GeoStrategies Inc.
2140 WEST WINTON AVENUE
HAYWARD, CALIFORNIA 94545
(510) 352-4800

April 22, 1992

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

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

Ms. Hugo:

As requested by Mr. Dan Kirk of Shell Oil Company, we are forwarding a copy of the April 22, 1992 Quarterly Report for the above referenced location. The report presents the results of the ground-water sampling conducted during the first quarter of 1992.

If you have any questions, please call.

Sincerely,

Ellen Fostersmith

Ellen Fostersmith
Geologist

enclosure

cc: Mr. Thomas Callaghan, S.F. Regional Water Quality Control Board
Mr. Dan Kirk, Shell Oil Company

GeoStrategies Inc.

QUARTERLY REPORT

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

760501-14

April 22, 1992

GeoStrategies Inc.
2140 WEST WINTON AVENUE
HAYWARD, CALIFORNIA 94545
(510) 352-4800

April 22, 1992

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

Attn: Mr. Dan Kirk

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

Gentlemen:

This Quarterly Report has been prepared by GeoStrategies Inc. (GSI) and presents the results of the 1992 first quarter sampling for the above referenced site (Plate 1). Sampling data were furnished by the Shell Oil Company sampling contractor.

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

CURRENT QUARTER SAMPLING RESULTS

Depth to water-level measurements were obtained in each monitoring well on February 12, 1992. Static ground-water levels were measured from the surveyed top of the well box and recorded to nearest ± 0.01 foot. Water-level elevations, referenced to Mean Sea Level (MSL) datum, and the stabilized values of measured physical parameters are presented in the EMCON Monitoring report (Appendix A). Water-level data were used to construct a quarterly potentiometric map (Plate 2). Shallow groundwater flow is to the south at an approximate hydraulic gradient of 0.01.

Each well was checked for the presence of floating product. Floating product was not observed in the wells this quarter. Well S-9 has contained a high viscosity black sludge-like substance since 1986, and was not monitored or sampled.

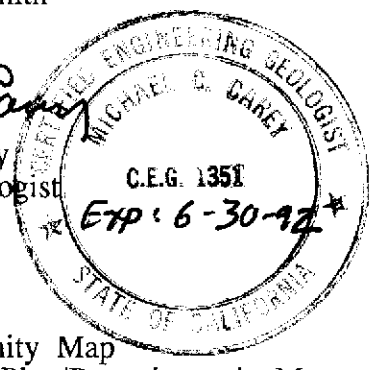
Ground-water samples were collected on February 12 and 13, 1992. Samples were analyzed for Total Petroleum Hydrocarbons calculated as Gasoline (TPH-Gasoline), according to EPA Method 8015 (Modified) and for Benzene, Toluene, Ethylbenzene, and Xylenes (BTEX) according to EPA Method 8020. Samples from Wells S-12, S-13 and S-14 were also analyzed for TPH-Diesel and TPH-Oil according to EPA Method 8015. The ground-water samples were analyzed by International Technology (IT) Analytical Services, A California State-certified laboratory located in San Jose, California. These data are summarized in the EMCON Monitoring report (Appendix A). A chemical isoconcentration map for benzene is presented on Plate 3. Historical chemical analytical data are presented in Appendix A.

If you have any questions, please call.

GeoStrategies Inc. by,

Ellen C. Fostersmith
Geologist

Michael C. Carey
Engineering Geologist
C.E.G. 1351



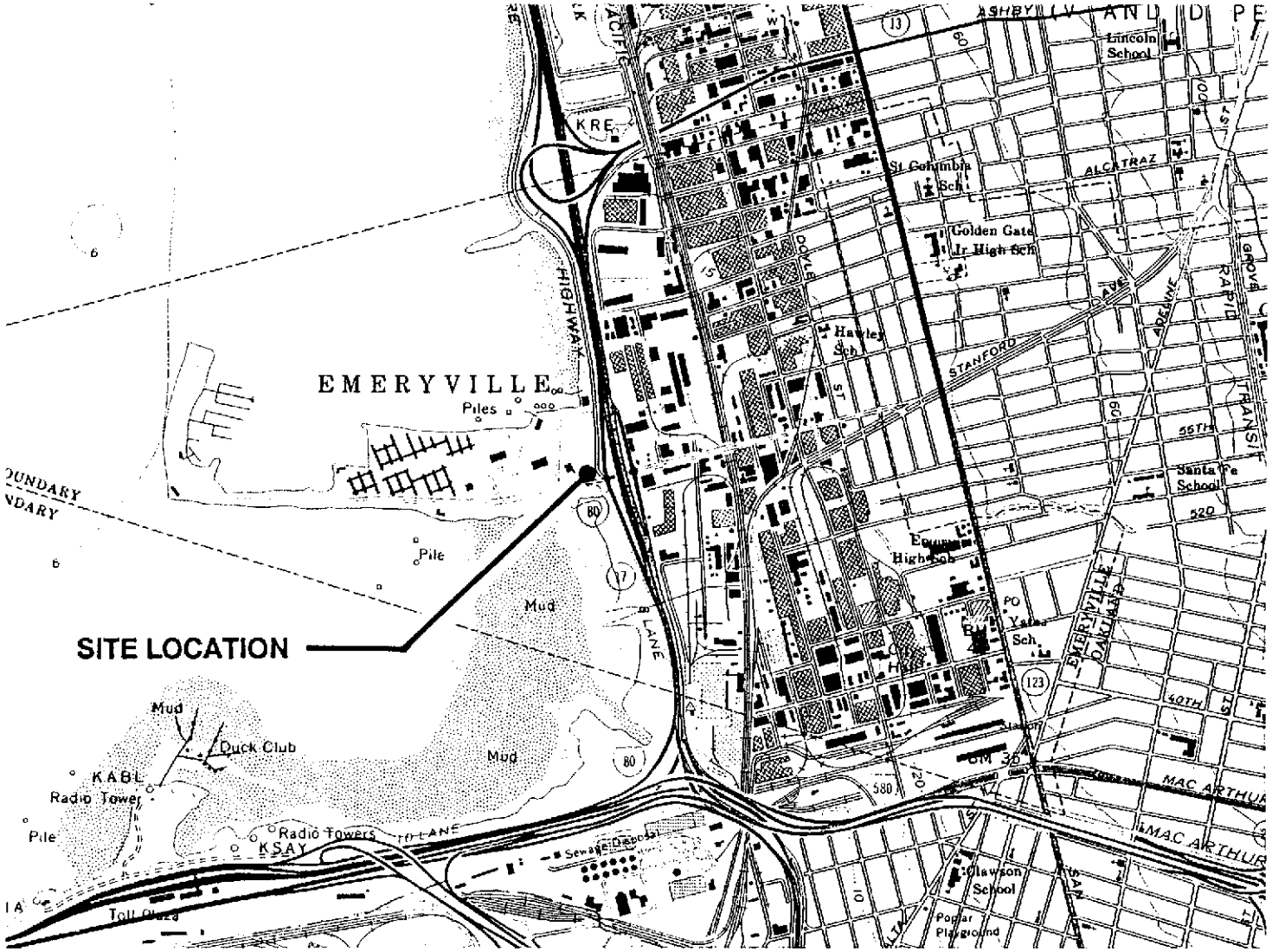
ECF/MCC/dls

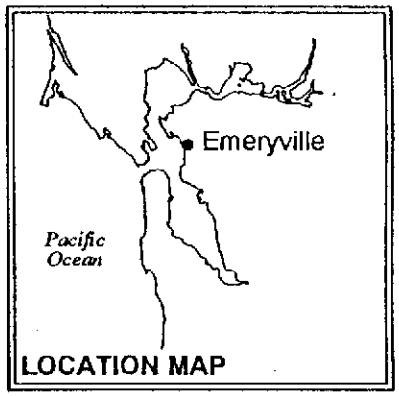
Plate 1. Vicinity Map
Plate 2. Site Plan/Potentiometric Map
Plate 3. Benzene Isoconcentration Map

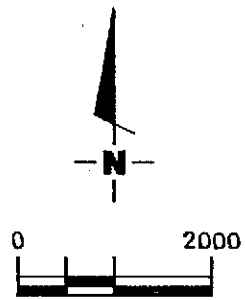
Appendix A: EMCON Monitoring Report and Chain-of Custody

QC Review: _____

760501-14







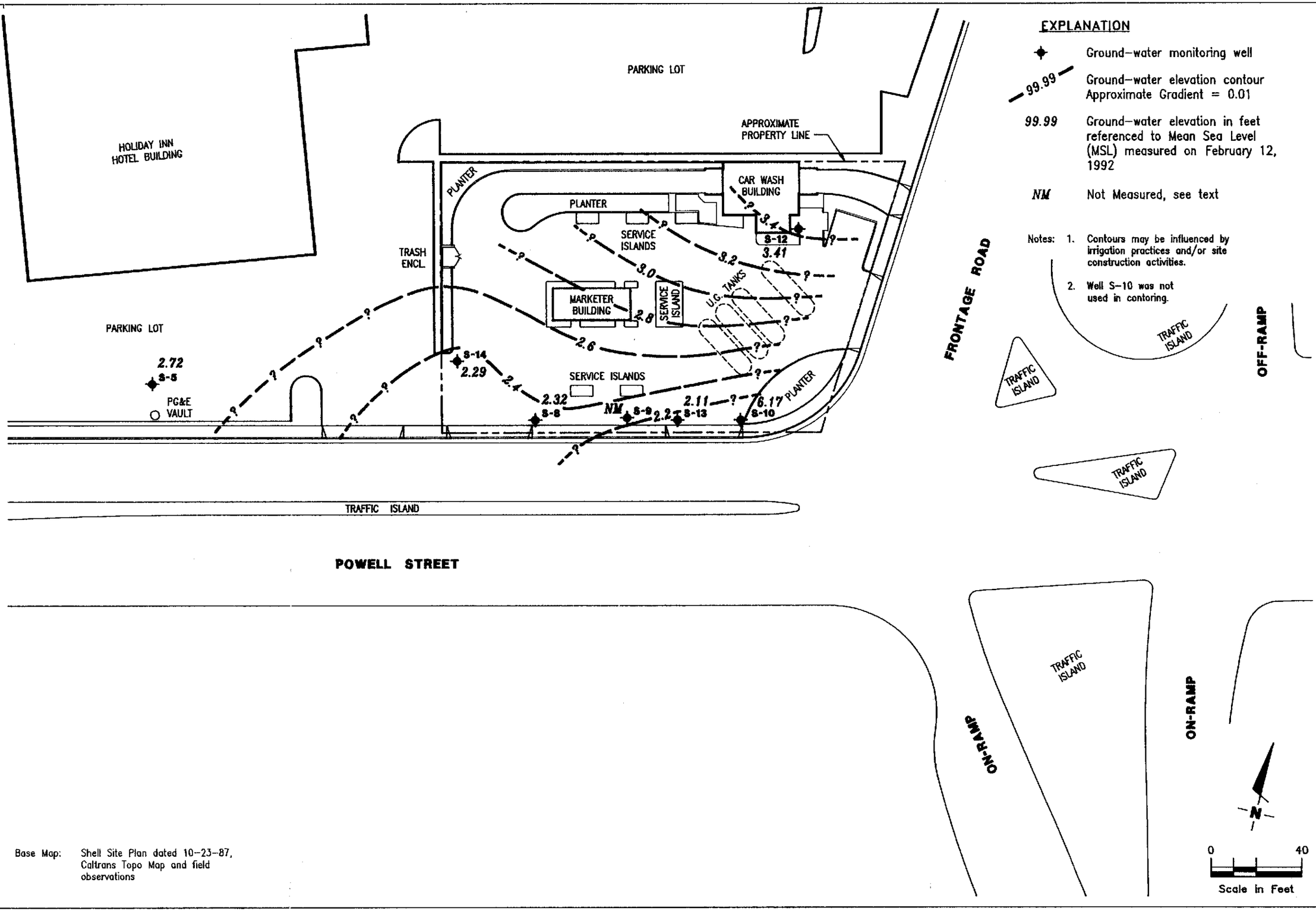
Base Map: USGS Topographic Map

GeoStrategies Inc.

VICINITY MAP
Shell Service Station
1800 Powell Street
Emeryville, California

PLATE
1

JOB NUMBER	REVIEWED BY	DATE	REVISED DATE
7605			



EXPLANATION

- Ground-water monitoring well
- 99.99 — Ground-water elevation contour Approximate Gradient = 0.01
- *99.99* — Ground-water elevation in feet referenced to Mean Sea Level (MSL) measured on February 12, 1992
- *NM* — Not Measured, see text

Notes:
1. Contours may be influenced by irrigation practices and/or site construction activities.
2. Well S-10 was not used in contoring.

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

PLATE **2**

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

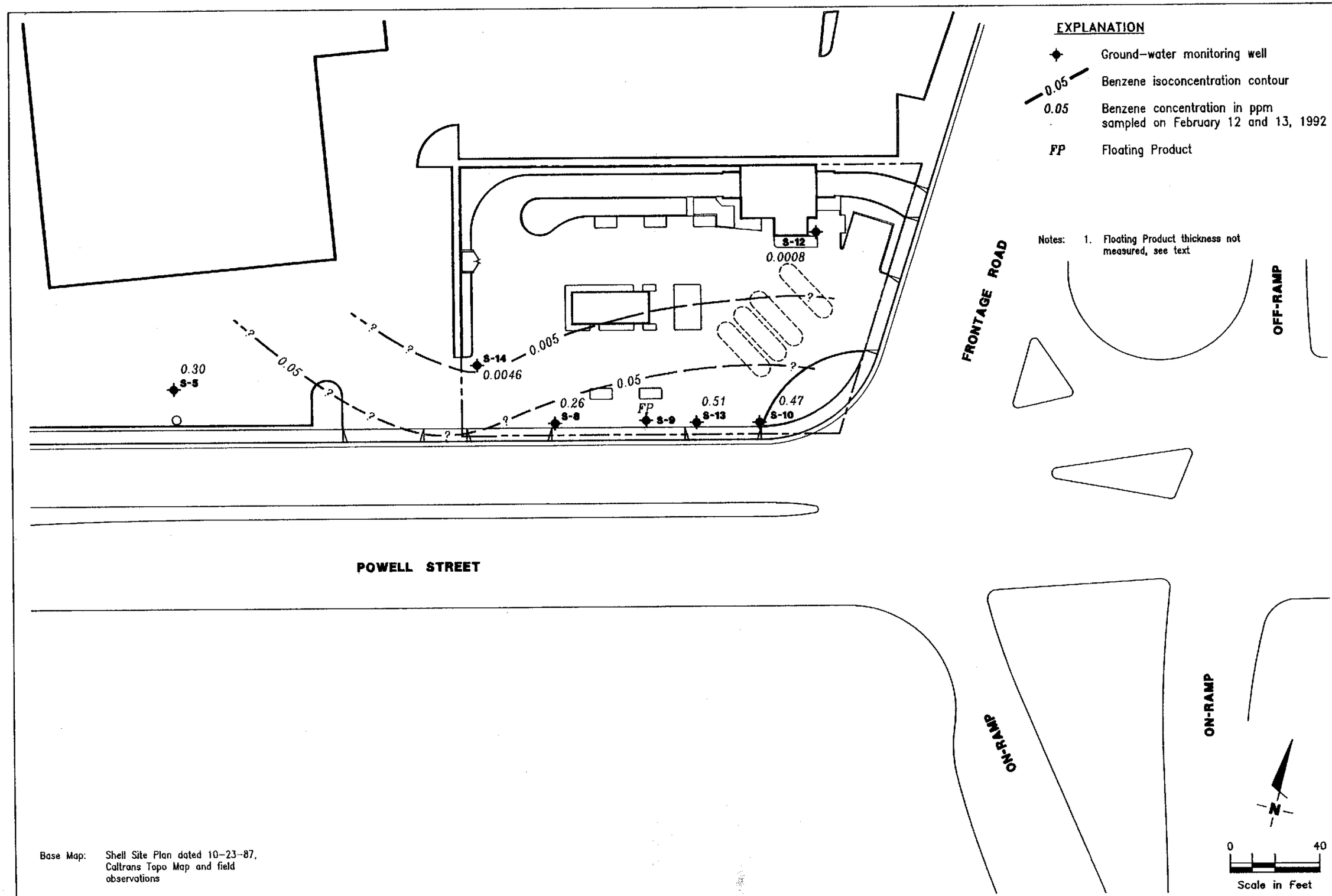
GeoStrategies Inc.

REVISED DATE

DATE 4/92

REVIEWED BY CHS

JOB NUMBER 760501-14



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

PLATE 3

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

REVISED DATE

DATE 4/92

GeoStrategies Inc.

REVIEWED BY CJS

JOB NUMBER 760501-14

Table 1
Monitoring Well Field Measurement Data
First Quarter 1992

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

Date: 04/02/92
Project Number: G67-20.01

Well Designation	Water Level Field Date	TOB Elevation (ft-MSL)	Depth to Water (feet)	Groundwater Elevation (ft-MSL)	Total Well Depth (feet)	Floating Product Thickness (feet)	Water Sample Field Date	pH (std. units)	Electrical Conductivity (micromhos/cm)	Temperature (degrees F)	Turbidity (NTU)
S-5	10/19/90	NR	NR	NR	NR	NR	10/19/90	NR	NR	NR	NR
S-5	01/14/91	NR	NR	NR	NR	NR	01/14/91	NR	NR	NR	NR
S-5	04/23/91	NR	NR	NR	NR	NR	04/23/91	NR	NR	NR	NR
S-5	07/08/91	11.72	9.15	2.57	12.1	ND	07/08/91	7.05	2400	68.8	NR
S-5	02/12/92	11.72	9.00	2.72	12.0	ND	02/12/92	7.00	2350	58.6	>200
S-8	10/19/90	NR	NR	NR	NR	NR	10/19/90	NR	NR	NR	NR
S-8	01/14/91	NR	NR	NR	NR	NR	01/14/91	NR	NR	NR	NR
S-8	04/23/91	NR	NR	NR	NR	NR	04/23/91	NR	NR	NR	NR
S-8	07/08/91	12.76	10.45	2.31	19.3	ND	07/08/91	7.28	6300	69.3	NR
S-8	02/12/92	12.76	10.44	2.32	19.2	ND	02/12/92	7.04	7440	64.1	>200
S-10	10/19/90	NR	NR	NR	NR	NR	10/19/90	NR	NR	NR	NR
S-10	01/14/91	NR	NR	NR	NR	NR	01/14/91	NR	NR	NR	NR
S-10	04/23/91	NR	NR	NR	NR	NR	04/23/91	NR	NR	NR	NR
S-10	07/08/91	12.58	9.41	3.17	NR	0.03	07/08/91	NR	NR	NR	NR
S-10	02/12/92	12.58	6.41	6.17	19.2	ND	02/13/92	6.12	696	63.5	109
S-12	10/19/90	NR	NR	NR	NR	NR	10/19/90	NR	NR	NR	NR
S-12	01/14/91	NR	NR	NR	NR	NR	01/14/91	NR	NR	NR	NR
S-12	04/23/91	NR	NR	NR	NR	NR	04/23/91	NR	NR	NR	NR
S-12	07/08/91	12.84	9.50	3.34	24.4	ND	07/08/91	6.90	5810	67.0	NR
S-12	02/12/92	12.84	9.43	3.41	24.4	ND	02/12/92	6.45	6120	66.1	95.4

TOB = top of well box
ft-MSL = elevation in feet, relative to mean sea level
std. units = standard pH units
micromhos/cm = micromhos per centimeter
degrees F = degrees Fahrenheit
NTU = nephelometric turbidity units
NR = not reported; data not available
ND = none detected

Table 1
Monitoring Well Field Measurement Data
First Quarter 1992

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

Date: 04/02/92
Project Number: G67-20.01

Well Designation	Water Level Field Date	TOB Elevation (ft-MSL)	Depth to Water (feet)	Groundwater Elevation (ft-MSL)	Total Well Depth (feet)	Floating Product Thickness (feet)	Water Sample Field Date	pH (std. units)	Electrical Conductivity (micromhos/cm)	Temperature (degrees F)	Turbidity (NTU)
S-13	10/24/90	NR	NR	NR	NR	NR	10/24/90	NR	NR	NR	NR
S-13	01/14/91	NR	NR	NR	NR	NR	01/14/91	NR	NR	NR	NR
S-13	04/23/91	NR	NR	NR	NR	NR	04/23/91	NR	NR	NR	NR
S-13	07/08/91	12.59	10.38	2.21	20.1	ND	07/08/91	7.27	9150	68.9	NR
S-13	02/12/92	12.59	10.48	2.11	20.0	ND	02/12/92	7.02	1066	63.3	66.9
S-14	11/17/89	NR	NR	NR	NR	NR	11/17/89	NR	NR	NR	NR
S-14	01/04/90	NR	NR	NR	NR	NR	01/04/90	NR	NR	NR	NR
S-14	04/23/91	NR	NR	NR	NR	NR	04/23/91	NR	NR	NR	NR
S-14	07/08/91	12.69	10.32	2.37	23.2	ND	07/08/91	7.35	8210	67.7	NR
S-14	02/12/92	12.69	10.40	2.29	23.9	ND	02/12/92	6.77	6850	64.3	80.1

TOB = top of well box
ft-MSL = elevation in feet, relative to mean sea level
std. units = standard pH units
micromhos/cm = micromhos per centimeter
degrees F = degrees Fahrenheit
NTU = nephelometric turbidity units
NR = not reported; data not available
ND = none detected

Table 2
Summary of Analytical Results
First Quarter 1992
milligrams per liter (mg/l) or parts per million (ppm)

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

Date: 04/02/92
Project Number: G67-20.01

Sample Designation	Water Sample Field Date	TPH-g (mg/l)	Benzene (mg/l)	Toluene (mg/l)	Ethyl-benzene (mg/l)	Total Xylenes (mg/l)	TPH-d (mg/l)	TPH-mo (mg/l)
S-5	10/19/90	4.2	1.1	0.009	0.014	0.007	NA	NA
S-5	01/14/91	4.5	1.1	0.015	0.030	0.025	6.1	NA
S-5	04/23/91	2.8	0.50	0.008	0.014	0.010	NA	NA
S-5	07/08/91	3.2	1.0	0.016	0.009	0.012	NA	NA
S-5	02/12/92	1.3	0.30	0.005	<0.005	<0.005	NA	NA
S-8	10/19/90	1.4	0.64	<0.01	<0.01	0.03	NA	NA
S-8	01/14/91	0.67	0.19	0.0058	<0.0005	0.019	0.76	0.6
S-8	04/23/91	2.4&	0.74	0.054	0.0057	0.059	NA	NA
S-8	07/08/91	1.1	0.45	0.015	<0.0025	0.042	NA	NA
S-8	02/12/92	<1.0	0.26	<0.01	<0.01	0.011	NA	NA
S-10	10/19/90	NR	NR	NR	NR	NR	NR	NR
S-10	01/14/91	NR	NR	NR	NR	NR	NR	NR
S-10	04/23/91	NR	NR	NR	NR	NR	NR	NR
S-10	07/08/91	NR	NR	NR	NR	NR	NR	NR
S-10	02/13/92	1.2	0.47	0.016	<0.005	0.014	NA	NA
S-12	10/19/90	0.15	0.012	0.009	<0.0005	0.0036	NA	NA
S-12	01/14/91	0.12	0.0036	0.0008	<0.0005	0.0029	1.0	0.6
S-12	04/23/91	0.10	0.0037	0.0038	0.0008	0.011	0.82*	0.80
S-12	07/08/91	0.07	0.0025	0.0008	<0.0005	0.0024	NA	NA
S-12	02/12/92	0.11	0.0008	<0.0005	<0.0005	0.0013	2.5#	1.4

TPH-g = total petroleum hydrocarbons as gasoline
TPH-d = total petroleum hydrocarbons as diesel
TPH-mo = total petroleum hydrocarbons as motor oil
NA = not analyzed
& = Compounds detected within the gasoline range are not characteristic of the standard gasoline chromatographic pattern.
NR = not reported; data not available
* = Compounds detected and calculated as diesel do not match the diesel standard; pattern is characteristic of weathered diesel.
# = Compounds detected and calculated as diesel appear to be the less volatile constituents of gasoline.

Table 2
Summary of Analytical Results
First Quarter 1992
milligrams per liter (mg/l) or parts per million (ppm)

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

Date: 04/02/92
Project Number: G67-20.01

Sample Designation	Water Sample Field Date	TPH-g (mg/l)	Benzene (mg/l)	Toluene (mg/l)	Ethyl-benzene (mg/l)	Total Xylenes (mg/l)	TPH-d (mg/l)	TPH-mo (mg/l)
S-13	10/24/90	3.4	1.5	0.028	0.028	0.25	NA	NA
S-13	01/14/91	1.9	0.83	0.015	<0.01	0.099	0.9	1.6
S-13	04/23/91	2.9&	1.1	0.02	0.03	0.14	0.77+	0.64
S-13	07/08/91	1.5	0.88	0.010	0.006	0.16	NA	NA
S-13	02/12/92	1.3	0.51	<0.01	<0.01	0.086	1.3@	1.3
SD-13	02/12/92	1.2	0.46	<0.01	<0.01	0.08	NA	NA
S-14	11/17/89	<0.25	0.003	<0.002	<0.002	<0.005	<0.4	3.
S-14	01/04/90	<0.25	0.003	0.002	<0.002	<0.005	NA	NA
S-14	04/23/91	1.2	0.0074	0.0027	0.015	0.11	18.+	<5.0
S-14	07/08/91	0.19	0.0065	0.0006	0.0019	0.026	NA	NA
S-14	02/12/92	0.37	0.0046	<0.0025	<0.0025	0.026	12.*	2.5
TB	02/13/92	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	NA	NA

TPH-g = total petroleum hydrocarbons as gasoline
TPH-d = total petroleum hydrocarbons as diesel
TPH-mo = total petroleum hydrocarbons as motor oil
NA = not analyzed
& = Compounds detected within the gasoline range are not characteristic of the standard gasoline chromatographic pattern.
+ = Results include compounds apparently due to gasoline as well as those due to diesel
@ = Compounds detected within the diesel range are not characteristic of the standard diesel chromatographic pattern.
* = Compounds detected and calculated as diesel do not match the diesel standard; pattern is characteristic of weathered diesel.

APPENDIX A
EMCON MONITORING REPORT
AND
CHAIN-OF-CUSTODY

emcon
ASSOCIATES
Consultants in Wastes
Management and
Environmental Control

March 26, 1992
Project: G67-20.01
WIC#: 204-2495-0101

Ms. Ellen Fostersmith
Geo Strategies Inc.
2140 West Winton Avenue
Hayward, California 94545

Re: First quarter 1992 ground-water monitoring report, Shell Oil Company, 1800 Powell Street, Emeryville, California

Dear Ms. Fostersmith:

This letter presents the results of the first quarter 1992 ground-water monitoring event for the Shell Oil Company (Shell) service station located at 1800 Powell Street, Emeryville, California. First quarter monitoring was conducted on February 12 and 13, 1992. The site is monitored quarterly.

GROUND-WATER LEVEL SURVEY

A water-level survey preceded the purging and sampling of the monitoring wells. The wells included in the survey are identified in figure 1 (supplied by Geo Strategies, Inc.). During the survey, monitoring wells S-5, S-8, S-10, and S-12 through S-14 were measured for depth to water, floating product thickness, and total depth. Depth to water and floating product thickness were measured to the nearest 0.01 foot with an oil/water interface probe. No floating product was observed in any of the wells. Total depth was measured to the nearest 0.1 foot. Results of the first quarter water-level survey, and available results from four previous surveys, are summarized in table 1.

SAMPLING AND ANALYSIS

Ground-water samples were collected from monitoring wells S-5, S-8, S-10, and S-12 through S-14 on February 12 and 13, 1992. Prior to sample collection, the wells were purged with a polyvinyl chloride (PVC) bailer. During the purging operation, ground water was monitored for pH, electrical conductivity, and temperature as a function of volume of water removed. Purging continued until these parameters were stable and a minimum of three casing volumes of ground water were removed. Well S-10 was evacuated to dryness before three casing volumes were removed. The well was allowed to recharge for up to 24 hours. Samples were collected as soon as the well had recharged to a level sufficient for

1938 Junction Avenue, San Jose, California 95131-2102, (408) 453-0719, Fax (408) 453-0452

sample collection. Field measurements from first quarter monitoring, and available measurements from four previous events, are summarized in table 1. Purge water from the monitoring wells was contained in 55-gallon drums. The drums were identified with Shell-approved labels and secured for on-site storage.

Ground water samples were collected with a Teflon® bailer, labeled, placed on ice, and transported to a Shell-approved and state-certified analytical laboratory for analysis. Shell chain-of-custody documents accompanied all samples to the laboratory.

All equipment that was placed down a well or that came in contact with ground water was steam cleaned on site with steaming hot deionized water prior to use at each well.

Quality control samples included one duplicate sample (SD-13) collected from well S-13, and a trip blank (TB). All water samples from the first quarter 1992 monitoring event were analyzed for total petroleum hydrocarbons (TPH) as gasoline, and benzene, toluene, ethylbenzene, and total xylenes (BTEX). Additional samples collected from wells S-12 through S-14 were also analyzed for TPH as diesel.

ANALYTICAL RESULTS

Analytical results for the first quarter 1992 monitoring event, and available results from four previous events, are summarized in table 2. The original certified analytical report and a copy of the final chain-of-custody document are attached.

If you have any questions, please call.

Very truly yours,

EMCON Associates

David Larsen
Environmental Sampling Coordinator

Orrin Childs
Environmental Sampling Supervisor

DL/OC:dl

Attachments: Table 1 - Monitoring well field measurement data
Table 2 - Summary of analytical results
Figure 1 - Site map
Certified analytical report
Chain-of-custody document

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYTICAL SERVICES

CERTIFICATE OF ANALYSIS

Shell Oil Company
Emcon Associates
1938 Junction Ave.
San Jose, CA 95131
David Larsen

Date: 03/05/92

Work Order: T2-02-127

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

This is the Certificate of Analysis for the following samples:

Client Work ID: G6720, 1800 Powell, Emeryvle
Date Received: 02/14/92
Number of Samples: 8
Sample Type: aqueous

TABLE OF CONTENTS FOR ANALYTICAL RESULTS

Reviewed and Approved:

Thomas L. Paulson
Project Manager

IT ANALYTICAL SERVICES
SAN JOSE, CA

Company: Shell Oil Company
Date: 03/05/92
Client Work ID: G6720, 1800 Powell, Emeryvle

Work Order: T2-02-127

TEST NAME: **Petroleum Hydrocarbons**

SAMPLE ID: S-12
SAMPLE DATE: 02/12/92
LAB SAMPLE ID: T202127-01
SAMPLE MATRIX: aqueous
RECEIPT CONDITION: Cool pH < 2

RESULTS in Milligrams per Liter:

	METHOD	EXTRACTION DATE	ANALYSIS DATE
BTEX	8020		02/21/92
Low Boiling Hydrocarbons	Mod.8015		02/21/92
High Boiling Hydrocarbons	Mod.8015	02/17/92	02/19/92

PARAMETER	DETECTION LIMIT	DETECTED	
Low Boiling Hydrocarbons calculated as Gasoline	0.05	0.11	
BTEX			
Benzene	0.0005	0.0008	
Toluene	0.0005	None.	
Ethylbenzene	0.0005	None.	
Xylenes (total)	0.0005	0.0013	
High Boiling Hydrocarbons			
calculated as Diesel	0.05	2.5	#
calculated as Oil	0.5	1.4	

SURROGATES	% REC
1,3-Dichlorobenzene (Gasoline)	106.
1,3-Dichlorobenzene (BTEX)	98.
nC32 (Diesel)	120.

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

IT ANALYTICAL SERVICES
SAN JOSE, CA

Company: Shell Oil Company
Date: 03/05/92
Client Work ID: G6720, 1800 Powell, Emeryvle

Work Order: T2-02-127

TEST NAME: **Petroleum Hydrocarbons**

SAMPLE ID: **S-14**
SAMPLE DATE: **02/12/92**
LAB SAMPLE ID: **T202127-02**
SAMPLE MATRIX: **aqueous**
RECEIPT CONDITION: **Cool pH < 2**

RESULTS in Milligrams per Liter:

	METHOD	EXTRACTION DATE	ANALYSIS DATE
BTEX	8020		02/21/92
Low Boiling Hydrocarbons	Mod.8015		02/21/92
High Boiling Hydrocarbons	Mod.8015	02/17/92	02/19/92

PARAMETER	DETECTION LIMIT	DETECTED	
Low Boiling Hydrocarbons calculated as Gasoline	0.25	0.37	
BTEX			
Benzene	0.0025	0.0046	
Toluene	0.0025	None.	
Ethylbenzene	0.0025	None.	
Xylenes (total)	0.0025	0.026	
High Boiling Hydrocarbons calculated as Diesel	0.15	12.	*
calculated as Oil	1.5	2.5	

SURROGATES	% REC
1,3-Dichlorobenzene (Gasoline)	109.
1,3-Dichlorobenzene (BTEX)	99.
nC32 (Diesel)	65.

Comments:
* Chromatographic pattern of compounds detected and calculated as diesel is similar to but does not match that of the diesel standard used for calibration; pattern is characteristic of weathered diesel.

Company: Shell Oil Company
Date: 03/05/92
Client Work ID: G6720, 1800 Powell, Emeryvle

IT ANALYTICAL SERVICES
SAN JOSE, CA

Work Order: T2-02-127

TEST NAME: **Petroleum Hydrocarbons**

SAMPLE ID: S-8
SAMPLE DATE: 02/12/92
LAB SAMPLE ID: T202127-03
SAMPLE MATRIX: aqueous
RECEIPT CONDITION: Cool pH < 2

RESULTS in Milligrams per Liter:

	METHOD	EXTRACTION DATE	ANALYSIS DATE
BTEX	8020		02/20/92
Low Boiling Hydrocarbons	Mod.8015		02/20/92

PARAMETER	DETECTION LIMIT	DETECTED
Low Boiling Hydrocarbons calculated as Gasoline	1.0	None.
BTEX		
Benzene	0.01	0.26
Toluene	0.01	None.
Ethylbenzene	0.01	None.
Xylenes (total)	0.01	0.011

SURROGATES	% REC
1,3-Dichlorobenzene (Gasoline)	108.
1,3-Dichlorobenzene (BTEX)	98.

IT ANALYTICAL SERVICES
SAN JOSE, CA

Company: Shell Oil Company
Date: 03/05/92
Client Work ID: G6720, 1800 Powell, Emeryvle

Work Order: T2-02-127

TEST NAME: **Petroleum Hydrocarbons**

SAMPLE ID: **S-13**
SAMPLE DATE: **02/12/92**
LAB SAMPLE ID: **T202127-04**
SAMPLE MATRIX: **aqueous**
RECEIPT CONDITION: **Cool pH < 2**

RESULTS in Milligrams per Liter:

	METHOD	EXTRACTION DATE	ANALYSIS DATE
BTEX	8020		02/20/92
Low Boiling Hydrocarbons	Mod.8015		02/20/92
High Boiling Hydrocarbons	Mod.8015	02/17/92	02/19/92

PARAMETER	DETECTION LIMIT	DETECTED	
Low Boiling Hydrocarbons			
calculated as Gasoline	1.0	1.3	
BTEX			
Benzene	0.01	0.51	
Toluene	0.01	None.	
Ethylbenzene	0.01	None.	
Xylenes (total)	0.01	0.086	
High Boiling Hydrocarbons			
calculated as Diesel	0.05	1.3	@
calculated as Oil	0.5	1.3	

SURROGATES	% REC
1,3-Dichlorobenzene (Gasoline)	109.
1,3-Dichlorobenzene (BTEX)	104.
nC32 (Diesel)	79.

Comments:
@ Compounds detected and calculated as high boiling hydrocarbons consist of compounds eluting within the chromatographic range of diesel, but are not characteristic of the standard diesel chromatographic pattern.

IT ANALYTICAL SERVICES
SAN JOSE, CA

Company: Shell Oil Company
Date: 03/05/92
Client Work ID: G6720, 1800 Powell, Emeryvle

Work Order: T2-02-127

TEST NAME: **Petroleum Hydrocarbons**

SAMPLE ID: S-5
SAMPLE DATE: 02/12/92
LAB SAMPLE ID: T202127-05
SAMPLE MATRIX: aqueous
RECEIPT CONDITION: Cool pH < 2

RESULTS in Milligrams per Liter:

	METHOD	EXTRACTION DATE	ANALYSIS DATE
BTEX	8020		02/20/92
Low Boiling Hydrocarbons	Mod.8015		02/20/92

PARAMETER	DETECTION LIMIT	DETECTED
Low Boiling Hydrocarbons calculated as Gasoline	0.5	1.3
BTEX		
Benzene	0.005	0.30
Toluene	0.005	0.005
Ethylbenzene	0.005	None.
Xylenes (total)	0.005	None.

SURROGATES	% REC
1,3-Dichlorobenzene (Gasoline)	114.
1,3-Dichlorobenzene (BTEX)	99.

IT ANALYTICAL SERVICES
SAN JOSE, CA

Company: Shell Oil Company
Date: 03/05/92
Client Work ID: G6720, 1800 Powell, Emeryvle

Work Order: T2-02-127

TEST NAME: Petroleum Hydrocarbons

SAMPLE ID: S-10
SAMPLE DATE: 02/12/92
LAB SAMPLE ID: T202127-06
SAMPLE MATRIX: aqueous
RECEIPT CONDITION: Cool pH < 2

RESULTS in Milligrams per Liter:

	METHOD	EXTRACTION DATE	ANALYSIS DATE
BTEX	8020		02/24/92
Low Boiling Hydrocarbons	Mod.8015		02/24/92

PARAMETER	DETECTION LIMIT	DETECTED
Low Boiling Hydrocarbons calculated as Gasoline	0.5	1.2
BTEX		
Benzene	0.005	0.47
Toluene	0.005	0.016
Ethylbenzene	0.005	None.
Xylenes (total)	0.005	0.014

SURROGATES	% REC
1,3-Dichlorobenzene (Gasoline)	109.
1,3-Dichlorobenzene (BTEX)	95.

IT ANALYTICAL SERVICES
SAN JOSE, CA

Company: Shell Oil Company
Date: 03/05/92
Client Work ID: G6720, 1800 Powell, Emeryvle

Work Order: T2-02-127

TEST NAME: **Petroleum Hydrocarbons**

SAMPLE ID: **TRIP BLANK**
SAMPLE DATE: **not spec**
LAB SAMPLE ID: **T202127-07**
SAMPLE MATRIX: **aqueous**
RECEIPT CONDITION: **Cool pH < 2**

RESULTS in Milligrams per Liter:

	METHOD	EXTRACTION DATE	ANALYSIS DATE
BTEX	8020		02/20/92
Low Boiling Hydrocarbons	Mod.8015		02/20/92

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)	96.
1,3-Dichlorobenzene (BTEX)	92.

IT ANALYTICAL SERVICES
SAN JOSE, CA

Company: Shell Oil Company
Date: 03/05/92
Client Work ID: G6720, 1800 Powell, Emeryvle

Work Order: T2-02-127

TEST NAME: **Petroleum Hydrocarbons**

SAMPLE ID: **SD-13**
SAMPLE DATE: **02/13/92**
LAB SAMPLE ID: **T202127-08**
SAMPLE MATRIX: **aqueous**
RECEIPT CONDITION: **Cool pH < 2**

RESULTS in Milligrams per Liter:

	METHOD	EXTRACTION DATE	ANALYSIS DATE
BTEX	8020		02/20/92
Low Boiling Hydrocarbons	Mod.8015		02/20/92

PARAMETER	DETECTION LIMIT	DETECTED
Low Boiling Hydrocarbons calculated as Gasoline	1.0	1.2
BTEX		
Benzene	0.01	0.46
Toluene	0.01	None.
Ethylbenzene	0.01	None.
Xylenes (total)	0.01	0.08

SURROGATES	% REC
1,3-Dichlorobenzene (Gasoline)	107.
1,3-Dichlorobenzene (BTEX)	103.

IT ANALYTICAL SERVICES
SAN JOSE, CA

Company: Shell Oil Company
Date: 03/05/92
Client Work ID: G6720, 1800 Powell, Emeryvle

Work Order: T2-02-127

TEST NAME: **Spike and Spike Duplicates**

SAMPLE ID: **Quality Control**
SAMPLE DATE: **not spec**
LAB SAMPLE ID: T202127-09B
EXTRACTION DATE: 02/13/92
ANALYSIS DATE: 02/18/92
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	1000	809	903	81	90	10

SURROGATES	LS %Rec	LSD %Rec
nC32	120	138

IT ANALYTICAL SERVICES
SAN JOSE, CA

Company: Shell Oil Company
Date: 03/05/92
Client Work ID: G6720, 1800 Powell, Emeryvle

Work Order: T2-02-127

TEST NAME: **Spike and Spike Duplicates**

SAMPLE ID: **Quality Control**
SAMPLE DATE: **not spec**
LAB SAMPLE ID: **T202127-09A**
EXTRACTION DATE:
ANALYSIS DATE: 02/19/92
ANALYSIS METHOD: 8020

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
Benzene	None	50.0	47.0	46.7	94	93	1
Toluene	None	50.0	45.9	44.5	92	90	2
Ethylbenzene	None	50.0	44.5	44.0	89	88	1
Total Xylenes	None	150	128	127	85	85	0

SURROGATES	MS %Rec	MSD %Rec
1,3-Dichlorobenzene	97	104

IT ANALYTICAL SERVICES
SAN JOSE, CA

Company: Shell Oil Company
Date: 03/05/92
Client Work ID: G6720, 1800 Powell, Emeryvle

Work Order: T2-02-127

TEST CODE **QC** TEST NAME **Quality Control**

Quality control (QC) samples are analyzed and used to assess the laboratory control measures. Routine QC samples include method blanks, spikes and duplicates. The purpose of the method blank (MB) analysis is to demonstrate that artifacts of the test do not yield false positives. The laboratory control spike (LS) and /or matrix spike (MS) analysis is used to evaluate the ability of the test to recover analytes of interest, i.e. accuracy. Accuracy is expressed as percent (%) recovery. The laboratory spike duplicate (LSD), matrix spike duplicate (MSD), or duplicate sample (DUP) is used to determine the precision of the test, by comparing the result from the original spike (or sample) to the duplicate spike (or sample). Precision is expressed as relative percent difference (RPD).

The results of appropriate QC samples from QC batches associated with the listed samples are included in this report.

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

The method of analysis for high boiling hydrocarbons is 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.

SHELL OIL COMPANY
RETAIL ENVIRONMENTAL ENGINEERING - WEST

CHAIN OF CUSTODY RECORD
Serial No.: 72-02-127

Date: 2-14-92
Page 1 of 1

Site Address: 1900 Powell Street, Emeryville, CA
WIC#: 204-2495-0101

Shell Engineer: Kurt Miller
Phone No. (510)
Fax #: 685-3853

Consultant Name & Address: EMCON Assoc. 1938 Junction Ave. San Jose, CA 95131

Consultant Contact: David Larsen
Phone No. (408)
Fax #: 453-2269

Comments: 3-VOAs for TPH-g, BTEX
1-Liter for TPH-d
1-VOA for Trip Blank

Sampled By: Bart Stafford
Printed Name: Bart Stafford

Analysis Required

LAB: IT Analytical - San Jose

CHECK ONE (1) BOX ONLY		CT/DT
Quarterly Monitoring	X	5461
Site Investigation	[ ]	5441
Soil for disposal	[ ]	5442
Water for disposal	[ ]	5443
Air Sample - Sys O&M	[ ]	5452
Water Sample - Sys O&M	[ ]	5453
Other	[ ]	

TURN AROUND TIME:
24 hours [ ]
48 hours [ ]
15 days X (Normal)
Other [ ] ____
NOTE: Notify Lab as soon as possible of 24/48 hrs. TAT.

Sample ID	Date	Soil	Water	Air	No. of conts.	TPH (EPA 8015 Mod. Gas)	TPH (EPA 8015 Mod. Diesel)	BTEX (EPA 8020/602)	Volatile Organics (EPA 8240)	Test for Disposal	Container Size	Preparation Used	Composite Y/N	MATERIAL DESCRIPTION	SAMPLE CONDITION/ COMMENTS
S-12			X		4	X	X	X			40 ml	HCl	No		Ice Cool
S-14					4	X	X	X							3 w/bubble
S-6					3	X		X							3 w/bubbles
S-13					4	X	X	X							
S-5					3	X		X							
S-10					3	X		X							
TB					1	X		X							
SD-13			↓		3	X		X			↓	↓	↓		↓

Relinquished By (signature): Bart Stafford	Printed name: Bart Stafford	Date: 2-14-92	Received (signature):	Printed name: Rasmussen	Date: 2-14-92
Relinquished By (signature):	Printed name:	Time: 8:36	Received (signature):	Printed name:	Time: 0836
Relinquished By (signature):	Printed name:	Date:	Received (signature):	Printed name:	Date:
		Time:			Time:
		Date:			Date:
		Time:			Time:

THE LABORATORY MUST PROVIDE A COPY OF THIS CHAIN-OF-CUSTODY WITH INVOICE AND RESULTS

Last Revision Date: 10/15/91