



ASSOCIATES  
Consultants in Wastes  
Management and  
Environmental Control

EMCON INC.  
GENERAL CONTRACTORS

August 1, 1985  
Project 738-04.01

*No major problem, technically  
interim screening  
2.4 ppm in water  
3 ppm in soil*

Gettler-Ryan, Incorporated  
1992 National Avenue  
Hayward, California 94545

Attention: Mr. Jeffrey M. Ryan

Re: Shell Service Station,  
Broadway and Taft  
Streets, Oakland,  
California

Gentlemen:

This letter presents the results of a soil and ground-water investigation conducted by EMCON Associates at the Shell service station located at Broadway and Taft Streets in Oakland, California. The purpose of this investigation was to examine soil and ground-water conditions adjacent to the subsurface product storage tanks located at the site.

#### FIELD INVESTIGATION PROCEDURES

Two exploratory borings (S-A and S-1) were drilled at the locations shown on Figure 1. The borings were drilled using continuous-flight hollow-stem auger drilling equipment and were logged by an EMCON geologist. Soil samples for logging and chemical analysis were obtained from auger-return materials and by advancing a California split-spoon sampler into undisturbed soil beyond the tip of the auger. Soil samples for chemical testing were placed in glass containers, packed on ice and delivered directly to an independent laboratory as authorized by Gettler-Ryan. Laboratory results accompany this report.

Upon completion of Boring S-1 it was converted to a ground-water monitoring well by the installation of 3-inch-diameter PVC casing. Well construction details accompany the attached Exploratory Boring Logs. Boring S-A was backfilled with soil cuttings to a depth of 0.5 foot and cemented to the ground surface.

CALIFORNIA REGIONAL WATER

AUG 28 1985

QUALITY CONTROL BOARD

## SITE CONDITIONS

Soil Boring S-A was placed within the subsurface gasoline tank complex. Ground-water monitoring Well S-1 was placed downgradient of the tank complex. Subsurface conditions explored by the borings ranged in depth from 11 to 12.5 feet. Boring S-A encountered clay, gravel and sand fill to a depth of 9 feet, underlain by shale bedrock to a depth of 11 feet. Boring S-1 encountered gravelly clay fill to a depth of 3.5 feet, underlain by gravelly clay to a depth of 12 feet. The gravelly clay is underlain by gravel to a depth of 12.5 feet. Ground water was encountered in both borings at a depth of approximately 3 feet.

Product odor was noted in soils from Boring S-A to a depth of 11 feet and in Boring S-1 to a depth of 6 feet.

## LABORATORY INVESTIGATIONS AND RESULTS

Three soil samples collected from Boring S-A between a depth of 4 to 11.5 feet were analyzed for gasoline. Relatively low concentrations were detected in the soil between 4 and 10 feet at 2 to 3 parts per million (ppm). No gasoline was detected in the soil sample analyzed from a depth of 10 to 11.5 feet.

Laboratory analysis of ground water from Well S-1 revealed dissolved gasoline concentrations of 2,400 micrograms per liter or 2,400 parts per billion (see attached laboratory results).

If you have any questions regarding the contents of this letter, please do not hesitate to call.

Very truly yours,

EMCON Associates



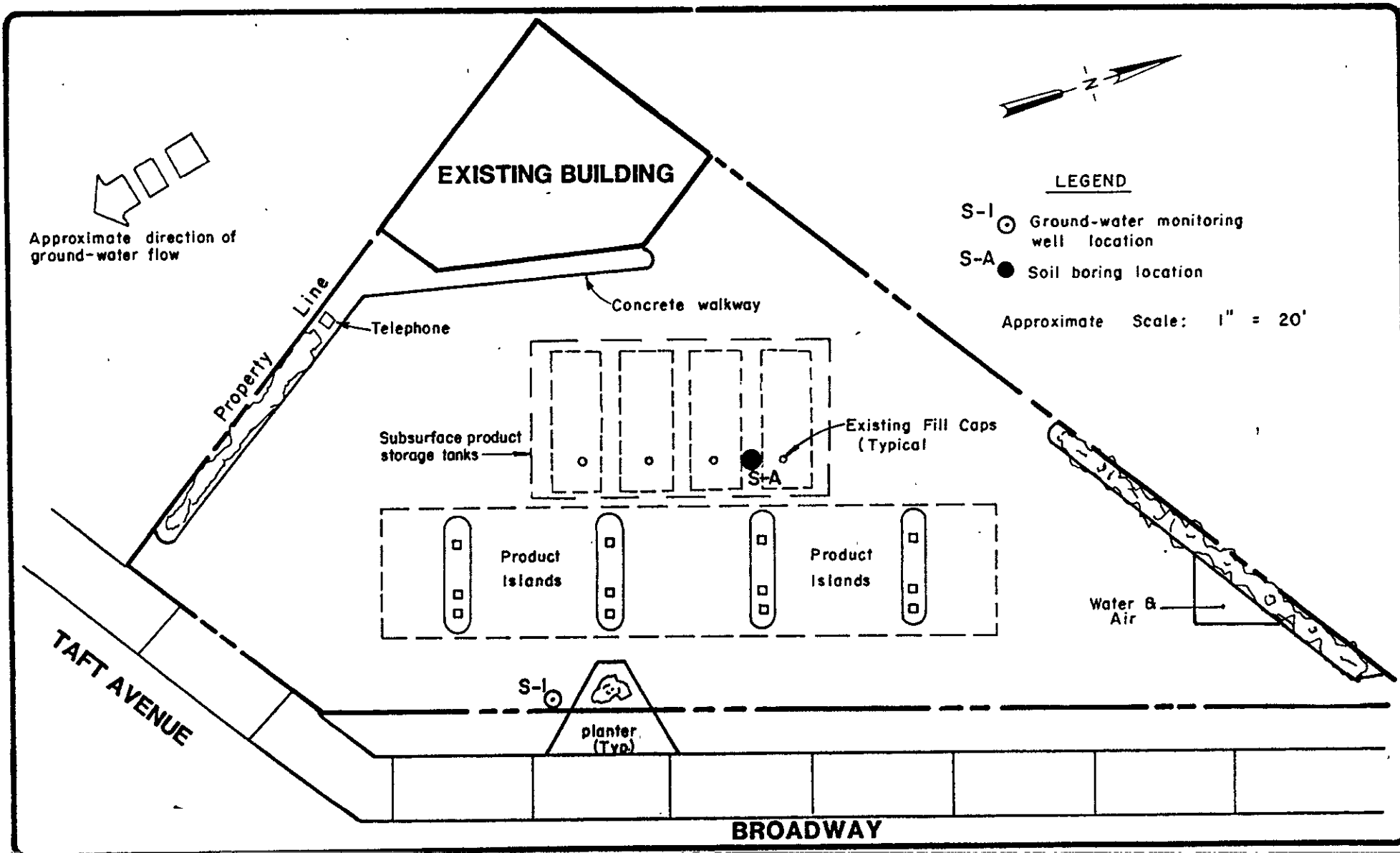
Erin Garner  
Staff Geologist



Susan M. Willhite  
Project Geologist

EG/SMW:mtg

Enclosures



**EMCON**  
Associates

San Jose, California

GETTLER-RYAN, INC.  
SUBSURFACE HYDROGEOLOGIC INVESTIGATION  
SHELL STATION, 5755 BROADWAY  
OAKLAND, CALIFORNIA

MONITORING WELL LOCATION MAP

FIGURE

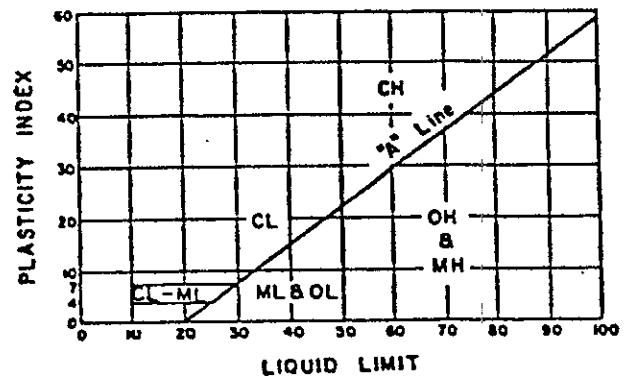
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PROJECT NO.  
738-04.01

| MAJOR DIVISIONS  |   | SYMBOLS                             | TYPICAL SOIL DESCRIPTIONS  |
|--|---|-------------------------------------|--|
| COARSE GRAINED SOILS<br>(More than 1/2 of soil > no. 200 sieve size) | <u>GRAVELS</u><br>(More than 1/2 of coarse fraction > no. 4 sieve size) | GW                                  | Well graded gravels or gravel-sand mixtures, little or no fines  |
|  |   | GP                                  | Poorly graded gravels or gravel-sand mixtures, little or no fines  |
|  |   | GM                                  | Silly gravels, gravel-sand-silt mixtures   |
|  |   | GC                                  | Clayey gravels, gravel-sand-clay mixtures  |
|  | <u>SANDS</u><br>(More than 1/2 of coarse fraction < no. 4 sieve size)   | SW                                  | Well graded sands or gravelly sands, little or no fines  |
|  |   | SP                                  | Poorly graded sands or gravelly sands, little or no fines  |
|  |   | SM                                  | Silty sands, sand-silt mixtures  |
|  |   | SC                                  | Clayey sands, sand-clay mixtures   |
| FINE GRAINED SOILS<br>(More than 1/2 of soil < no. 200 sieve size)   | <u>SILTS &amp; CLAYS</u><br><u>LL &lt; 50</u>                           | ML                                  | Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity |
|  |   | CL                                  | Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays                  |
|  |   | OL                                  | Organic silts and organic silty clays of low plasticity  |
|  | <u>SILTS &amp; CLAYS</u><br><u>LL &gt; 50</u>                           | MH                                  | Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts                                |
|  |   | CH                                  | Inorganic clays of high plasticity, fat clays  |
|  |   | OH                                  | Organic clays of medium to high plasticity, organic silty clays, organic silts                                     |
| HIGHLY ORGANIC SOILS   | Pt  | Peat and other highly organic soils |  |

### CLASSIFICATION CHART (Unified Soil Classification System)

| CLASSIFICATION | RANGE OF GRAIN SIZES       |                           |
|----------------|----------------------------|---------------------------|
|                | U.S. Standard Sieve Size   | Grain Size in Millimeters |
| BOULDERS       | Above 12"                  | Above 305                 |
| COBBLES        | 12" to 3"                  | 305 to 76.2               |
| GRAVEL         | 3" to No. 4                | 76.2 to 4.76              |
|                | coarse<br>3" to 3/4"       | 76.2 to 19.1              |
|                | fine<br>3/4" to No. 4      | 19.1 to 4.76              |
| SAND           | No. 4 to No. 200           | 4.76 to 0.074             |
|                | coarse<br>No. 4 to No. 10  | 4.76 to 2.00              |
|                | medium<br>No. 10 to No. 40 | 2.00 to 0.420             |
|                | fine<br>No. 40 to No. 200  | 0.420 to 0.074            |
| SILT & CLAY    | Below No. 200              | Below 0.074               |



PLASTICITY CHART

### GRAIN SIZE CHART

## METHOD OF SOIL CLASSIFICATION



NOTES:

Logs of Exploratory Borings

2.5 YR 6/2

Denotes color as field checked to Munsell Soil Color Charts (1975 Edition)



Denotes undisturbed sample taken in 2-inch split-spoon sampler.



Denotes disturbed sample (bag sample).



Denotes first observation of ground water.



Denotes static ground-water level.

Penetration

Sample drive hammer weight - 140 pounds, drop - 30 inches. Blows required to drive sampler 1 foot are indicated on the logs.

# LOG OF EXPLORATORY BORING


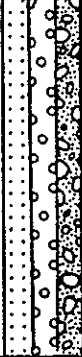

PROJECT NUMBER 738-04.01

BORING NO. S-A

PROJECT NAME Gettler-Ryan Shell at Broadway and Taft, Oakland PAGE 1 OF 1

BY JDB DATE 6/11/85

SURFACE ELEV.

| TORVANE<br>(TSF) | POCKET<br>PENETRO-<br>METER<br>(TSF) | PENETRA-<br>TION<br>(Blows/<br>Ft.) | GROUND<br>WATER<br>LEVELS | DEPTH IN FT. | SAMPLES            | LITHO-<br>GRAPHIC<br>COLUMN   | DESCRIPTION   |
|------------------|--------------------------------------|-------------------------------------|---------------------------|--------------|--------------------|---|---|
|                  |                                      |                                     | ▽                         | 5            | CL                 |    | CONCRETE<br>CLAY; Fill; very dark grayish brown<br>(2.5Y, 3/2); trace sand; 25-30% fine<br>to coarse gravel; (60% gravel at 3');<br>stiff; wet; product odor. |
|                  |                                      | 5                                   |                           | 5            | SP -<br>GP -<br>GC |   | SAND; COARSE GRAVEL; CLAYEY GRAVEL, Fill;<br>light olive brown (2.5Y, 5/6); loose;<br>wet; product odor.  |
|                  |                                      | 47                                  |                           | 10           | Bed<br>Rock        |  | BEDROCK; SHALE; olive (5Y, 4/3); silty;<br>FeO stained; highly fractured; hard; wet;<br>slight product odor.  |
|                  |                                      | 75                                  |                           | 15           |                    |   | HOLE TERMINATED AT 11 FEET  |

**REMARKS**

Boring was backfilled with cuttings, to a depth of .5 feet, then cement to surface.



# LOG OF EXPLORATORY BORING

PROJECT NUMBER 738-04.01

BORING NO. S-1

PROJECT NAME Gettler-Ryan, Shell @ Broadway & Taft, Oakland

PAGE 1 OF 1

BY JDB DATE 6/11/85

SURFACE ELEV.

| TORVANE<br>(TSF) | POCKET<br>PENETRO-<br>METER<br>(TSF) | PENETRA-<br>TION<br>(Blows/<br>Ft.) | GROUND<br>WATER<br>LEVELS | DEPTH IN FT. | SAMPLES    | LITHO-<br>GRAPHIC<br>COLUMN | DESCRIPTION  |
|------------------|--------------------------------------|-------------------------------------|---------------------------|--------------|------------|-----------------------------|--|
|                  |                                      |                                     | ▽                         | 5            | CL<br>Fill |                             | <p>CONCRETE<br/>CLAY; Fill; very dark grayish brown<br/>(2.5Y, 3/2); gravelly; trace sand; damp;<br/>no product odor.</p>  |
|                  | 2.5-5                                | 37                                  |                           | 5            | CL         |                             | <p>GRAVELLY CLAY; dark yellowish brown<br/>(10YR, 4/6); trace sand; damp; slight<br/>product odor.</p> <p>@6': becomes olive brown (2.5Y, 4/4);<br/>slight product odor.</p> <p>@7': becomes dark yellowish brown<br/>(10YR, 4/6); 30-50% fine to coarse<br/>gravel; very stiff to hard; moist;<br/>no product odor.</p> <p>@8½': gravel content decreases<br/>9½'; no product odor.</p> |
|                  | 2-4                                  | 20                                  |                           | 10           |            |                             |  |
|                  |                                      | 50 for<br>3"                        |                           | 15           | GW         |                             | <p>GRAVEL; olive gray (2.5Y, 5/2); firm to<br/>coarse angular gravel; 30% fine sand;<br/>very dense; damp; no product odor.</p>  |
|                  |                                      |                                     |                           | 20           |            |                             | <p>HOLE TERMINATED AT 12½ FEET:</p>  |

REMARKS Boring converted to ground water monitoring well, detailed on Plate C.

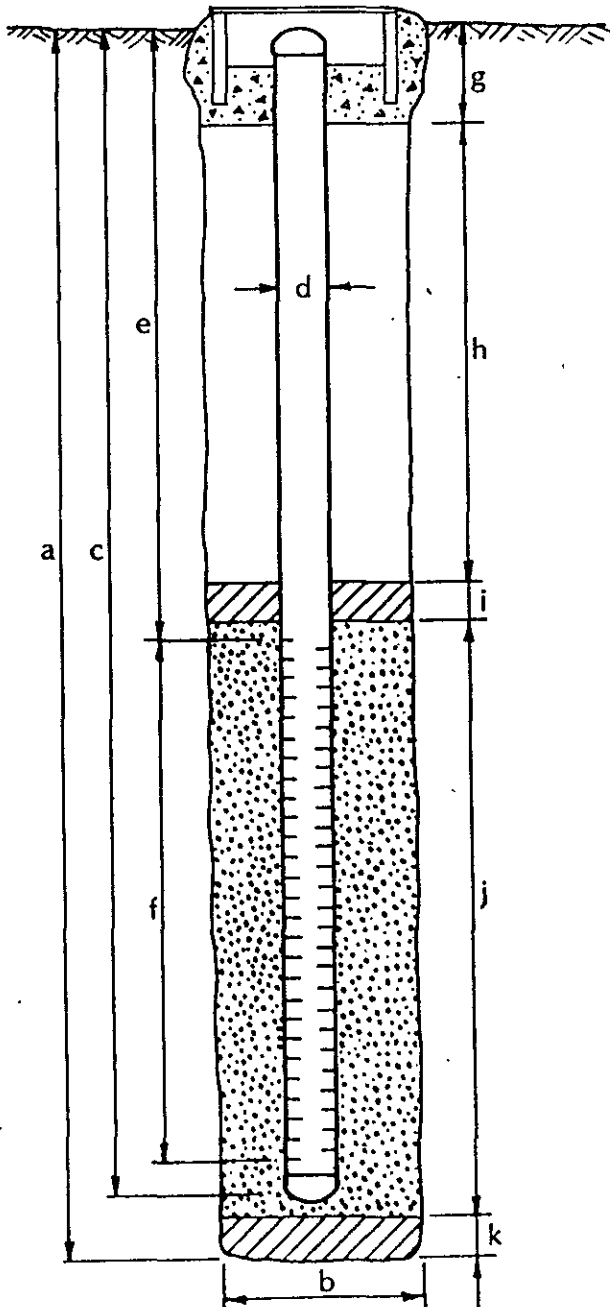


# WELL DETAILS



PROJECT NUMBER 738-04.01 BORING / WELL NO. S-1  
 PROJECT NAME Gettler-Ryan, Shell Broadway & Taft TOP OF CASING ELEV. \_\_\_\_\_  
 COUNTY Alameda GROUND SURFACE ELEV. \_\_\_\_\_  
 WELL PERMIT NO. \_\_\_\_\_ DATUM \_\_\_\_\_

G-5 vault box (Std.)



## EXPLORATORY BORING

a. Total depth 12.5 ft.  
 b. Diameter 8 in.  
 Drilling method Hollow-Stem Auger

## WELL CONSTRUCTION

c. Casing length 12.5 ft.  
 Material Schedule 40 PVC  
 d. Diameter 3 in.  
 e. Depth to top perforations 1 ft.  
 f. Perforated length 10.5 ft.  
 Perforated interval from 12½ to 2 ft.  
 Perforation type Machined Slotted  
 Perforation size .020 inch  
 g. Surface seal 1 ft.  
 Seal material Cement  
 h. Backfill - ft.  
 Backfill material Included in g.  
 i. Seal 0.5 ft.  
 Seal material Bentonite  
 j. Gravel pack (12½ to 1½ foot) 11 ft.  
 Pack material 6 x 12 Monterey Sand  
 k. Bottom seal - ft.  
 Seal material \_\_\_\_\_





July 12, 1985

Emcon Associates  
90 Archer Street  
San Jose, CA 95112

Reference: Shell Purchase Order No. MOH056751

ATTN: Erin Garner

Following are the results of our analysis for the presence of volatile hydrocarbons due to gasoline in three samples of soil received on June 21, 1985.

The samples were examined using the purge and trap technique. Final detection was by gas chromatography using a flame ionization detector and a Carbo-pack B/3% SP-1500 column. This method allows for the detection of aliphatic hydrocarbons from C<sub>5</sub> through C<sub>10</sub> and aromatic hydrocarbons through substituted benzenes. Hydrocarbons C<sub>5</sub>-C<sub>7</sub>, benzene and toluene were calculated by comparing the sample chromatogram to a fresh gasoline standard. Hydrocarbons C<sub>8</sub>-C<sub>10</sub> ethyl benzene, xylenes and other substituted aromatics were calculated by comparing to a standard of gasoline which had been evaporated to 35% of its original weight. The results given below are the sum of hydrocarbons in these two ranges.

| nd = none detected |                              | Results  |
|--------------------|------------------------------|--|
| Lab. #             | Sample Identification        | Parts per Million (dry soil basis)<br>Volatile Hydrocarbons<br>Due to Gasoline |
|                    | Job 738-04.01, 5755 Broadway |  |
| 29613              | S-A @ 4 - 5.5', 6/11/85      | 3.   |
| 29614              | S-A @ 8.5 - 10', 6/12/85     | 2.   |
| 29615              | S-A @ 10 - 11.5', 6/11/85    | nd   |
|                    | Detection Limit              | 2.   |

*Patricia L. Murphy*  
Patricia L. Murphy

PLM/jd

cc: Stan Roller  
Shell Oil Co.

Regional Office

IT Corporation • 397 Mathew Street • Santa Clara California 95050 • 408-727-4277

# EMCON ASSOCIATES • CHEMICAL LABORATORIES

Analysis • Consultation • Research • Environmental Studies  
State Approved Water Laboratory



## CERTIFIED ANALYTICAL REPORT

Report to: Gettler-Ryan  
1992 National Avenue  
Hayward, CA 94545

Location: Shell

Date Received July 3, 1985

Laboratory Number E85-0517

Project Number 738-04.01

Date Sampled July 3, 1985

### WATER

|             |     |
|-------------|-----|
| SAMPLE ID   | S-1 |
| SAMPLE DATE | 7/3 |

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### PARAMETER

|                               |      |
|-------------------------------|------|
| Benzene ug/l                  | 240  |
| Toluene ug/l                  | 9.8  |
| Xylenes and Ethylbenzene ug/l | 380  |
| Gasoline ug/l                 | 2400 |

Reported by: Philip Murphy Date: 7-24-85

90 ARCHER STREET, SAN JOSE, CALIFORNIA 95112

TELEPHONE (408) 275-1444

These results were obtained by following standard laboratory procedures, the liability of the corporation shall not exceed the amount paid for this report