



April 13, 1990

Alameda County Hazardous Materials Division  
80 Swan Way, Room 200  
Oakland, California 94621

Attention: Mr. Rafat Shahid

Gentlemen:

Quarterly Technical Reports  
Three Shell Service Stations  
Oakland and Berkeley, California

On behalf of Shell Oil Company, we enclose the quarterly technical report for the following Shell service stations for which Harding Lawson Associates is providing remedial investigations:

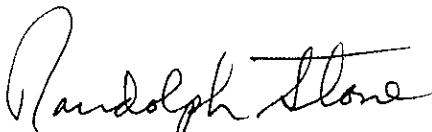
- 5755 Broadway, Oakland 18
- 6039 College Avenue, Oakland 18
- 2996 Shattuck Avenue, Berkeley

These quarterly technical reports have been reviewed and approved by Shell Oil Company.

If you have any questions, please call.

Very truly yours,

HARDING LAWSON ASSOCIATES

  
Randolph Stone  
Associate Hydrogeologist

RS/ly

cc: Ms. Diane Lundquist, Shell Oil Company  
Mr. Donald G. Gray, HLA

A Report Prepared for  
Shell Oil Company  
P.O. Box 4023  
Concord, California 94524

*WOP 3618*

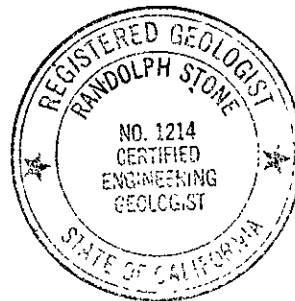
QUARTERLY TECHNICAL REPORT  
FIRST QUARTER OF 1990  
5755 BROADWAY  
OAKLAND, CALIFORNIA

HLA Job No. 4022,218.03

by

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April 13, 1990

## INTRODUCTION

This Quarterly Technical Report (QTR) by Harding Lawson Associates (HLA) describes the status of our continuing evaluation of the presence of petroleum hydrocarbons in groundwater in the vicinity of the Shell Oil Company (Shell) service station at 5755 Broadway, Oakland, California (Plate 1). This report discusses the site history and investigation progress through the first quarter of 1990, and summarizes activities we plan to undertake in the second quarter of 1990.

## SITE HISTORY

Through conversations with employees at the service station, HLA understands that this facility was previously a Thrifty service station.

In July 1985, Gettler-Ryan Inc. (GRI) installed one soil boring (S-A) and one 4-inch monitoring well (S-1) on site to approximately 12 feet. Boring logs, well construction details, and previous analytical reports were presented in a letter from EMCON Associates (subcontractor to GRI) dated August 1, 1985. Relatively small concentrations of up to 3 parts per million (ppm) of total petroleum hydrocarbons (TPH) as gasoline were detected in soil and groundwater samples. A soil sample obtained from S-A at the maximum depth explored, 10 to 11.5 feet below grade, did not contain detectable concentrations of TPH as gasoline. These data indicated the presence of petroleum hydrocarbons only in the groundwater on site.

On August 10, 1989, Shell retained HLA to complete the site assessment and evaluate the need for remediation. On August 15, 1989, HLA obtained a groundwater sample from S-1. That sample contained concentrations of TPH as gasoline and benzene in respective concentrations of 170 and 6 parts per billion (ppb).

On September 18, HLA installed two soil borings, S-2 and S-3, at locations shown on Plate 2. Drilling was performed under the direction of an HLA field engineer, who obtained soil samples and converted the borings to groundwater monitoring wells as outlined in HLA work plan dated October 13, 1989. Results of analyses on soil and groundwater samples are summarized in Tables 1 and 2.

#### ACCOMPLISHMENTS DURING THE FIRST QUARTER OF 1990

##### Groundwater Sampling

On January 18, 1990, HLA collected groundwater samples from the existing monitoring wells.

Before sampling the groundwater, at least three casing volumes were purged from the well while monitoring temperature, pH, and conductivity. After these parameters stabilized, groundwater samples were collected with a clean Teflon bailer, and decanted directly into laboratory-prepared volatile organic analysis (VOA) vials. The samples were labeled and placed into an ice-chilled cooler for transportation, under chain-of-custody, to a state-certified chemical testing laboratory. Samples were analyzed for TPH as gasoline and for benzene, toluene, ethyl-

benzene, and xylenes (BTEX). Between wells, all purging and sampling equipment was cleaned with an Alconox solution and rinsed with deionized water.

#### Chemical Test Results

The results of chemical analyses on groundwater samples indicated the presence of gasoline fuel constituents in groundwater from S-1 and S-2, with concentrations of up to 1,100 ppb TPH as gasoline and 74 ppb benzene (Table 2).

#### Groundwater Gradient

The tops of well casings were surveyed to a temporary datum with an assigned elevation of 100.00 feet. Water-level measurements were obtained using a chalked steel tape accurate to 0.01 feet. Well survey and water-level data are presented in Table 3. Our calculations indicate that the hydraulic gradient direction is toward the south. Plate 3 illustrates the surface contours of groundwater at the site.

#### ANTICIPATED ACTIVITIES FOR THE SECOND QUARTER 1990

HLA plans to perform the following tasks for the second quarter 1990:

- Obtain groundwater samples from on-site monitoring wells to be analyzed for the presence of BTEX and TPH as gasoline for the purpose of monitoring hydrocarbons dissolved in groundwater.

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Table	2	Summary of Analyses on Groundwater Samples
Table	3	Well-survey and Water-level Data

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Plate	2	Site Plan
Plate	3	Groundwater Surface Contour Map

TABLES

Table 1. Summary of Analyses on Soil Samples

<u>Sample Number</u>	<u>Depth (ft)</u>	<u>Sample Date</u>	<u>TPH as Gasoline (ppm)</u>	<u>Benzene (ppm)</u>	<u>Toluene (ppm)</u>	<u>Ethyl-benzene (ppm)</u>	<u>Xylenes (ppm)</u>
S-2-1	30	09/18/89	92	.120	.800	.580	4.20
S-3-1	30	09/18/89	ND (10)	ND (.025)	.062 (.025)	ND (.025)	.120

( ) Reporting Limits in parentheses



Table 2. Summary of Analyses on Groundwater Samples

Well Number	Sample Date	TPH as Gasoline (ppb)	Benzene (ppb)	Toluene (ppb)	Ethyl- benzene (ppb)	Xylenes (ppb)
S-1	08/15/89	170	0.6	ND (1.5)	ND (1.5)	ND (1.5)
	11/13/89	90	1.2	ND (.5)	ND (1.5)	ND (1.5)
	01/18/90	ND (50)	57	3.1	5.7	10
S-2	09/22/89	260	15	2	1	13
	11/13/89	910	64	5.8	13	84
	01/18/90	1,100	74	5.6	13	45
S-3	09/22/89	ND (50)	ND (.5)	ND (.5)	ND (1.5)	ND (1.5)
	11/13/89	ND (50)	ND (.5)	ND (.5)	ND (1.5)	ND (1.5)
	01/18/90	ND (50)	ND (.5)	ND (.5)	ND (.5)	ND (.5)

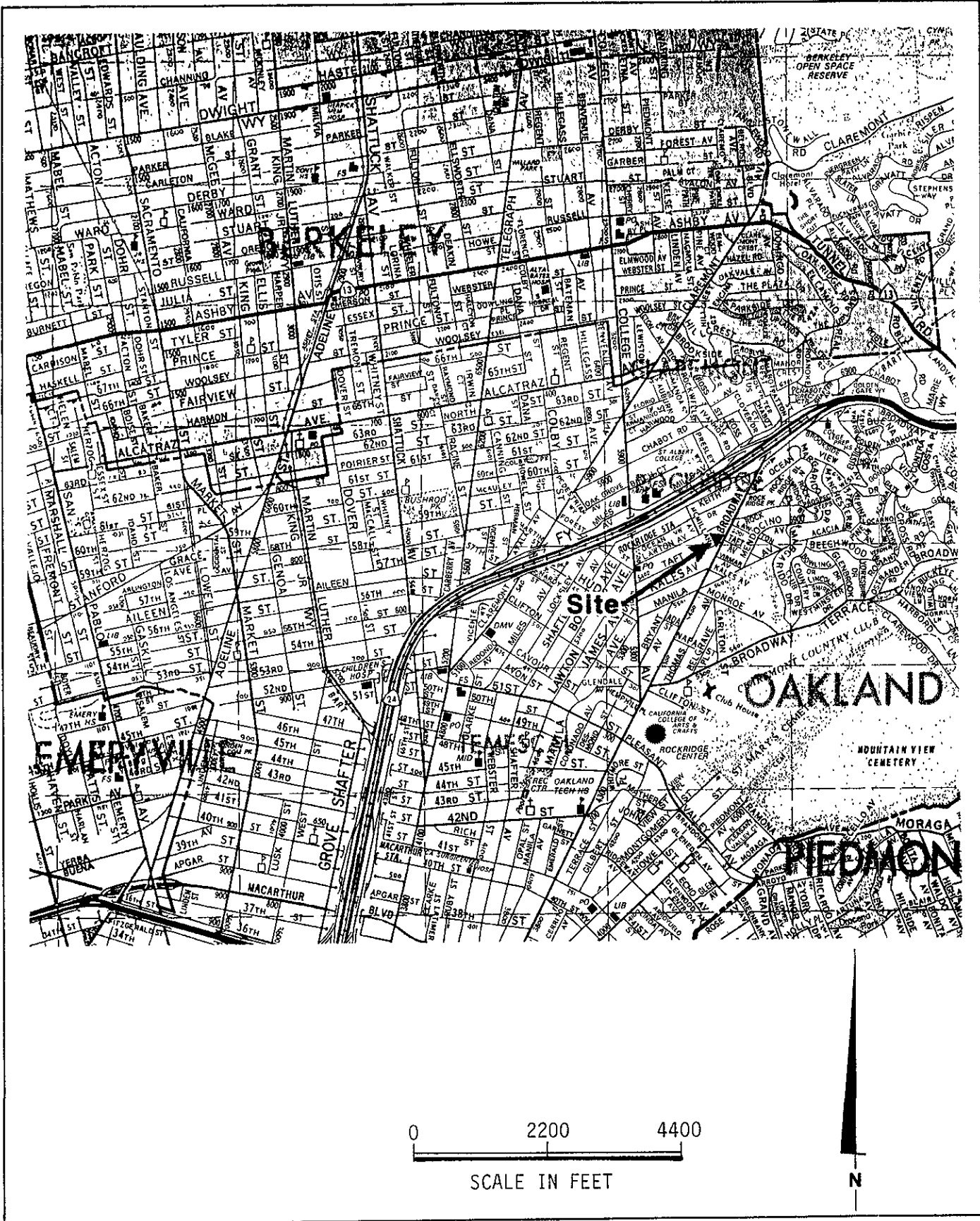
( ) Reporting limits in parentheses

Table 3. Well-survey and Water-level Data

<u>Well Number</u>	<u>Date</u>	<u>Top of Casing (feet)</u>	<u>Depth to Groundwater (feet)</u>	<u>Relative Groundwater Elevation (feet)</u>
S-1	10/05/89	*100.00	3.80	96.20
	11/13/89		3.72	96.12
	01/18/90		2.87	97.13
	02/20/90		2.71	97.29
S-2	10/05/89	98.92	4.44	94.48
	11/13/89		4.44	94.48
	01/18/90		3.41	95.51
	02/20/90		3.19	95.73
S-3	10/05/89	101.67	3.97	97.70
	11/13/89		3.76	97.91
	01/18/90		2.43	99.24
	02/20/90		2.27	99.40

\* Temporary datum of 100.00 feet assigned to top casing at Well Number S-1

ILLUSTRATIONS

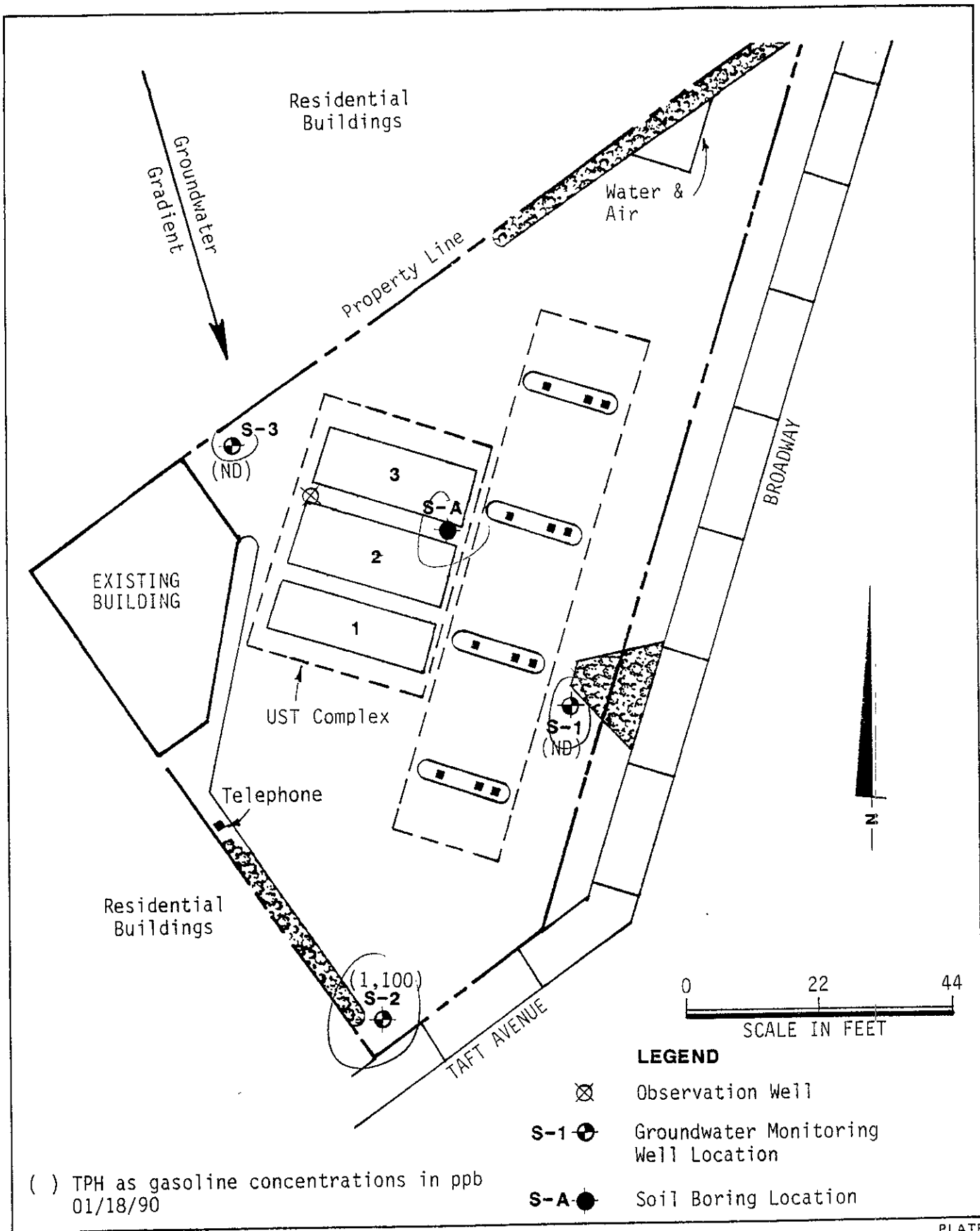


**Harding Lawson Associates**  
 Engineering and  
 Environmental Services

**Vicinity Map**  
 Shell Service Station  
 5755 Broadway  
 Oakland, California

PLATE  
**1**

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED DATE
KH	4022,218.03	<i>[Signature]</i>	8/89	



( ) TPH as gasoline concentrations in ppb  
01/18/90

**LEGEND**

- ⊗ Observation Well
- S-1 ● Groundwater Monitoring Well Location
- S-A ● Soil Boring Location



**Harding Lawson Associates**  
Engineering and  
Environmental Services

**Site Plan**  
Shell Service Station  
5755 Broadway  
Oakland, California

PLATE

**2**

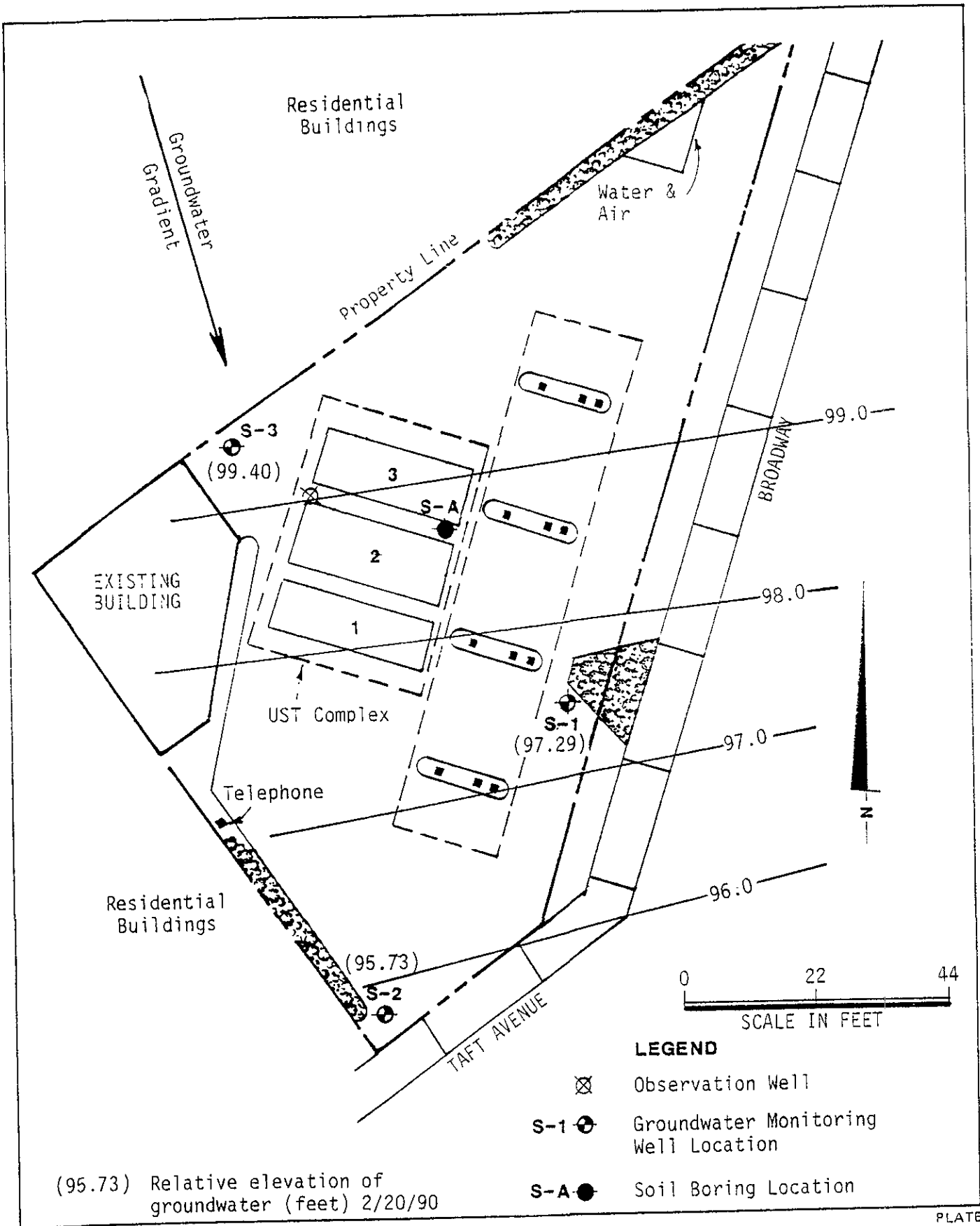
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APPROVED

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DATE 8/89

REVISED DATE



PLATE

**3**



**Harding Lawson Associates**  
 Engineering and  
 Environmental Services

Shell Service Station  
 5755 Broadway  
 Oakland, California

DRAWN KH  
 JOB NUMBER 4022,218.03

APPROVED  
*[Signature]*

DATE 8/89

REVISED DATE

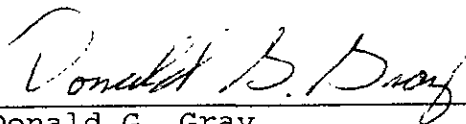
DISTRIBUTION

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GSY/RS/ly 031263P/R35

QUALITY CONTROL REVIEWER

  
\_\_\_\_\_  
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