GeoStrategies Inc.

SITE UPDATE

Shell Service Station
350 Grand Avenue
Oakland, California 94610
WIC 204-5510-0204

766702-5

September 10, 1991

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

September 10, 1991

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

Attn: Mr. John Werfal

Re: SITE UPDATE
Shell Service Station
350 Grand Avenue
Oakland, California

Gentlemen:

This Site Update has been prepared by GeoStrategies Inc. (GSI) and presents the results of the 1991 third 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 (SWRCB) guidelines.

SITE BACKGROUND

There are ~~currently three monitoring wells~~ at the site; Wells S-1 through S-3 (Plate 2). These wells were installed in January, 1991 by GSI 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 January 1991. Ground-water samples have been analyzed for Total Petroleum Hydrocarbons calculated as Gasoline (TPH-Gasoline) and as Diesel (TPH-Diesel) 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 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 to Mean Sea Level (MSL) have been plotted on Plate 3 and are summarized in Table 1. The static ground-water level in Well S-3 appears anomalous and was not used for contouring.

Floating Product Measurements

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

Ground-water Analytical Data

Ground-water samples were collected on July 19, 1991. The samples were analyzed for Total Petroleum Hydrocarbons calculated as Gasoline (TPH-Gasoline) and as Diesel (TPH - Diesel) according to EPA Method 8015 (Modified), and for Benzene, Toluene, Ethylbenzene and Xylenes (BTEX) according to EPA Method 8020 by International Technology (IT) Analytical Services, a State of California certified laboratory located in San Jose, California.

TPH-Gasoline was detected in Well S-2 at a concentration of 21. parts per million (ppm). Benzene was detected in Wells S-1 and S-2 at concentrations of 0.0068 and 4.7 ppm, respectively. TPH-Diesel was detected in Well S-2 at a concentration of 30. ppm. These data are summarized in Table 2 and included in Appendix A. A chemical concentration map for TPH-Gasoline, TPH-Diesel and benzene is presented on Plate 4. Historical chemical analytical data are presented in Table 3.

Quality Control

The Quality Control sample for this quarter's sampling was a trip blank. This sample was prepared in the laboratory to evaluate laboratory sample handling procedures. The results of QC sample analyses are presented in Table 2.

If you have any questions, please call.

GeoStrategies Inc. by,

Ellen C. Fostersmith

Ellen C. Fostersmith
Geologist

John F. Vargas
Senior Geologist
R.G. 5046

REGISTERED GEOLOGIST
JOHN F. VARGAS
NO. 5046
STATE OF CALIFORNIA

ECF/JFV/kjj

Plate 1. Vicinity Map
Plate 2. Site Plan
Plate 3. Ground-water Elevation Map
Plate 4. TPH-G/TPH-D/Benzene Concentration Map

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

QC Review: _____

766702-5

TABLE 1

FIELD MONITORING DATA

WELL NO.	MONITORING DATE	CASING DIA. (IN)	TOTAL WELL DEPTH (FT)	WELL ELEV. (FT)	DEPTH TO WATER (FT)	PRODUCT THICKNESS (FT)	STATIC WATER ELEV. (FT)	PURGED WELL VOLUMES	pH	TEMPERATURE (F)	CONDUCTIVITY (uMHOS/cm)
S-1	19-Jul-91	3	17.6	20.84	8.92	----	11.92	2	7.11	69.8	877
S-2	19-Jul-91	3	15.0	21.24	9.55	----	11.69	2	7.10	70.5	819
S-3	19-Jul-91	3	15.1	22.70	12.45	----	10.25	2	7.12	67.8	608

Notes: 1. Static water elevations referenced to Mean Sea Level (MSL).
2. Physical parameter measurements represent stabilized values.

TABLE 2

GROUND-WATER ANALYSIS DATA

WELL NO	SAMPLE DATE	ANALYSIS DATE	TPH-G (PPM)	BENZENE (PPM)	TOLUENE (PPM)	ETHYLBENZENE (PPM)	XYLENES (PPM)	TPH-D (PPM)
S-1	19-Jul-91	25-Jul-91	<0.05	0.0068	<0.0005	<0.0005	<0.0005	<0.05
S-2	19-Jul-91	25-Jul-91	21.	4.7	0.43	1.2	2.4	30.*
S-3	19-Jul-91	25-Jul-91	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	----
TB	----	25-Jul-91	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	<0.05

CURRENT REGIONAL WATER QUALITY CONTROL BOARD MAXIMUM CONTAMINANT LEVELS
Benzene 0.001 ppm Xylenes 1.750 ppm Ethylbenzene 0.680 ppm

CURRENT DHS ACTION LEVELS
Toluene 0.1000 ppm

TPH-G = Total Petroleum Hydrocarbons calculated as Gasoline
TPH-D = Total Petroleum Hydrocarbons calculated as Diesel

PPM = Parts Per Million
TB = Trip Blank

Note: 1. All data shown as <x are reported as ND (none detected).
2. DHS Action Levels and MCLs are subject to change pending State review.
3. Analysis data for TPH-G and BTEX.

* Compounds detected and calculated as diesel appear to be the less volatile constituents of gasoline.

766702-5

TABLE 3

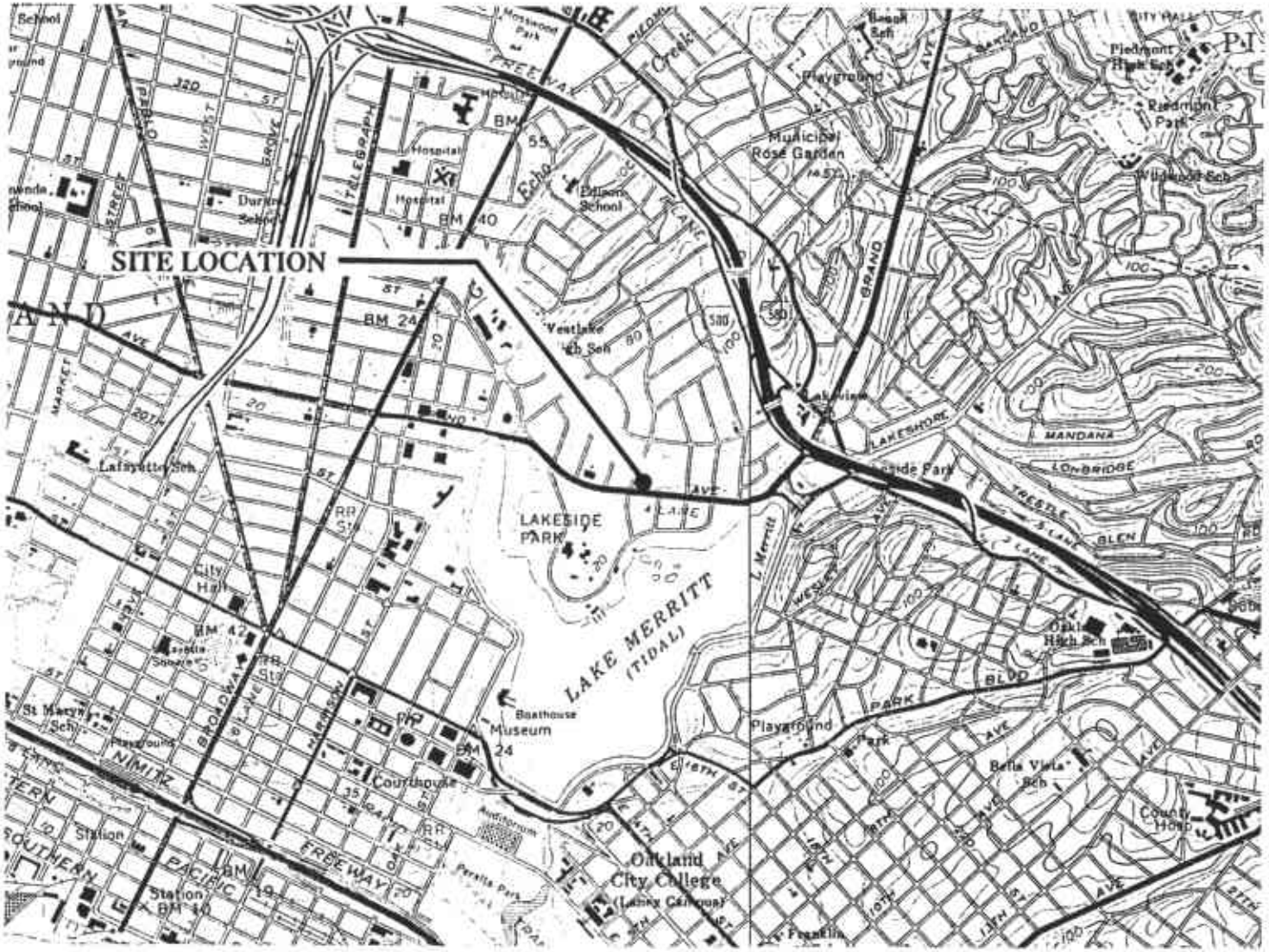
HISTORICAL GROUND WATER QUALITY DATABASE

SAMPLE DATE	SAMPLE POINT	TPH-G (PPM)	BENZENE (PPM)	TOLUENE (PPM)	ETHYLBENZENE (PPM)	XYLENES (PPM)	TPH-D (PPM)
23-Jan-91	S-1	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	<0.05
25-Apr-91	S-1	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	<0.05
19-Jul-91	S-1	<0.05	0.0068	<0.0005	<0.0005	<0.0005	<0.05
23-Jan-91	S-2	2.5	0.55	0.015	0.033	0.042	1.2
25-Apr-91	S-2	32.	2.9	0.48	1.4	2.3	20.*
19-Jul-91	S-2	21.	4.7	0.43	1.2	2.4	30.*
25-Apr-91	S-3	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	N/A
19-Jul-91	S-3	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	N/A

Current Regional Water Quality Control Board Maximum Contaminant Levels
Benzene 0.001 ppm Xylenes 1.750 ppm Ethylbenzene 0.680 ppm

Current DHS Action Levels Toluene 0.1000 ppm

TPH-G = Total Petroleum Hydrocarbons calculated as Gasoline
PPM = Parts Per Million
* Compounds detected and calculated as diesel appear to be the less volatile constituents of gasoline.
NOTE: 1. DHS Action levels and MCL's are subject to change pending State of California review.
2. All data shown as <X are reported as ND (none detected).



Base Map: USGS Topographic Map

GeoStrategies Inc.

VICINITY MAP
Shell Service Station
350 Grand Avenue
Oakland, California

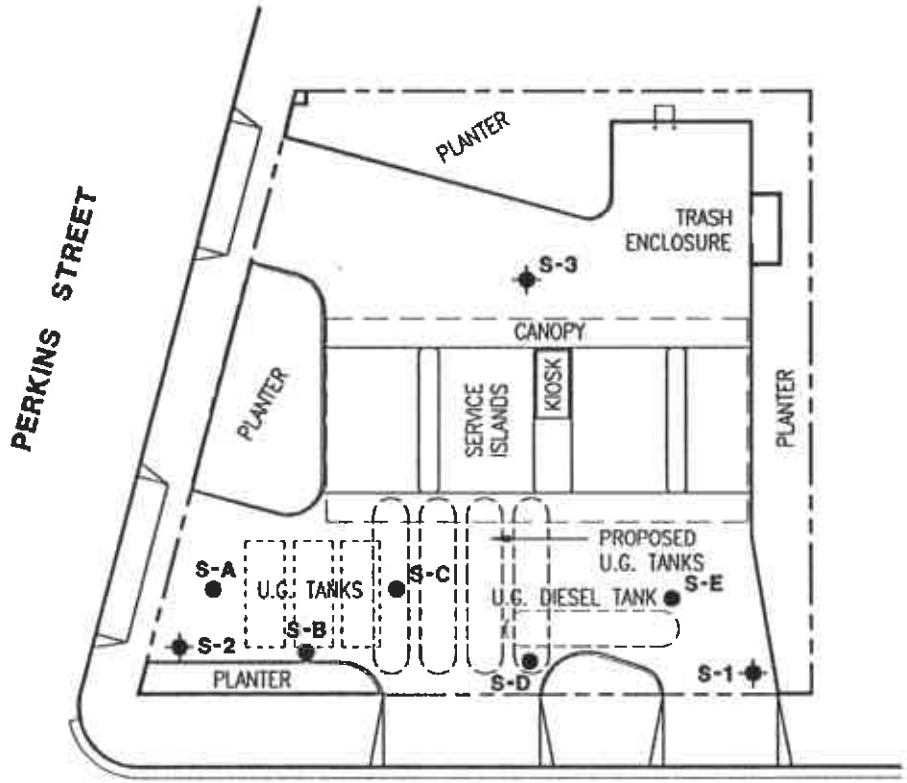
PLATE
1

JOB NUMBER	REVIEWED BY	DATE	REVISED DATE
7667		3/91	

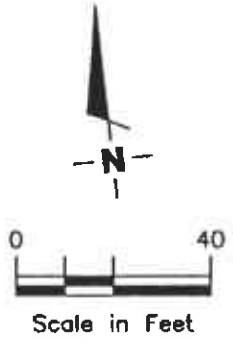
EXPLANATION

Ground-water monitoring well

Soil boring



Base Map: Shell Site Plan dated 12-21-89

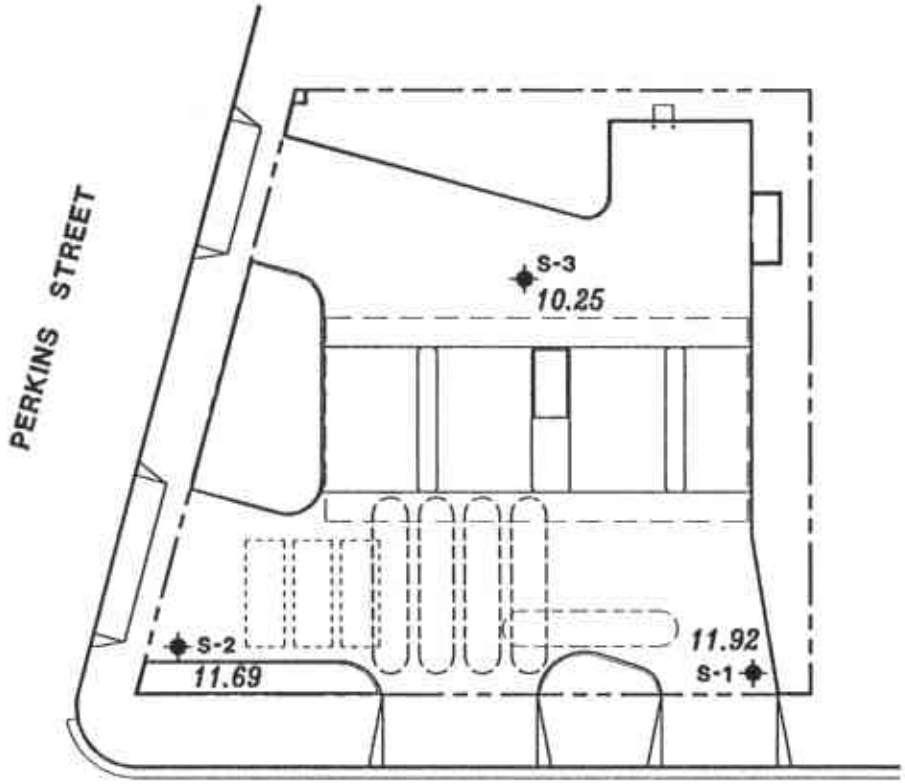


GeoStrategies Inc.

SITE PLAN
Shell Service Station
350 Grand Avenue
Oakland, California

PLATE 2

JOB NUMBER	REVIEWED BY	DATE	REVISED DATE
766702-5	CES	9/91	



EXPLANATION

✦	Ground-water monitoring well
99.99	Ground-water elevation in feet referenced to Mean Sea Level (MSL) measured on July 19, 1991

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

N-NW gradient?

N

0 40

Scale in Feet

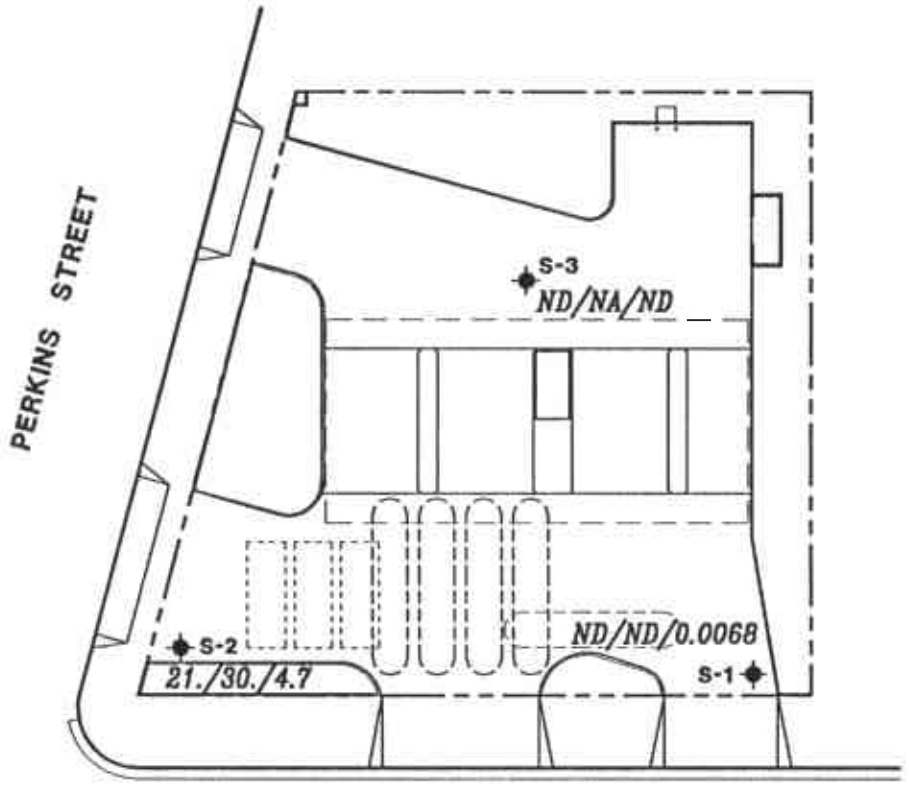
Base Map: Shell Site Plan dated 12-21-89

GeoStrategies Inc.

GROUND-WATER ELEVATION MAP
Shell Service Station
350 Grand Avenue
Oakland, California

PLATE 3

JOB NUMBER	REVIEWED BY	DATE	REVISED DATE
766702-5	ERS	9/91	



EXPLANATION

✦	Ground-water monitoring well
A/B/C	TPH-G/TPH-D(Total Petroleum Hydrocarbons calculated as Gasoline/ Diesel)/Benzene concentrations in ppm sampled July 19, 1991
ND	Not Detected (See laboratory reports for detection limits)
NA	Not Analyzed

N

0 40

Scale in Feet

Base Map: Shell Site Plan dated 12-21-89

GeoStrategies Inc.

TPH-G/TPH-D/BENZENE CONCENTRATION MAP
Shell Service Station
350 Grand Avenue
Oakland, California

PLATE 4

JOB NUMBER	REVIEWED BY	DATE	REVISED DATE
766702-5	EIS	9/91	

APPENDIX A
ANALYTICAL LABORATORY REPORT
AND CHAIN-OF-CUSTODY

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYTICAL SERVICES

CERTIFICATE OF ANALYSIS

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

Date: 08/02/91

Work Order: T1-07-280 P.O. Number: MOH 880-021 Vendor #I0002402

This is the Certificate of Analysis for the following samples:

Client Work ID: GR3667 350 Grand Ave, Oakland
Date Received: 07/22/91
Number of Samples: 4
Sample Type: aqueous

TABLE OF CONTENTS FOR ANALYTICAL RESULTS

Reviewed and Approved:

Suzanne Veaudry
Project Manager

Company: Shell Oil Company
Date: 08/02/91
Client Work ID: GR3667 350 Grand Ave, Oakland

IT ANALYTICAL SERVICES
SAN JOSE, CA

Work Order: T1-07-280

TEST NAME: Petroleum Hydrocarbons

SAMPLE ID: S-1
SAMPLE DATE: 07/19/91
LAB SAMPLE ID: T107280-01
SAMPLE MATRIX: aqueous
RECEIPT CONDITION: cool pH<2

RESULTS in Milligrams per Liter:

	METHOD	EXTRACTION DATE	ANALYSIS DATE
BTEX	8020		07/25/91
Low Boiling Hydrocarbons	Mod.8015		07/25/91
High Boiling Hydrocarbons	Mod.8015	07/25/91	07/26/91

PARAMETER	DETECTION LIMIT	DETECTED
Low Boiling Hydrocarbons calculated as Gasoline	0.05	None
BTEX		
Benzene	0.0005	0.0068
Toluene	0.0005	None
Ethylbenzene	0.0005	None
Xylenes (total)	0.0005	None
High Boiling Hydrocarbons calculated as Diesel	0.05	None

SURROGATES	% REC
1,3-Dichlorobenzene (Gasoline)	114.
1,3-Dichlorobenzene (BTEX)	101.
nC32 (Diesel)	79.

IT ANALYTICAL SERVICES
SAN JOSE, CA

Company: Shell Oil Company
Date: 08/02/91
Client Work ID: GR3667 350 Grand Ave, Oakland

Work Order: T1-07-280

TEST NAME: **Petroleum Hydrocarbons**

SAMPLE ID: **S-2**
SAMPLE DATE: **07/19/91**
LAB SAMPLE ID: **T107280-02**
SAMPLE MATRIX: **aqueous**
RECEIPT CONDITION: **cool pH<2**

RESULTS in Milligrams per Liter:

	METHOD	EXTRACTION DATE	ANALYSIS DATE
BTEX	8020		07/25/91
Low Boiling Hydrocarbons	Mod.8015		07/25/91
High Boiling Hydrocarbons	Mod.8015	07/25/91	07/26/91

PARAMETER	DETECTION LIMIT	DETECTED	
Low Boiling Hydrocarbons calculated as Gasoline	2.5	21.	
BTEX			
Benzene	0.025	4.7	
Toluene	0.025	0.43	
Ethylbenzene	0.025	1.2	
Xylenes (total)	0.025	2.4	
High Boiling Hydrocarbons calculated as Diesel	0.5	30.	#

SURROGATES	% REC
1,3-Dichlorobenzene (Gasoline)	119.
1,3-Dichlorobenzene (BTEX)	101.
nC32 (Diesel)	48.

Comments:
Compounds detected and calculated as diesel appear to be the less volatile constituents of gasoline.

Company: Shell Oil Company
Date: 08/02/91
Client Work ID: GR3667 350 Grand Ave, Oakland

IT ANALYTICAL SERVICES
SAN JOSE, CA

Work Order: T1-07-280

TEST NAME: Petroleum Hydrocarbons

SAMPLE ID: S-3
SAMPLE DATE: 07/19/91
LAB SAMPLE ID: T107280-03
SAMPLE MATRIX: aqueous
RECEIPT CONDITION: cool pH<2

RESULTS in Milligrams per Liter:

	METHOD	EXTRACTION DATE	ANALYSIS DATE
BTEX	8020		07/25/91
Low Boiling Hydrocarbons	Mod.8015		07/25/91

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

SURROGATES	% REC
1,3-Dichlorobenzene (Gasoline)	111.
1,3-Dichlorobenzene (BTEX)	100.

Company: Shell Oil Company
Date: 08/02/91
Client Work ID: GR3667 350 Grand Ave, Oakland

IT ANALYTICAL SERVICES
SAN JOSE, CA

Work Order: T1-07-280

TEST NAME: Petroleum Hydrocarbons

SAMPLE ID: TRIP BLANK
SAMPLE DATE: not spec
LAB SAMPLE ID: T107280-04
SAMPLE MATRIX: aqueous
RECEIPT CONDITION: cool pH<2

RESULTS in Milligrams per Liter:

	METHOD	EXTRACTION DATE	ANALYSIS DATE
BTEX	8020		07/25/91
Low Boiling Hydrocarbons	Mod.8015		07/25/91
High Boiling Hydrocarbons	Mod.8015	07/25/91	07/26/91

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

SURROGATES	% REC
1,3-Dichlorobenzene (Gasoline)	112.
1,3-Dichlorobenzene (BTEX)	100.
nC32 (Diesel)	59.

Company: Shell Oil Company
Date: 08/02/91
Client Work ID: GR3667 350 Grand Ave, Oakland

IT ANALYTICAL SERVICES
SAN JOSE, CA

Work Order: T1-07-280

TEST NAME: Spike and Spike Duplicates

SAMPLE ID: Quality Control
SAMPLE DATE: not spec
LAB SAMPLE ID: T107280-05A
EXTRACTION DATE: 07/25/91
ANALYSIS DATE: 07/26/91
ANALYSIS METHOD: Mod.8015

QUALITY CONTROL REPORT

Laboratory Spike(LS) and Laboratory Spike Duplicate(LSD) Analyses

RESULTS in Micrograms per Liter

PARAMETER	Sample Amt	Spike Amt	LS Result	LSD Result	LS %Rec	LSD %Rec	RPD
Diesel	None	2500.	1983.	2042.	79.	82.	4.

SURROGATES	LS %Rec	LSD %Rec
nC32	46.	46.

IT ANALYTICAL SERVICES
SAN JOSE, CA

Company: Shell Oil Company
Date: 08/02/91
Client Work ID: GR3667 350 Grand Ave, Oakland

Work Order: T1-07-280

TEST NAME: Spike and Spike Duplicates

SAMPLE ID: Quality Control
SAMPLE DATE: not spec
LAB SAMPLE ID: T107280-05A
EXTRACTION DATE:
ANALYSIS DATE: 07/25/91
ANALYSIS METHOD: Mod.8015

QUALITY CONTROL REPORT

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Analyses

RESULTS in Micrograms per Liter

PARAMETER	Sample Amt	Spike Amt	MS Result	MSD Result	MS %Rec	MSD %Rec	RPD
Gasoline	ND<50.	500.	450.	453.	90.	90.	0

SURROGATES	MS %Rec	MSD %Rec
1,3-Dichloroebenzene	122.	121.

IT ANALYTICAL SERVICES
SAN JOSE, CA

Company: Shell Oil Company
Date: 08/02/91
Client Work ID: GR3667 350 Grand Ave, Oakland

Work Order: T1-07-280

TEST CODE **TPHN** TEST NAME **TPH High Boiling by 8015**

The method of analysis for high boiling hydrocarbons s taken from the LUFT field manual. Samples are extracted with solvent and examined by gas chromatography using a flame ionization detector. Results in soils are corrected for moisture content and are reported on a dry soil basis unless otherwise noted.

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

The method of analysis for low boiling hydrocarbons is taken from EPA Methods modified 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 in series with a photoionization detector. The result for total low boiling hydrocarbons is calculated as gasoline. Results in soils are corrected for moisture content and are reported on a dry soil basis unless otherwise noted.

Gettler - Ryan Inc. T1-07-280 ENVIRONMENTAL DIVISION **3051 Chain of Custody**

COMPANY Shell JOB NO. _____

JOB LOCATION 350 Grand

CITY Oakland PHONE NO. 783-7500

AUTHORIZED Tom Paulson DATE 7-19-91 P.O. NO. 3667.02

SAMPLE ID	NO. OF CONTAINERS	SAMPLE MATRIX	DATE/TIME SAMPLED	ANALYSIS REQUIRED	SAMPLE CONDITION LAB ID
1 S-1	5	H_2O	7-19-91 / 1328	TH-C(gas) BTXE, Diesel	Cool by Board
2 S-2	5	↓	/ 1320	"	↓
3 S-3	3	↓	/ 1339	"	↓
4 Trip Blank	2	↓	—	"	↓
				OA OB	

ABC - 40 ml w/hcl

DE - 1 L Amber w/hcl

RELINQUISHED BY: 7/19/91 1415 RECEIVED BY: 7/19/91 1415

REFRIG #1

RELINQUISHED BY: Refrig #1 7-22-91 08:00 RECEIVED BY: Flash 7-22-91 0800

RELINQUISHED BY: Flash 7-22-91 10:30 RECEIVED BY LAB: Joann DeHeren

DESIGNATED LABORATORY: IT (SCV) DHS #: 137

REMARKS: Normal TAT WIC # 204-5510-0204

Engr: J Brastad

Exp: 5461

DATE COMPLETED 7/19/91 FOREMAN _____