WEISS ASSOCIATES
Geologic and Environmental Services
Fax: 415-547-5043 Phone: 415-547-5420
5500 Shellmound Street, Emeryville, CA 94608

91 MAY 15 AM 10:48

May 14, 1991

Mr. Lowell Miller
Alameda County Department of Environmental Health
Hazardous Materials Division
80 Swan Way, Room 200
Oakland, CA 94621-1426

Re: Shell Service Station
WIC #204-0072-0403
1601 Webster Street
Alameda, California 94501
WA Job #81-434-01

Dear Mr. Miller:

This letter describes Weiss Associates' (WA) second quarter 1991 activities at the Shell service station referenced above. This status report satisfies the quarterly reporting requirements outlined in our March 19, 1990 workplan, and prescribed by California Administrative Code Title 23 Waters, Chapter 3, Subchapter 16, Article 5, Section 265.d. Included below are:

- Descriptions and results of activities performed to date in the second quarter 1991, and
- Proposed work for the third quarter 1991.

WA recommended ground water sampling frequency modifications for this site which are on hold pending approval of the Alameda County Department of Environmental Health.[1]

SECOND QUARTER 1991 ACTIVITIES

During this quarter, WA:

- Collected ground water samples from the three site wells,

[1]WA, March 5, 1991, Quarterly status report letter to Lowell Miller, Alameda County Department of Environmental Health, 5 pages and 6 attachments.

- Measured ground water depths and determined ground water elevations and the flow direction, and
- Analyzed the ground water samples and tabulated the analytic results.

These activities are described below.

Ground Water Sampling

WA collected ground water samples from all three monitoring wells on April 11, 1991 as part of the quarterly ground water monitoring program at Shell Service Station WIC #204-0072-0403 in Alameda, California. Ground water samples from monitoring well MW-2 (Figure 2) contained benzene above the California Department of Health Services (DHS) maximum contaminant level (MCL) for drinking water.

Sampling Personnel: WA Environmental Technician Paul Cardoza

Monitoring Wells Sampled: MW-1, MW-2, and S-1

Method of Purging Wells: Dedicated PVC bailers

Volume of Water Purged Prior to Sampling:

- Wells were purged of four well-casing volumes, about 18 to 37 gallons each.

Method of Collecting Ground Water Samples:	Wells
• Drawn through sampling ports on the side of dedicated PVC bailers	MW-1 and MW-2
• Decanted from the dedicated PVC bailer	S-1

Methods of Containing Ground Water Samples:

- 40 ml glass volatile organic analysis (VOA) vials, preserved with hydrochloric acid and packed in protective foam sleeves

All samples were refrigerated and transported under chain-of-custody to the analytical laboratory.

Water Samples Transported to:

- International Technology Analytical Services, Inc. (IT), San Jose, California, and were received on April 12, 1991

Quality Assurance/Quality Control:

- A travel blank was submitted for analysis.
- An equipment blank was not necessary because all bailers are dedicated to specific wells.

Water sample collection records and chain-of-custody forms are included in Attachments A and B, respectively.

Ground Water Elevations and Flow Direction

- The depth to water was measured in all wells on April 11, 1991. Ground water elevations have increased about 3 ft from the previous quarter to the highest levels since monitoring began.
- Ground water flows north-northeastward. The flow direction has varied from north-northwest to northeast over the past year.

Depth to water measurements and ground water elevations are presented in Table 1. Ground water elevation contours are plotted on Figure 2. Previous ground water elevation contour maps are included in Attachment C.

Chemical Analyses

The Ground Water Samples were Analyzed for:	Wells
• Total petroleum hydrocarbons as gasoline (TPH-G) by modified EPA Method 8015	all wells
• Benzene, ethylbenzene, toluene and xylenes (BETX) by EPA Method 8020	all wells
• Halogenated volatile organic compounds (HVOCs) by EPA Method 601	MW-1 and MW-2

The laboratory analyzed the samples on April 19, 21, and 22, 1991. The results are presented in Table 2 and the analytic reports are included in Attachment B.

Discussion of Analytic Results of Ground Water for this Quarter:

- The ground water sample from monitoring well MW-2 contained benzene above the DHS MCL for drinking water.
- Toluene and xylene concentrations in the sample from well MW-2 decreased from the previous quarter from 1.2 to 0.15 ppm and 2.6 to 0.33 ppm, respectively.
- No 1,2-dichloroethane was detected in the sample from well MW-2 for the first time.
- No TPH-G or BETX have been detected in samples from wells MW-1 and S-1 for five consecutive quarters.

ANTICIPATED WORK FOR THIRD QUARTER 1991

During the third quarter 1991, on behalf of Shell Oil, WA plans to:

- Continue quarterly monitoring of ground water at this site, and
- Prepare a quarterly status report presenting all data generated during the third quarter including water sampling results and analysis.

We trust that this submittal satisfies your requirements. Please contact Tom Fojut or Eric Anderson if you have any questions.

Sincerely,
Weiss Associates

Thomas J. Fojut
Staff Geologist

Joseph P. Theisen, R.G.
Senior Project Hydrogeologist

REGISTERED GEOLOGIST
JOSEPH P. THEISEN
No. 4981
STATE OF CALIFORNIA

TJF/JPT:jg

E:\ALL\SHELL\425\434QMMY1.WP

Attachments: Figures
Tables
A - Water Sample Collection Records
B - Analytic Reports and Chain-of-Custody Form
C - Previous Ground Water Elevation Contour Maps

FIGURES

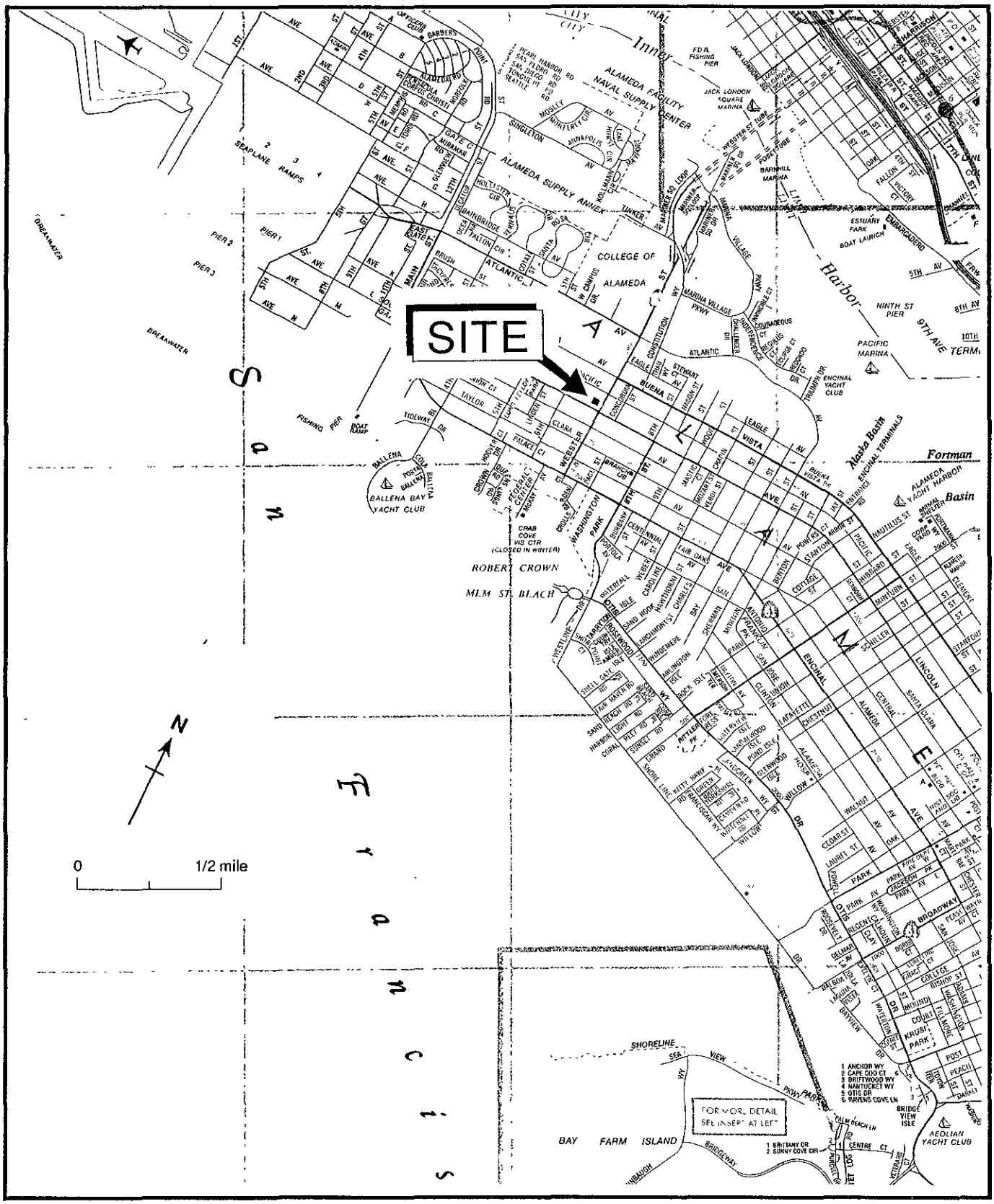

Figure 1. Site Location Map - Shell Service Station, WIC# 204-0072-0403, 1601 Webster Street, Alameda, CA

8/20/90

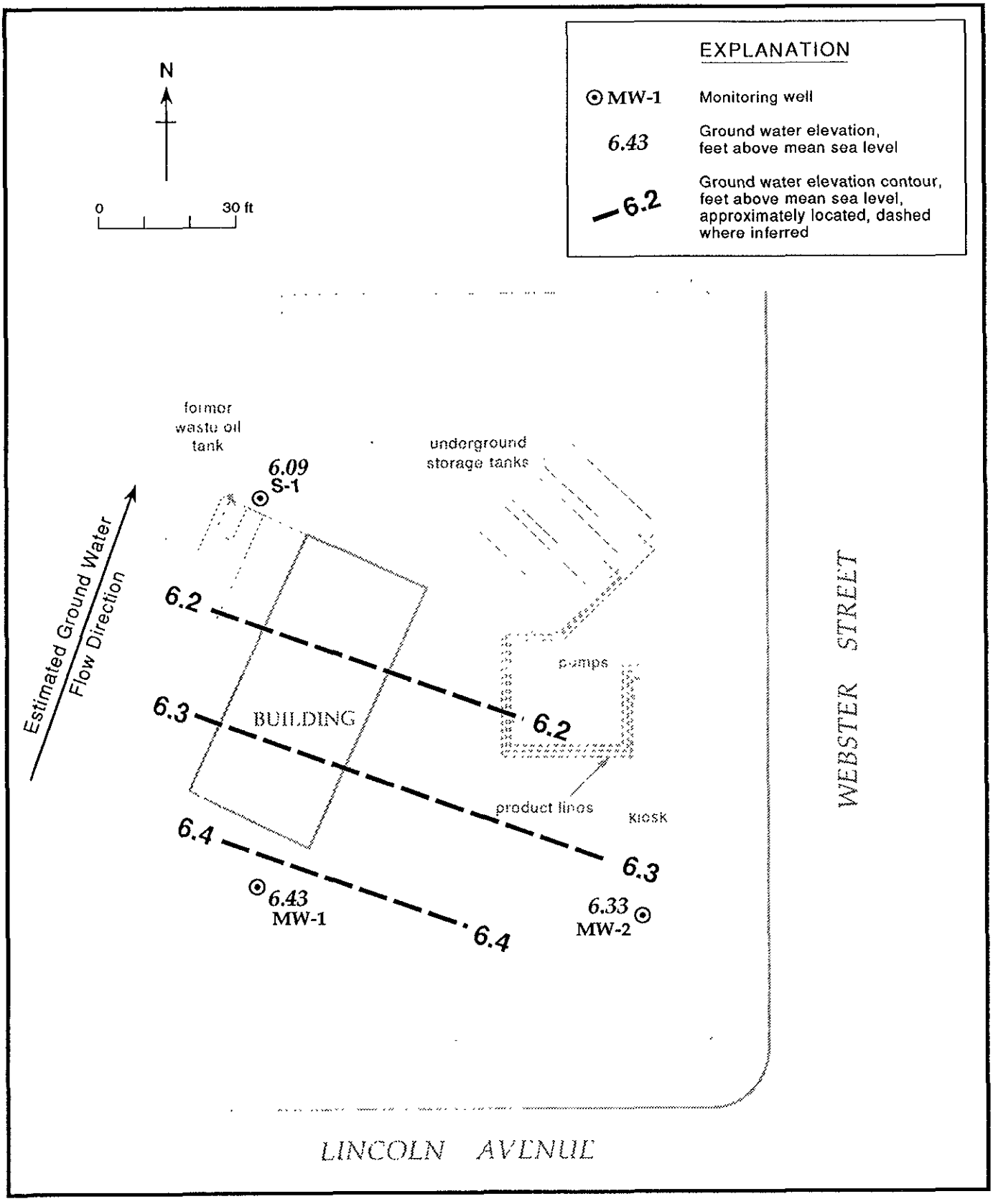

Figure 2. Monitoring Well Locations and Ground Water Elevation Contours - April 11, 1991 - Shell Service Station WIC #204-0072-0403, 1601 Webster Street, Alameda, California

TABLES

TABLE 1. Ground Water Elevation Data - Shell Service Station WIC #204-0072-0403, 1601 Webster Street Alameda, California

Well ID	Date	Top-of-Casing Elevation (ft above msl)	Depth to Water (ft)	Ground Water Elevation (ft above msl)
MW-1	04-11-90	13.80	8.22	5.58
	07-18-90		9.14	4.66
	10-18-90		10.37	3.43
	01-25-91		10.41	3.39
	04-11-91		7.37	6.43
MW-2	04-11-90	13.20	7.69	5.51
	07-18-90		8.56	4.64
	10-18-90		9.76	3.44
	01-25-91		9.78	3.42
	04-11-91		6.87	6.33
S-1	09-11-89	13.77	9.82	3.95
	04-11-90		8.41	5.36
	07-18-90		9.31	4.46
	10-18-90		10.43	3.34
	01-25-91		10.49	3.28
	04-11-91		7.68	6.09

TABLE 2. Analytic Results for Ground Water - Shell Service Station, WIC #204-0072-0403, 1601 Webster Street, Alameda, California

Sample ID	Date Sampled	Depth to Water (ft)	TPH-G	TPH-D	B	E	T	X	c-1,2-DCE	1,2-DCA	TOG
			<----------parts per million (mg/L)---------->								
MW-1	04-11-90[a]	8.22	<0.050	<0.050	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<10
	07-18-90	9.14	<0.050	---	<0.0005	<0.0005	<0.0005	<0.0005	0.003	<0.0005	<5
	10-18-90	10.37	<0.050	---	<0.0005	<0.0005	<0.0005	<0.0005	0.0079	<0.0005	<5
	01-25-91	10.41	<0.050	---	<0.0005	<0.0005	<0.0005	<0.0005	0.0056	<0.0005	---
	04-11-91	7.37	<0.050	---	<0.0005	<0.0005	<0.0005	<0.0005	0.0009	<0.0005	---
MW-2	04-11-90[a]	7.69	0.58	0.43	0.020	0.0012	0.0049	0.073	<0.0005	0.0011	<10
	07-18-90	8.56	1.4	---	0.11	0.071	0.31	0.31	<0.0005	0.0007	<5
	10-18-90	9.76	1.9	1.3[b]	0.11	0.089	0.47	0.40	<0.0005	0.0009	<5
	01-25-91	9.78	8.1	---	0.43	0.48	1.2	2.6	<0.0005	0.0008	---
	04-11-91	6.87	2.6	---	0.13	0.25	0.15	0.33	<0.0005	<0.0005	---
S-1	09-04-87[c]	d	---	---	<0.005	<0.005	<0.005	<0.005	<0.0005	<0.0005	---
	09-11-89[e]	9.82	<0.050	<0.10	<0.0005	<0.001	<0.001	<0.003	<0.0005	<0.0005	<1
	04-11-90[a]	8.41	<0.050	<0.050	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<10
	07-18-90	9.31	<0.050	---	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<5
	10-18-90	10.43	<0.050	---	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<5
	01-25-91	10.49	<0.050	---	<0.0005	<0.0005	<0.0005	<0.0005	---	---	---
	04-11-91	7.68	<0.050	---	<0.0005	<0.0005	<0.0005	<0.0005	---	---	---
Travel Blank	07-18-90		<0.050	---	<0.0005	<0.0005	<0.0005	<0.0005	---	---	---
	10-18-90		<0.050	---	<0.0005	<0.0005	<0.0005	<0.0005	---	---	---
	01-25-91		<0.050	---	<0.0005	<0.0005	<0.0005	0.0008	---	---	---
	04-11-91		<0.050	---	<0.0005	<0.0005	<0.0005	<0.0005	---	---	---
DHS MCLs			NE	NE	0.001	0.680	0.100[f]	1.750	0.0060	0.0005	NE

Abbreviations:

TPH-G = Total petroleum hydrocarbons as gasoline by Modified EPA Method 8015
TPH-D = Total petroleum hydrocarbons as diesel by Modified EPA Method 8015
B = Benzene by EPA Method 602, 624, or 8020
E = Ethylbenzene by EPA Method 602, 624, or 8020
T = Toluene by EPA Method 602, 624, or 8020
X = Xylenes by EPA Method 602, 624, or 8020
c-1,2-DCE = cis-1,2-dichloroethylene by EPA Method 601 or 624
1,2-DCA = 1,2-dichloroethane by EPA Method 601 or 624
TOG = Total non-polar oil and grease by American Public Health Association Standard Method 503E
<n = Not detected at detection limit of n ppm
DHS MCL = Department of Health Services Maximum Contaminant Level for drinking water
NE = DHS action levels not established
--- = Not analyzed

Analytical Laboratory:

International Technology Analytical Services, San Jose, California

Notes:

[a] = Samples analyzed by National Environmental Testing Pacific, Inc., Santa Rosa, California
[b] = Compounds detected and calculated as diesel appear to be the less volatile constituents of gasoline.
[c] = Sampled by Pacific Environmental Group, Santa Clara, California; acetone detected at 0.12 ppm by EPA Method 624; no other volatile organic compounds detected
[d] = Depth to water measurement not available
[e] = Analyzed for metals by EPA Method 6010: cadmium <0.010 ppm; chromium, 0.020 ppm; lead, 0.060 ppm; zinc, 0.030 ppm; and analyzed for PCBs (<0.0005 ppb) and semi-volatile organic compounds (<0.010-0.050 ppm) by EPA Method 625.
[f] = DHS recommended action level for drinking water, MCL not established

ATTACHMENT A

WATER SAMPLE COLLECTION RECORDS

WEISS ASSOCIATES

WATER SAMPLING DATA

Well Name MW-1 Date 4/11/91 Time of Sampling 13:09
Job Name Shell-Alameda II Job Number 81-434-01 Initials PC
Sample Point Description M (M = Monitoring Well)
Location South side of site, near building wall.

WELL DATA: Depth to Water 7.37 ft (static, pumping) Depth to Product — ft.
Product Thickness — Well Depth 21.0 ft (spec) Well Depth 20.77 ft(sounded) Well Diameter 4 in
Initial Height of Water in Casing 13.40 ft. = volume 8.75 gal.
4 Casing Volumes to be Evacuated. Total to be evacuated 35.0 gal.

EVACUATION METHOD: Pump # and type — Hose # and type —
Bailer# and type 3"x 36" ovr Dedicated Y (Y/N)
Other —

Evacuation Time: Stop 12:54
Start 12:36
Total Evacation Time 18 min
Total Evacuated Prior to Sampling 37.0 gal.
Evacuation Rate 2.05 gal. per minute
Depth to Water during Evacuation — ft. — time
Depth to Water at Sampling 8.26 ft. 13:11 time
Evacuated Dry? No After — gal. Time —
80% Recovery = —
% Recovery at Sample Time — Time —

Formulas/Conversions
r = well radius in ft.
h = ht of water col in ft.
vol. in cyl. = $\pi r^2 h$
7.48 gal/ft^3
V_2" casing = 0.163 gal/ft
V_3" casing = 0.367 gal/ft
V_4" casing = 0.653 gal/ft
$V_{4.5}$" casing = 0.826 gal/ft
V_6" casing = 1.47 gal/ft
V8 casing = 2.61 gal/ft

CHEMICAL DATA: Meter Brand/Number —
Calibration: — 4.0 — 7.0 — 10.0

Measured: SC/µmhos	pH	T°C	Time	Volume Evacuated (gal.)

SAMPLE: Color Slightly cloudy Odor None
Description of matter in sample: Very fine particles
Sampling Method: from sample port on side of dedicated bailer
Sample Port: Rate — gpm Totalizer — gal.
Time —

# of Cont.	Sample ID	Cont. Type[1]	Vol[2]	Fil[3]	Ref[4]	Preservative (specify)	Analytic Method	Turn[5]	LAB
3	041-01	w/cv	40ml	N	Y	HCl	EPA 8015/8020	N	ET
↓	↓	↓	↓	↓	↓	↓	EPA 601	↓	↓

1 Sample Type Codes: W = Water, S = Soil, Describe Other
Container Type Codes: V = VOA/Teflon Septa, P = Plastic, C or B = Clear/Brown Glass, Describe Other
Cap Codes: PT = Plastic, Teflon lined;
2 = Volume per container; 3 = Filtered (Y/N); 4 = Refrigerated (Y/N)
5 Turnaround [N = Normal, W = 1 week, R = 24 hour, HOLD (spell)]

ADDITIONAL COMMENTS, CONDITIONS, PROBLEMS:

WEISS ASSOCIATES

WATER SAMPLING DATA

Well Name MW-2 Date 4/22/91 Time of Sampling 14:34
Job Name Shell-Alameda II Job Number 81-434-01 Initials PC
Sample Point Description M (M = Monitoring Well)
Location SW area of site, in driveway

WELL DATA: Depth to Water 6.87 ft (static, pumping) Depth to Product — ft.
Product Thickness — Well Depth 20.0 ft (spec) Well Depth 19.92 ft(sounded) Well Diameter 4 in
Initial Height of Water in Casing 13.05 ft. = volume 8.52 (2) gal.
4 Casing Volumes to be Evacuated. Total to be evacuated 34.01 gal.

EVACUATION METHOD: Pump # and type — Hose # and type —
Bailer# and type 3"x 36" PVC Dedicated Y (Y/N)
Other —

Evacuation Time: Stop 14:18
Start 14:02
Total Evacation Time 16 min
Total Evacuated Prior to Sampling 35.0 gal.
Evacuation Rate 2.2 gal. per minute
Depth to Water during Evacuation — ft. — time
Depth to Water at Sampling 7.93 ft. 14:36 time
Evacuated Dry? No After — gal. Time —
80% Recovery =
% Recovery at Sample Time — Time —

Formulas/Conversions
r = well radius in ft.
h = ht of water col in ft.
vol. in cyl. = $\pi r^2 h$
7.48 gal/ft^3
V_2" casing = 0.163 gal/ft
V_3" casing = 0.367 gal/ft
V_4" casing = 0.653 gal/ft
$V_{4.5}$" casing = 0.826 gal/ft
V_6" casing = 1.47 gal/ft
V8 casing = 2.61 gal/ft

CHEMICAL DATA: Meter Brand/Number /
Calibration: ____ 4.0 ____ 7.0 ____ 10.0

Measured:	SC/µmhos	pH	T°C	Time	Volume Evacuated (gal.)
		N/A			

SAMPLE: Color Clear Odor Slight
Description of matter in sample: None
Sampling Method: from sample port on side of dedicated bailer
Sample Port: Rate — gpm Totalizer — gal.
Time —

# of Cont.	Sample ID	Cont. Type[1]	Vol[2]	Fil[3]	Ref[4]	Preservative (specify)	Analytic Method	Turn[5]	LAB
3	041-02	w/cv	40ml	N	Y	HCL	EPA 8015/8020	N	ET
↓	↓	↓	↓	↓	↓	↓	EPA 601	↓	↓

1 Sample Type Codes: W = Water, S = Soil, Describe Other
Container Type Codes: V = VOA/Teflon Septa, P = Plastic, C or B = Clear/Brown Glass, Describe Other
Cap Codes: PT = Plastic, Teflon lined;
2 = Volume per container; 3 = Filtered (Y/N); 4 = Refrigerated (Y/N)
5 Turnaround [N = Normal, W = 1 week, R = 24 hour, HOLD (spell)]

ADDITIONAL COMMENTS, CONDITIONS, PROBLEMS:

WEISS ASSOCIATES

WATER SAMPLING DATA

Well Name S-1 Date 4/11/91 Time of Sampling 15:23
Job Name Shell-Alameda II Job Number 81-434-01 Initials PC
Sample Point Description M (M = Monitoring Well)
Location Northside of station, near storage area

WELL DATA: Depth to Water 7.68 ft (static) pumping) Depth to Product — ft.
Product Thickness — Well Depth 20.0 ft (spec) Well Depth 19.8 ft(sounded) Well Diameter 3 in
Initial Height of Water in Casing 12.12 ft. = volume 4.45 gal.
4 Casing Volumes to be Evacuated. Total to be evacuated 17.79 gal.

EVACUATION METHOD: Pump # and type — Hose # and type —
Bailer# and type 1½" x 48" PVC Dedicated Y (Y/N)
Other —

Evacuation Time: Stop ~~13:48~~ 14:57 —
Start 13:37 15:07 —
Total Evacation Time 21 min
Total Evacuated Prior to Sampling 18 gal.
Evacuation Rate .86 gal. per minute
Depth to Water during Evacuation — ft. — time
Depth to Water at Sampling 8.44 ft. 15:25 time
Evacuated Dry? Yes After 10 gal. Time 15:48
80% Recovery = 10.10 (2TW)
% Recovery at Sample Time .94 Time 15:25

Formulas/Conversions
r = well radius in ft.
h = ht of water col in ft.
vol. in cyl. = $\pi r^2 h$
7.48 gal/ft^3
V_2" casing = 0.163 gal/ft
V_3" casing = 0.367 gal/ft
V_4" casing = 0.653 gal/ft
$V_{4.5}$" casing = 0.826 gal/ft
V_6" casing = 1.47 gal/ft
V8 casing = 2.61 gal/ft

CHEMICAL DATA: Meter Brand/Number
Calibration: 4.0 7.0 10.0

Measured:	SC/µmhos	pH	T°C	Time	Volume Evacuated (gal.)

SAMPLE: Color Slightly cloudy Odor None
Description of matter in sample: Very small silty type material.
Sampling Method: Decanted from end of dedicated bailer
Sample Port: Rate —gpm Totalizer — gal.
Time —

# of Cont.	Sample ID	Cont. Type[1]	Vol[2]	Fil[3]	Ref[4]	Preservative (specify)	Analytic Method	Turn[5]	LAB
3	041-S1	W/cv	40ml	N	Y	HCL	EPA 8015/8020	N	IT

1 Sample Type Codes: W = Water, S = Soil, Describe Other
Container Type Codes: V = VOA/Teflon Septa, P = Plastic, C or B = Clear/Brown Glass, Describe Other
Cap Codes: PT = Plastic, Teflon lined;
2 = Volume per container; 3 = Filtered (Y/N); 4 = Refrigerated (Y/N)
5 Turnaround [N = Normal, W = 1 week, R = 24 hour, HOLD (spell)]

ADDITIONAL COMMENTS, CONDITIONS, PROBLEMS:

Travel Blanks

WEISS ASSOCIATES

WATER SAMPLING DATA

Well Name — Date 4/11/91 Time of Sampling 10:45

Job Name Shell Alameda E Job Number 81-434-01 Initials PC

Sample Point Description — (M = Monitoring Well)

Location

WELL DATA: Depth to Water _____ ft (static, pumping) Depth to Product _____ ft.

Product Thickness _____ Well Depth _____ ft (spec) Well Depth _____ ft(sounded) Well Diameter _____ in

Initial Height of Water in Casing _____ ft. = Volume _____ gal.

_____ Casing Volumes to be Evacuated. Total to be evacuated _____ gal.

EVACUATION METHOD: Pump # and type _____ Hose # and type _____

Bailer# and type _____ Dedicated _____ (Y/N)

Other _____

Evacuation Time: Stop _____

Start _____

Total Evacation Time _____

Total Evacuated Prior to Sampling _____ gal.

Evacuation Rate N/A gal. per minute

Depth to Water during Evacuation _____ ft. _____ time

Depth to Water at Sampling _____ ft. _____ time

Evacuated Dry? _____ After _____ gal. Time _____

80% Recovery = _____

% Recovery at Sample Time _____ Time _____

Formulas/Conversions

r = well radius in ft.

h = ht of water col in ft.

vol. in cyl. = $\pi r^2 h$

7.48 gal/ft^3

V_2" casing = 0.163 gal/ft

V_3" casing = 0.367 gal/ft

V_4" casing = 0.653 gal/ft

$V_{4.5}$" casing = 0.826 gal/ft

V_6" casing = 1.47 gal/ft

V8 casing = 2.61 gal/ft

CHEMICAL DATA: Meter Brand/Number _____

Calibration: _____ 4.0 _____ 7.0 _____ 10.0

Measured:	SC/μmhos	pH	T°C	Time	Volume Evacuated (gal.)

SAMPLE: Color _____ Odor _____

Description of matter in sample: _____

Sampling Method: _____

Sample Port: Rate ____ gpm Totalizer _____ gal.

Time

# of Cont.	Sample ID	Cont. Type[1]	Vol[2]	Fil[3]	Ref[4]	Preservative (specify)	Analytic Method	Turn[5]	LAB
3	041-21	w/cv	40ml	N	Y	HCl	EPA 8015/8020	N	ET

1 Sample Type Codes. W = Water, S = Soil, Describe Other
Container Type Codes: V = VOA/Teflon Septa, P = Plastic, C or B = Clear/Brown Glass, Describe Other
Cap Codes: PT = Plastic, Teflon lined;
2 = Volume per container; 3 = Filtered (Y/N); 4 = Refrigerated (Y/N)
5 Turnaround [N = Normal, W = 1 week, R = 24 hour, HOLD (spell)]

ADDITIONAL COMMENTS, CONDITIONS, PROBLEMS:

ATTACHMENT B

ANALYTIC RESULTS AND CHAIN-OF-CUSTODY FORM

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYTICAL SERVICES

CERTIFICATE OF ANALYSIS

Shell Oil Company **Date: 04/30/91**
Weiss Associates
5500 Shellmound Street
Emeryville, CA 94608
Tom Fojut

Work Order: T1-04-208 **P.O. Number: MOH 880-021 Vendor #I0002402**

This is the Certificate of Analysis for the following samples:

Client Work ID: 81-434-01 1601 Webster St., Alameda
Date Received: 04/12/91
Number of Samples: 4
Sample Type: aqueous

TABLE OF CONTENTS FOR ANALYTICAL RESULTS

Reviewed and Approved:

Suzanne Veaudry
Project Manager

IT ANALYTICAL SERVICES
SAN JOSE, CA

Company: Shell Oil Company
Date: 04/30/91
Client Work ID: 81-434-01 1601 Webster St.

Work Order: T1-04-208

TEST NAME: **Halocarbons by 8010/601**

SAMPLE ID: **041-01**
SAMPLE DATE: **04/11/91**
LAB SAMPLE ID: **T104208-01**
SAMPLE MATRIX: **aqueous**
RECEIPT CONDITION: **Cool**
EXTRACTION DATE: **N/A**
ANALYSIS DATE: **04/21/91**

RESULTS in Milligrams per Liter

PARAMETER	DETECTION LIMIT	DETECTED
Bromodichloromethane	0.0005	None
Bromoform	0.0005	None
Bromomethane	0.0005	None
Carbon tetrachloride	0.0005	None
Chlorobenzene	0.0005	None
Chloroethane	0.0005	None
Chloroform	0.0005	None
Chloromethane	0.0005	None
Dibromochloromethane	0.0005	None
1,2-Dichlorobenzene	0.0005	None
1,3-Dichlorobenzene	0.0005	None
1,4-Dichlorobenzene	0.0005	None
Dichlorodifluoromethane	0.0005	None
1,1-Dichloroethane	0.0005	None
1,2-Dichloroethane	0.0005	None
1,1-Dichloroethene	0.0005	None
cis-1,2-Dichloroethene	0.0005	0.0009
trans-1,2-Dichloroethene	0.0005	None
1,2-Dichloropropane	0.0005	None
cis-1,3-Dichloropropene	0.0005	None
trans-1,3-Dichloropropene	0.0005	None
Methylene chloride	0.0005	None
1,1,2,2-Tetrachloroethane	0.0005	None
Tetrachloroethene	0.0005	None
1,1,1-Trichloroethane	0.0005	None
1,1,2-Trichloroethane	0.0005	None
Trichloroethene	0.0005	None
Trichlorofluoromethane	0.0005	None
1,1,2-Trichlorotrifluoroethane	0.0005	None
Vinyl chloride	0.0005	None

IT ANALYTICAL SERVICES
SAN JOSE, CA

Company: Shell Oil Company
Date: 04/30/91
Client Work ID: 81-434-01 1601 Webster St.

Work Order: T1-04-208

TEST NAME: **Petroleum Hydrocarbons**

SAMPLE ID: **041-01**
SAMPLE DATE: **04/11/91**
LAB SAMPLE ID: **T104208-01**
SAMPLE MATRIX: **aqueous**
RECEIPT CONDITION: **Cool pH < 2**

RESULTS in Milligrams per Liter:

	METHOD	EXTRACTION DATE	ANALYSIS DATE
BTEX	8020		04/19/91
Low Boiling Hydrocarbons	Mod.8015		04/19/91

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**

IT ANALYTICAL SERVICES
SAN JOSE, CA

Company: Shell Oil Company
Date: 04/30/91
Client Work ID: 81-434-01 1601 Webster St.

Work Order: T1-04-208

TEST NAME: **Halocarbons by 8010/601**

SAMPLE ID: **041-02**
SAMPLE DATE: **04/11/91**
LAB SAMPLE ID: **T104208-02**
SAMPLE MATRIX: **aqueous**
RECEIPT CONDITION: **Cool**
EXTRACTION DATE: **N/A**
ANALYSIS DATE: **04/21/91**

RESULTS in Milligrams per Liter

PARAMETER	DETECTION LIMIT	DETECTED
Bromodichloromethane	0.0005	None
Bromoform	0.0005	None
Bromomethane	0.0005	None
Carbon tetrachloride	0.0005	None
Chlorobenzene	0.0005	None
Chloroethane	0.0005	None
Chloroform	0.0005	None
Chloromethane	0.0005	None
Dibromochloromethane	0.0005	None
1,2-Dichlorobenzene	0.0005	None
1,3-Dichlorobenzene	0.0005	None
1,4-Dichlorobenzene	0.0005	None
Dichlorodifluoromethane	0.0005	None
1,1-Dichloroethane	0.0005	None
1,2-Dichloroethane	0.0005	None
1,1-Dichloroethene	0.0005	None
cis-1,2-Dichloroethene	0.0005	None
trans-1,2-Dichloroethene	0.0005	None
1,2-Dichloropropane	0.0005	None
cis-1,3-Dichloropropene	0.0005	None
trans-1,3-Dichloropropene	0.0005	None
Methylene chloride	0.0005	None
1,1,2,2-Tetrachloroethane	0.0005	None
Tetrachloroethene	0.0005	None
1,1,1-Trichloroethane	0.0005	None
1,1,2-Trichloroethane	0.0005	None
Trichloroethene	0.0005	None
Trichlorofluoromethane	0.0005	None
1,1,2-Trichlorotrifluoroethane	0.0005	None
Vinyl chloride	0.0005	None

IT ANALYTICAL SERVICES
SAN JOSE, CA

Company: Shell Oil Company
Date: 04/30/91
Client Work ID: 81-434-01 1601 Webster St.

Work Order: T1-04-208

TEST NAME: **Petroleum Hydrocarbons**

SAMPLE ID: **041-02**
SAMPLE DATE: **04/11/91**
LAB SAMPLE ID: **T104208-02**
SAMPLE MATRIX: **aqueous**
RECEIPT CONDITION: **Cool pH < 2**

RESULTS in Milligrams per Liter:

	METHOD	EXTRACTION DATE	ANALYSIS DATE
BTEX	8020		04/19/91
Low Boiling Hydrocarbons	Mod.8015		04/19/91

PARAMETER	DETECTION LIMIT	DETECTED
Low Boiling Hydrocarbons calculated as Gasoline	0.5	**2.6**
BTEX		
Benzene	0.005	**0.13**
Toluene	0.005	**0.15**
Ethylbenzene	0.005	**0.25**
Xylenes (total)	0.005	**0.33**

IT ANALYTICAL SERVICES
SAN JOSE, CA

Company: Shell Oil Company
Date: 04/30/91
Client Work ID: 81-434-01 1601 Webster St.

Work Order: T1-04-208

TEST NAME: Petroleum Hydrocarbons

SAMPLE ID: 041-S1
SAMPLE DATE: 04/11/91
LAB SAMPLE ID: T104208-03
SAMPLE MATRIX: aqueous
RECEIPT CONDITION: Cool pH < 2

RESULTS in Milligrams per Liter:

	METHOD	EXTRACTION DATE	ANALYSIS DATE
BTEX	8020		04/22/91
Low Boiling Hydrocarbons	Mod.8015		04/22/91

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

IT ANALYTICAL SERVICES
SAN JOSE, CA

Company: Shell Oil Company
Date: 04/30/91
Client Work ID: 81-434-01 1601 Webster St.

Work Order: T1-04-208

TEST NAME: **Petroleum Hydrocarbons**

SAMPLE ID: **041-21**
SAMPLE DATE: **04/11/91**
LAB SAMPLE ID: **T104208-04**
SAMPLE MATRIX: **aqueous**
RECEIPT CONDITION: **Cool pH < 2**

RESULTS in Milligrams per Liter:

	METHOD	EXTRACTION DATE	ANALYSIS DATE
BTEX	8020		04/22/91
Low Boiling Hydrocarbons	Mod.8015		04/22/91

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**

IT ANALYTICAL SERVICES
SAN JOSE, CA

Company: Shell Oil Company
Date: 04/30/91
Client Work ID: 81-434-01 1601 Webster St.

Work Order: T1-04-208

TEST NAME: **Spike and Spike Duplicates**

SAMPLE ID: **Quality Control**
SAMPLE DATE: **not spec**
LAB SAMPLE ID: **T104208-05A**
EXTRACTION DATE:
ANALYSIS DATE: **04/20/91**
ANALYSIS METHOD: **601/8010**

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
Chlorobenzene	None	20.0	19.7	20.4	99.	102.	3.
1,1-Dichloroethene	None	20.0	18.9	20.0	95.	100.	5.
Trichloroethene	None	20.0	18.5	19.3	93.	97.	4.

SURROGATES	MS %Rec	MSD %Rec
1-Chloro-2-Fluorobenzene	113.	116.

IT ANALYTICAL SERVICES
SAN JOSE, CA

Company: Shell Oil Company
Date: 04/30/91
Client Work ID: 81-434-01 1601 Webster St.

Work Order: T1-04-208

TEST NAME: **Spike and Spike Duplicates**

SAMPLE ID: **Quality Control**
SAMPLE DATE: **not spec**
LAB SAMPLE ID: **T104208-05B**
EXTRACTION DATE:
ANALYSIS DATE: **04/19/91**
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.	444.	428.	89.	86.	3.

SURROGATES	MS %Rec	MSD %Rec
1,3-Dichlorobenzene	117.	128.

IT ANALYTICAL SERVICES
SAN JOSE, CA

Company: Shell Oil Company
Date: 04/30/91
Client Work ID: 81-434-01 1601 Webster St.

Work Order: T1-04-208

TEST NAME: **Spike and Spike Duplicates**

SAMPLE ID: **Quality Control**
SAMPLE DATE: **not spec**
LAB SAMPLE ID: **T104208-05C**
EXTRACTION DATE:
ANALYSIS DATE: **04/20/91**
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	ND<0.5	50.0	50.0	44.5	100.	89.	12.
Toluene	ND<0.5	50.0	47.0	42.5	94.	85.	10.
Ethyl benzene	ND<0.5	50.0	45.1	41.1	90.	82.	9.
Xylenes	ND<0.5	150.	107.	97.3	71.	65.	9.

SURROGATES	MS %Rec	MSD %Rec
1,3-Dichlorobenzene	96.	96.

IT ANALYTICAL SERVICES
SAN JOSE, CA

Company: Shell Oil Company
Date: 04/30/91
Client Work ID: 81-434-01 1601 Webster St.

Work Order: T1-04-208

TEST CODE **601** TEST NAME **Halocarbons by 8010/601**

The method of analysis for volatile halocarbons is taken from EPA Methods 601 and 8010. Samples are examined using the purge and trap technique. Final detection is by gas chromatography using an electrolytic conductivity detector.

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.

WEISS ASSOCIATES
5500 Shellmound St., Emeryville, CA 94608
Phone: 415-547-5420 FAX: 415-547-5043

Shell Service Station Address: 1601 WEBSTER STREET ALAMEDA CA
Shell Contact: KURT MILLER
WIC #: 204-0072-0502
AFE #:

Please send analytic results and a copy of the signed chain of custody form to:
TOM FOJUT
Project ID: 81-434-01

CHAIN-OF-CUSTODY RECORD AND ANALYTIC INSTRUCTIONS

Lab Personnel: 1) Specify analytic method and detection limit in report.
2) Notify us if there are any anomalous peaks on GC or other scans.
3) ANY QUESTIONS/CLARIFICATIONS: CALL US.

Sampled by: Paul Cardoza
Laboratory Name: IT

No. of Containers	Sample ID	Container Type[1]	Sample Date	Vol[2]	Fil[3]	Ref[4]	Preservative (specify)	Analyze for	Analytic Method	Turn[5]	COMMENTS
3	041-01	w/cv	4/11/91	40ml	N	Y	HCl	TPH-G/BETX	EPA 8015/8020	N	
	041-02							HVOC's	EPA 601		
	041-51							TPH-G/BETX	EPA 8015/8020		
	041-21							HVOC's	EPA 601		
								TPH-G/BETX	EPA 8015/8020		

1 Paul Cardoza 4/11/91 16:20
Released by (Signature), Date

1 Weiss Associates
Affiliation

2 [signature] 4/12/91
Received by (Signature), Date

2 Weiss Assoc. 16:20
Affiliation

3 [signature] 4/12/91
Released by (Signature), Date

3 Weiss Associates 13:25
Affiliation

4 Mark Patrick 13:25 4/12/91
Shipping Carrier, Method, Date

4 IT CLRP
Affiliation

5
Released by (Signature), Date

5
Affiliation

6
Received by Lab Personnel, Date

X
Seal intact?

6
Affiliation, Telephone

1 Sample Type Codes: W = Water, S = Soil, Describe Other; Container Type Codes: V = VOA/Teflon Septa, P = Plastic, C or B - Clear/Brown Glass, Describe Other;
Cap Codes: PT = Plastic, Teflon Lined 2 = Volume per container; 3 = Filtered (Y/N); 4 = Refrigerated (Y/N)
5 Turnaround [N = Normal, W = 1 Week, R = 24 Hour, HOLD (write out)]
ADDITIONAL COMMENTS, CONDITIONS, PROBLEMS:
→ Samples stored in locked secure area 4/11/91 → 4/12/91

F:\ALL\ADMIN\FORMS\COCSHELL.WP2

ATTACHMENT C

PREVIOUS GROUND WATER ELEVATION CONTOUR MAPS

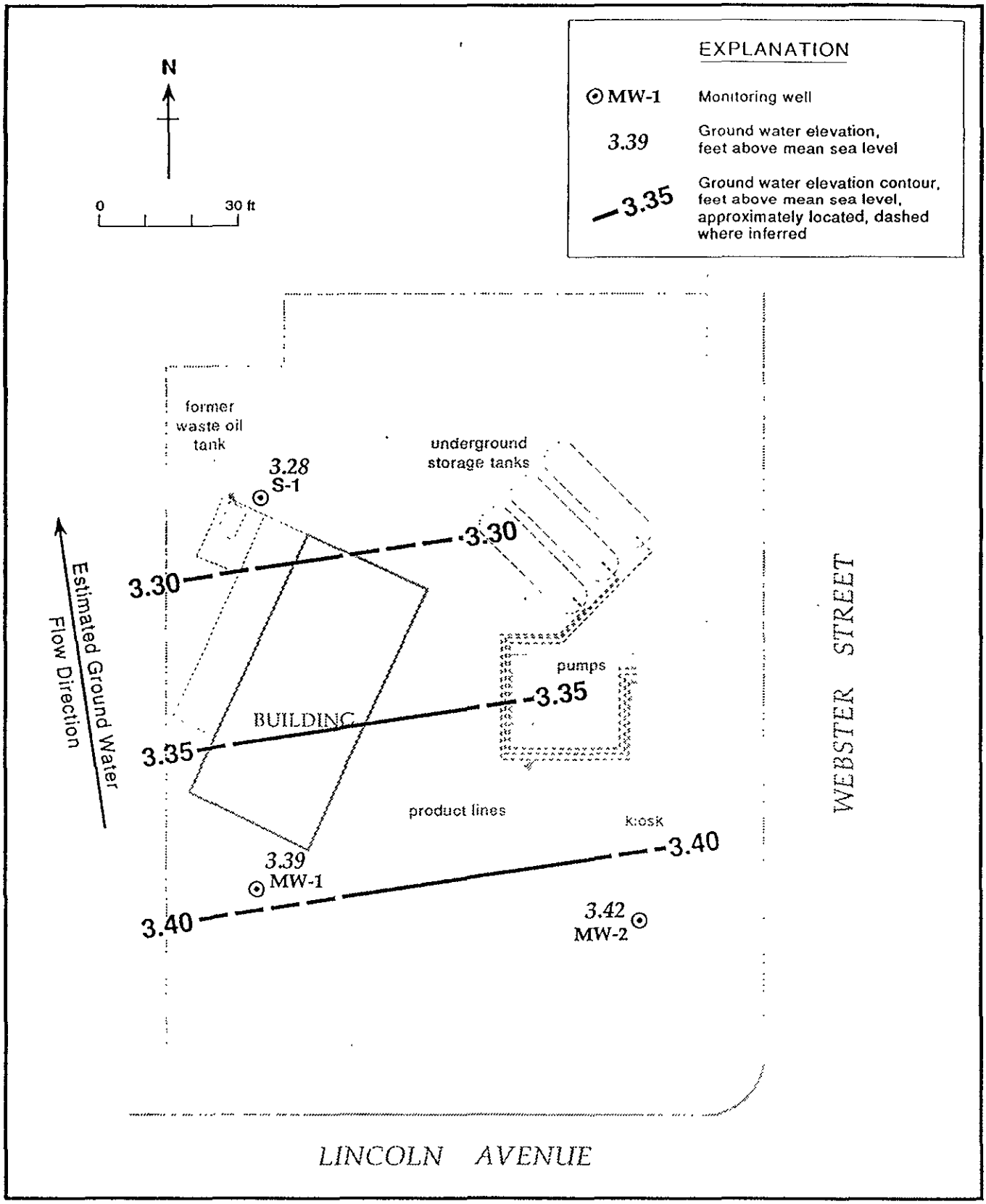

Figure 3. Ground Water Elevation Contours - January 25, 1991 - Shell Service Station WIC #204-0072-0403, 1601 Webster Street, Alameda, California

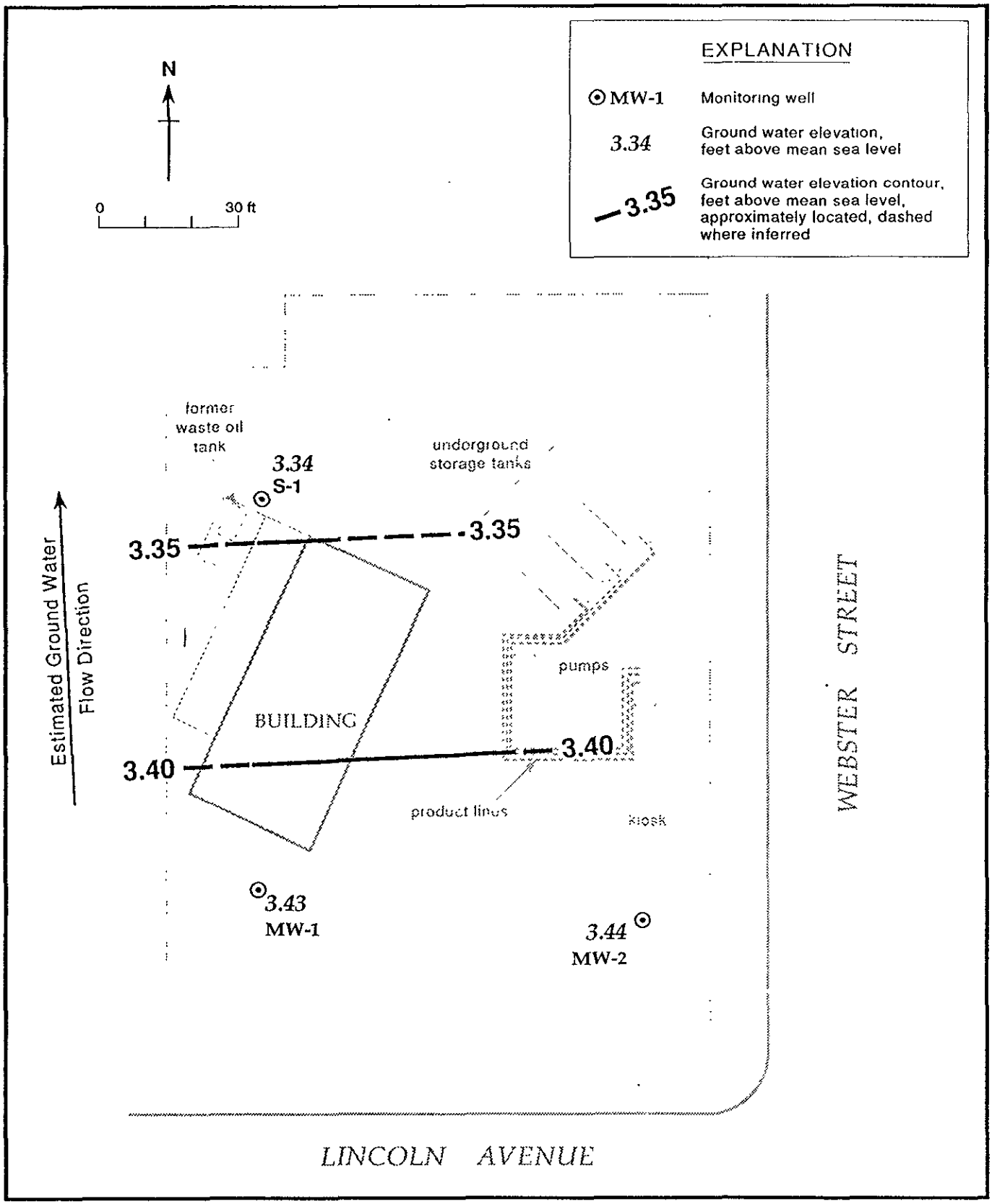

Figure 2. Monitoring Well Locations and Ground Water Elevation Contours - October 18, 1990 - Shell Service Station WIC #204-0072-0403, 1601 Webster Street, Alameda, California

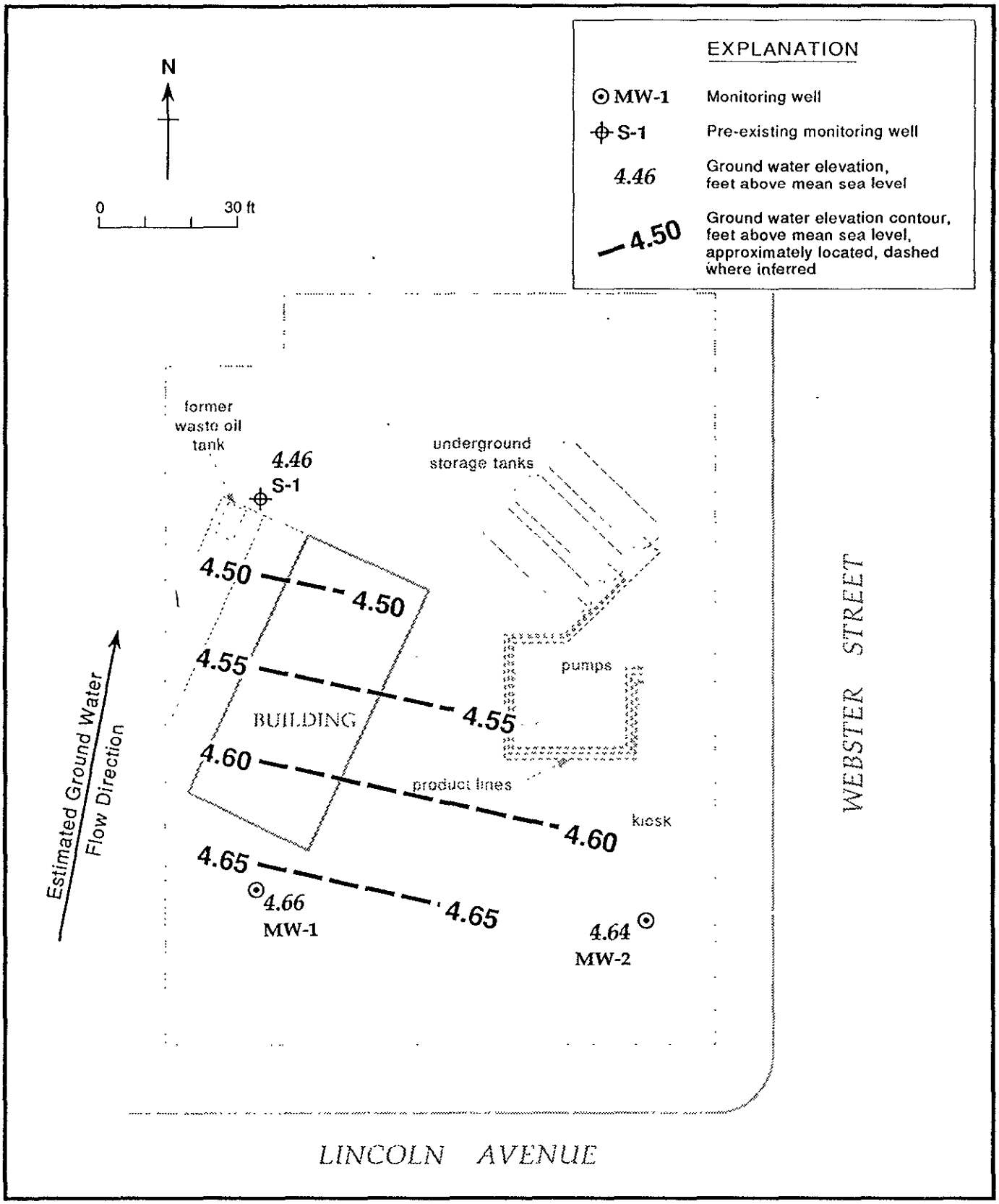

Figure 2. Monitoring Well Locations and Ground Water Elevation Contours - July 18, 1990 - Shell Service Station WIC #204-0072-0403, 1601 Webster Street, Alameda, California

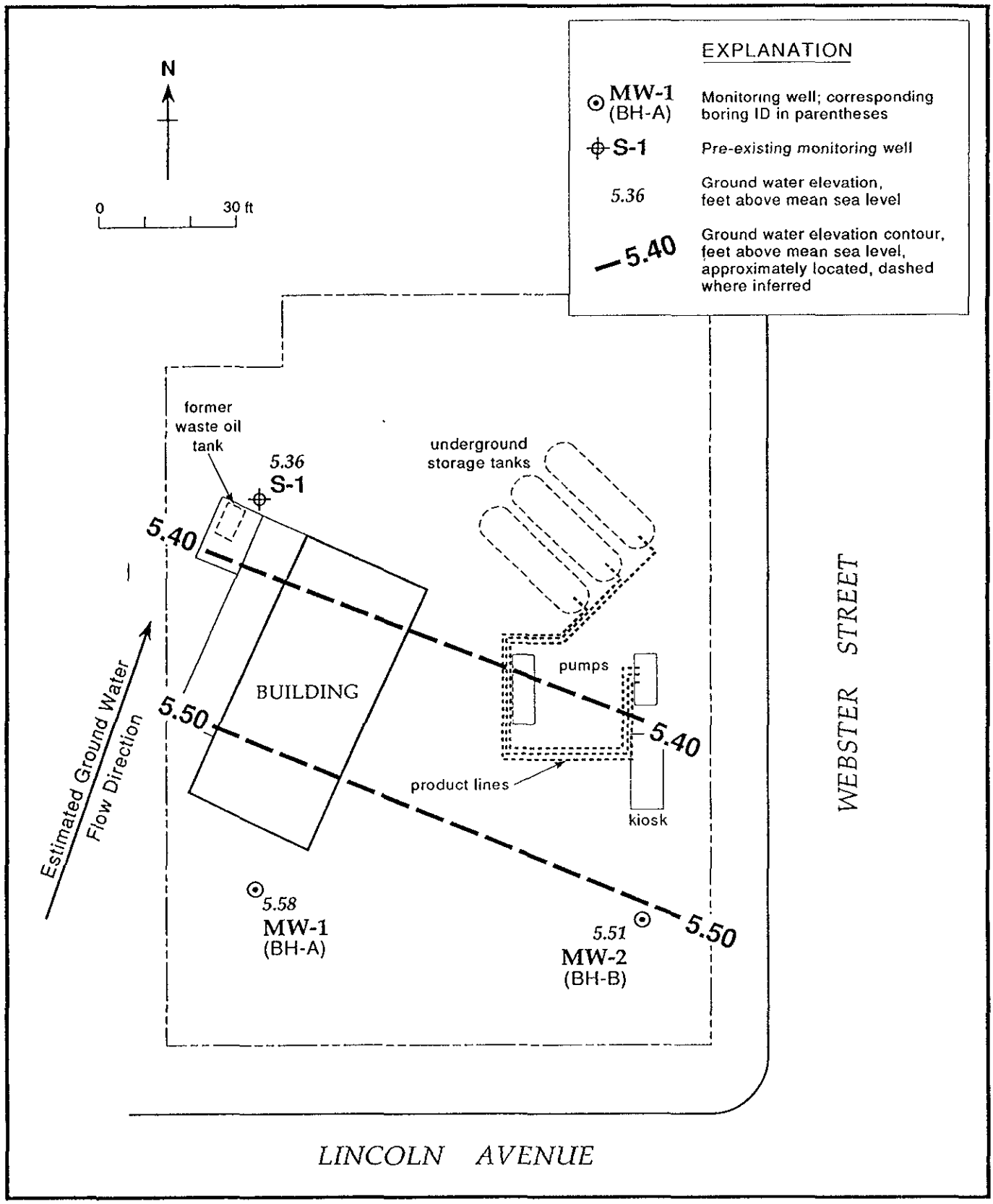

Figure 3. Monitoring Well Locations and Ground Water Elevation Contours - April 11, 1990 - Shell Service Station WIC #204-0072-0403, 1601 Webster Street, Alameda, California

1/14/91