work Order: TO-06-117

P.O. Number: MOH 880-021

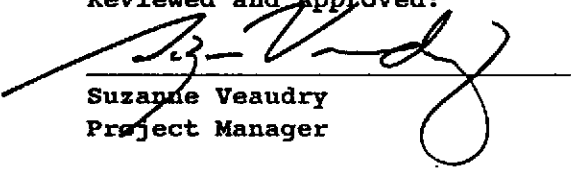
This is the Certificate of Analysis for the following samples:

Client Work ID: GR3632, 3790 Hopyard, Plsntn  
Date Received: 06/14/90  
Number of Samples: 8  
Sample Type: aqueous

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Reviewed and Approved:

  
Suzanne Veaudry  
Project Manager

American Council of Independent Laboratories  
International Association of Environmental Testing Laboratories  
American Association for Laboratory Accreditation

Company: Shell Oil Company  
Date: 06/30/90  
Client Work ID: GR3632, 3790 Hopyard, Plsntn

Work Order: T0-06-117

TEST NAME: Petroleum Hydrocarbons

SAMPLE ID: S-9  
SAMPLE DATE: 06/14/90  
LAB SAMPLE ID: T006117-01  
SAMPLE MATRIX: aqueous  
RECEIPT CONDITION: Cool pH < 2

RESULTS in Milligrams per Liter:

	METHOD	EXTRACTION DATE	ANALYSIS DATE
BTEX	8020		06/20/90
Low Boiling Hydrocarbons	Mod.8015		06/20/90

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)	0.001	None



Company: Shell Oil Company

Date: 06/30/90

Client Work ID: GR3632, 3790 Hopyard, Plsntn

Work Order: T0-06-117

## TEST NAME: Petroleum Hydrocarbons

SAMPLE ID: S-10

SAMPLE DATE: 06/14/90

LAB SAMPLE ID: T006117-02

SAMPLE MATRIX: aqueous

RECEIPT CONDITION: Cool pH &lt; 2

## RESULTS in Milligrams per Liter:

	METHOD	EXTRACTION DATE	ANALYSIS DATE
BTEX	8020		06/20/90
Low Boiling Hydrocarbons	Mod.8015		06/20/90

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)	0.001	None

Company: Shell Oil Company

Date: 06/30/90

Client Work ID: GR3632, 3790 Hopyard, Plsntn

Work Order: TO-06-117

## TEST NAME: Petroleum Hydrocarbons

SAMPLE ID: SR-1

SAMPLE DATE: 06/14/90

LAB SAMPLE ID: T006117-03

SAMPLE MATRIX: aqueous

RECEIPT CONDITION: Cool pH &lt; 2

## RESULTS in Milligrams per Liter:

	METHOD	EXTRACTION DATE	ANALYSIS DATE
BTEX	8020		06/21/90
Low Boiling Hydrocarbons	Mod.8015		06/21/90

PARAMETER	DETECTION LIMIT	DETECTED
Low Boiling Hydrocarbons calculated as Gasoline	0.05	0.06
BTEX		
Benzene	0.0005	0.017
Toluene	0.0005	None
Ethylbenzene	0.0005	0.0019
Xylenes (total)	0.001	0.001

Company: Shell Oil Company

Date: 06/30/90

Client Work ID: GR3632, 3790 Hopyard, Plsntn

Work Order: T0-06-117

## TEST NAME: Petroleum Hydrocarbons

SAMPLE ID: SR-2

SAMPLE DATE: 06/14/90

LAB SAMPLE ID: T006117-04

SAMPLE MATRIX: aqueous

RECEIPT CONDITION: Cool pH &lt; 2

## RESULTS in Milligrams per Liter:

	METHOD	EXTRACTION DATE	ANALYSIS DATE
BTEX	8020		06/21/90
Low Boiling Hydrocarbons	Mod.8015		06/21/90

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	0.0026
Xylenes (total)	0.001	None

Company: Shell Oil Company

Date: 06/30/90

Client Work ID: GR3632, 3790 Hopyard, Plsntn

Work Order: T0-06-117

## TEST NAME: Petroleum Hydrocarbons

SAMPLE ID: SR-3

SAMPLE DATE: 06/14/90

LAB SAMPLE ID: T006117-05

SAMPLE MATRIX: aqueous

RECEIPT CONDITION: Cool pH &lt; 2

## RESULTS in Milligrams per Liter:

	METHOD	EXTRACTION DATE	ANALYSIS DATE
BTEX	8020		06/21/90
Low Boiling Hydrocarbons	Mod.8015		06/21/90

PARAMETER	DETECTION LIMIT	DETECTED
Low Boiling Hydrocarbons calculated as Gasoline	0.05	0.47
BTEX		
Benzene	0.0005	0.059
Toluene	0.0005	0.0023
Ethylbenzene	0.0005	0.035
Xylenes (total)	0.001	0.05

Company: Shell Oil Company

Date: 06/30/90

Client Work ID: GR3632, 3790 Hopyard, Plsntn

Work Order: T0-06-117

## TEST NAME: Petroleum Hydrocarbons

SAMPLE ID: SF-2

SAMPLE DATE: 06/14/90

LAB SAMPLE ID: T006117-06

SAMPLE MATRIX: aqueous

RECEIPT CONDITION: Cool pH &lt; 2

## RESULTS in Milligrams per Liter:

	<u>METHOD</u>	<u>EXTRACTION DATE</u>	<u>ANALYSIS DATE</u>
BTEX	8020		06/20/90
Low Boiling Hydrocarbons	Mod.8015		06/20/90

<u>PARAMETER</u>	<u>DETECTION LIMIT</u>	<u>DETECTED</u>
Low Boiling Hydrocarbons calculated as Gasoline	0.05	None
BTEX		
Benzene	0.0005	None
Toluene	0.0005	None
Ethylbenzene	0.0005	None
Xylenes (total)	0.001	None

Company: Shell Oil Company

Date: 06/30/90

Client Work ID: GR3632, 3790 Hopyard, Plsntn

Work Order: T0-06-117

TEST NAME: Petroleum Hydrocarbons

SAMPLE ID: SRD-1

SAMPLE DATE: 06/14/90

LAB SAMPLE ID: T006117-07

SAMPLE MATRIX: aqueous

RECEIPT CONDITION: Cool pH &lt; 2

RESULTS in Milligrams per Liter:

	METHOD	EXTRACTION DATE	ANALYSIS DATE
BTEX	8020		06/21/90
Low Boiling Hydrocarbons	Mod.8015		06/21/90

PARAMETER	DETECTION LIMIT	DETECTED
Low Boiling Hydrocarbons calculated as Gasoline	0.05	None
BTEX		
Benzene	0.0005	0.013
Toluene	0.0005	None
Ethylbenzene	0.0005	0.0014
Xylenes (total)	0.001	None

IT ANALYTICAL SERVICES  
SAN JOSE, CA

Company: Shell Oil Company

Date: 06/30/90

Client Work ID: GR3632, 3790 Hopyard, Plsntn

Work Order: T0-06-117

TEST NAME: Petroleum Hydrocarbons

SAMPLE ID: Trip Blank

SAMPLE DATE: not spec

LAB SAMPLE ID: T006117-08

SAMPLE MATRIX: aqueous

RECEIPT CONDITION: Cool pH &lt; 2

RESULTS in Milligrams per Liter:

	METHOD	EXTRACTION DATE	ANALYSIS DATE
BTEX	8020		06/20/90
Low Boiling Hydrocarbons	Mod.8015		06/20/90

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)	0.001	None

Company: Shell Oil Company

Date: 06/30/90

Client Work ID: GR3632, 3790 Hopyard, Plsntn

Work Order: T0-06-117

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

The method of analysis for low boiling hydrocarbons is taken from EPA Methods 8015, 8020 and 5030. The sample is examined using the purge and trap technique. Final detection is by gas chromatography 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.



10-06-10 + 1006-111

Gettler - Ryan Inc. 0237 Chain of Custody

ENVIRONMENTAL DIVISION

COMPANY Shell Oil Co. JOB NO.

JOB LOCATION 3790 Hopyard / Las Positas.

CITY Pleasonton, CA PHONE NO. 783-7500

AUTHORIZED Tom Paulson DATE 6-14-90 P.O. NO. 3632

SAMPLE ID	NO. OF CONTAINERS	SAMPLE MATRIX	DATE/TIME SAMPLED	ANALYSIS REQUIRED	SAMPLE CONDITION LAB ID
S-2	3	liquid	6-14-90/11:51	THC(gas) BTXE	
S-3			/13:00		
S-4			/11:29		
S-5			/10:39		
S-6			/10:27		
S-7			/10:29		
S-8			/9:30		
S-9			/8:37		
S-10			/11:45		
SR-1			/13:05		
SR-2			/12:07		
SR-3			/11:58		
SF-2					
SRD-1					

RELINQUISHED BY: Shelly Rye 6/14/90 10:33

RECEIVED BY:

RELINQUISHED BY:

RECEIVED BY:

RELINQUISHED BY:

RECEIVED BY LAB: Josephine DeCarli 6/14/90 16:40

DESIGNATED LABORATORY: IT (SCV) DHS #: 137

REMARKS: Wic # 204-6138-0501 APE # 086621 Exp. Code 5446

Eng. Diane Lundquist Normal TAT

DATE COMPLETED 6-14-90 FOREMAN Shelly Rye

ORIGINAL