



Delta
Environmental
Consultants, Inc.

90 AUG 21 AM 11:04

3330 Data Drive, Suite 100
Rancho Cordova, CA 95670
916/638-2085
FAX: 916/638-8385

August 20, 1990

Mr. Dennis Byrne
Environmental Health Services
Hazardous Materials Department
County of Alameda
470 27th Street
Oakland, California 94607

Subject: *Quarterly Monitoring Report*
Shell Service Station
3420 San Pablo Avenue
Oakland, California
Shell Wic No. 204-5508-5306
Delta Project No. 40-88-666

Dear Mr. Byrne:

Enclosed is a copy of Delta Environmental Consultant's, Inc. (Delta), *Quarterly Monitoring Report* for the subject site. Delta is currently seeking encroachment permits upgradient of MW-6, and on the west side of San Pablo Avenue across from the site, to complete our hydrogeologic investigation.

If you have any questions regarding this matter, please contact me at (916) 638-2085.

Sincerely,

DELTA ENVIRONMENTAL CONSULTANTS, INC.

Hal Hansen
Hydrogeologist/Project Manager

HH:law
Enclosure

cc/enc: Ms. Lisa McCann, California Regional Water Quality Control Board,
San Francisco Bay Region
Ms. Diane Lundquist, Shell Oil Company

QUARTERLY MONITORING REPORT

**3420 SAN PABLO AVENUE
OAKLAND, CALIFORNIA
SHELL WIC NO. 204-5508-5306
DELTA PROJECT NO. 40-88-666**

Prepared by:

**Delta Environmental Consultants, Inc.
3330 Data Drive, Suite 100
Rancho Cordova, California 95670
(916) 638-2085**

July 30, 1990

TABLE OF CONTENTS

| | | |
|------------------------|---|---|
| 1.0 INTRODUCTION | | 1 |
| 2.0 SITE DATA | | 1 |
| 2.1 | Depth to Ground Water Elevations and Observations | 1 |
| 2.2 | Ground Water Quality | 3 |
| 3.0 DISCUSSION | | 4 |
| 4.0 REMARKS/SIGNATURES | | 5 |

Tables

| | | |
|---------|--------------------------------|---|
| TABLE 1 | Ground Water Elevations | 2 |
| TABLE 2 | Ground Water Chemical Analysis | 3 |

Figures

| | | |
|----------|-----------------------------------|--|
| FIGURE 1 | Site Location Map | |
| FIGURE 2 | Water Table Contour Map - 4/10/90 | |

Appendices

| | | |
|------------|---|--|
| APPENDIX A | Certified Analytical Laboratory Reports | |
|------------|---|--|

QUARTERLY MONITORING REPORT

3420 SAN PABLO AVENUE
OAKLAND, CALIFORNIA
SHELL WIC NO. 204-5508-5306
DELTA PROJECT NO. 40-88-666

1.0 INTRODUCTION

This report presents results of ground water quality and ground water elevation measurements made by Delta Environmental Consultants, Inc. (Delta), in April 1990 for nine existing monitoring wells at the Shell service station located at 3420 San Pablo Avenue, Oakland, California (site, Figure 1).

Previous reports on the site include the following:

| <u>Report</u> | <u>Date</u> | <u>Author</u> |
|--|-----------------|------------------------------------|
| <i>Soil and Ground Water Investigation</i> | September 1988 | Ensco Environmental Services, Inc. |
| <i>Phase I Hydrogeologic Assessment Investigation</i> | August 14, 1989 | Delta |
| <i>Phase II Hydrogeologic Assessment Investigation</i> | May 30, 1990 | Delta |

On April 10, 1990, a site visit was made to perform the following:

- Measure water levels and record physical observations.
- Collect water samples from monitoring wells MW-2, MW-3, MW-4, MW-5, MW-6, MW-7, MW-8, and MW-9 for analysis of volatile organics and total petroleum hydrocarbons (TPH) by U.S. Environmental Protection Agency (EPA) Methods 8015 and 8020.

2.0 SITE DATA

2.1 Depth to Ground Water Elevations and Observations

Depth to ground water was measured and physical observations recorded at monitoring wells MW-1, MW-2, MW-3, MW-4, MW-5, MW-6, MW-7, MW-8, and MW-9 on April 10, 1990. The results are presented in Table 1. During the subjective analysis of water removed from the wells, it was noted that MW-1 contained 0.01-feet of free product. Figure 2 is a ground water contour map showing the location of the nine monitoring wells and the measured ground water elevations. The April 10, 1990, ground water elevations indicate a complex pattern of ground water flow. The general trend of ground water flow appears to be toward the southeast, except for irregularities in the water table surface near MW-5 and MW-9.

TABLE 1

Ground Water Elevations

| <u>Monitoring Well</u> | <u>Date</u> | <u>Top of Riser Elevation (ft)</u> | <u>Water Depth (feet)</u> | <u>Ground Water Elevation (ft)</u> | <u>Physical Observations</u> |
|------------------------|-------------|------------------------------------|---------------------------|------------------------------------|------------------------------|
| MW-1 | 06/12/89 | 21.28 | 9.57 | 11.71 | --- |
| | 01/23/90 | | 9.04 | 12.24 | Odor |
| | 02/02/90 | | 8.89 | 12.39 | Odor |
| | 02/21/90 | | 8.00 | 13.28 | 0.01' Free product |
| | 04/10/90 | | 9.47 | 11.81 | 0.01' Free product |
| MW-2 | 06/12/89 | 21.56 | 7.96 | 13.60 | --- |
| | 01/23/90 | | 8.30 | 13.26 | No odor |
| | 02/02/90 | | 8.04 | 13.52 | Odor |
| | 02/21/90 | | 7.57 | 13.99 | No odor |
| | 04/10/90 | | 7.94 | 13.62 | No odor |
| MW-3 | 06/12/89 | 21.78 | 10.77 | 11.01 | --- |
| | 01/23/90 | | 9.26 | 12.52 | No odor |
| | 02/02/90 | | 9.33 | 12.45 | No odor |
| | 02/21/90 | | 8.24 | 13.54 | No odor |
| | 04/10/90 | | 10.26 | 11.52 | No odor |
| MW-4 | 06/12/89 | 20.31 | 11.19 | 9.12 | --- |
| | 01/23/90 | | 9.25 | 11.06 | No odor |
| | 02/02/90 | | 8.04 | 12.27 | No odor |
| | 02/21/90 | | 7.90 | 12.41 | --- |
| | 04/10/90 | | 9.30 | 11.01 | No odor |
| MW-5 | 01/23/90 | 20.91 | 7.89 | 13.02 | Slight odor |
| | 02/02/90 | | 8.23 | 12.68 | No odor |
| | 02/21/90 | | 7.31 | 13.60 | Slight odor |
| | 04/10/90 | | 9.89 | 11.72 | No odor |
| MW-6 | 01/23/90 | 22.32 | 7.57 | 14.75 | No odor |
| | 02/02/90 | | 7.86 | 14.46 | No odor |
| | 02/21/90 | | 6.95 | 15.37 | No odor |
| | 04/10/90 | | 9.25 | 13.07 | No odor |
| MW-7 | 01/23/90 | 20.36 | 6.98 | 13.38 | No odor |
| | 02/02/90 | | 8.91 | 11.45 | Odor |
| | 02/21/90 | | 6.65 | 13.71 | No odor |
| | 04/10/90 | | 6.99 | 13.37 | No odor |
| MW-8 | 01/23/90 | 20.95 | 7.19 | 13.76 | Slight odor |
| | 02/02/90 | | 7.32 | 13.36 | No odor |
| | 02/21/90 | | 6.90 | 14.05 | Very slight odor |
| | 04/10/90 | | 7.20 | 13.75 | No odor |
| MW-9 | 01/23/90 | 21.19 | 9.31 | 11.88 | No odor |
| | 02/02/90 | | 9.02 | 12.17 | No odor |
| | 02/21/90 | | 8.28 | 12.91 | No odor |
| | 04/10/90 | | 8.41 | 12.78 | No odor |

2.2 Ground Water Quality

Ground water samples collected from monitoring wells MW-2, MW-3, MW-4, MW-5, MW-6, MW-7, MW-8, and MW-9 on April 10, 1990, were analyzed for benzene, toluene, ethylbenzene, and xylenes (BTEX) and TPH as gasoline. MW-1 was not sampled because it contained 0.01-feet of free product. The results from these laboratory analyses are presented in Table 2. Analytical results from samples collected during previous sampling events are provided for comparison. Copies of certified laboratory reports for the April 1990 sampling event are included in Appendix A.

TABLE 2
 Ground Water Chemical Analysis
 Concentrations in parts per billion (ppb)

| Monitoring Well | Date Sampled | Benzene | Toluene | Ethylbenzene | Xylenes | EDB ^a | EDC ^b | TPH ^c |
|-----------------|--------------|-----------------|---------|--------------|---------|------------------|------------------|------------------|
| MW-1 | 04/17/89 | 1,400 | 2,300 | 6,600 | 1,100 | ND ^d | 10.0 | 12,000 |
| | 01/23/90 | FP ^e | FP | FP | FP | FP | FP | FP |
| | 04/10/90 | FP | FP | FP | FP | FP | FP | FP |
| MW-2 | 04/17/89 | 12,000 | 1,800 | 12,000 | 2,200 | <100 | 36.0 | 35,000 |
| | 01/23/90 | 110 | 9.6 | 140 | 3,300 | NA ^f | NA | 40,000 |
| | 04/10/90 | 12,000 | 570 | 560 | 6,800 | NA | NA | 45,000 |
| MW-3 | 04/17/89 | 3.0 | 2.0 | 9.0 | <1.0 | <1.0 | <1.0 | 100 |
| | 01/23/90 | 1.1 | <0.3 | <0.3 | <0.3 | NA | NA | 140 |
| | 04/10/90 | 1.1 | <0.3 | <0.3 | 1.2 | NA | NA | 250 |
| MW-4 | 04/17/89 | 1.2 | <1.0 | 3.0 | 1.0 | <0.1 | 1.5 | 500 |
| | 01/23/90 | 1.2 | <0.3 | <0.3 | <0.3 | NA | NA | 150 |
| | 04/10/90 | 150 | 3.5 | 9.8 | 11 | NA | NA | 1,000 |
| MW-5 | 01/23/90 | 4.8 | <0.3 | <0.3 | <0.3 | NA | NA | 290 |
| | 04/10/90 | 40 | 0.59 | 0.63 | 2.7 | NA | NA | 750 |
| MW-6 | 01/23/90 | 460 | 100 | 9.3 | 1,600 | NA | NA | 33,000 |
| | 04/10/90 | 460 | 21 | 40 | 170 | NA | NA | 9,200 |
| MW-7 | 01/23/90 | 61 | 1.3 | <0.3 | 1,600 | NA | NA | 3,200 |
| | 04/10/90 | 4,300 | 23 | 18 | 550 | NA | NA | 15,000 |
| MW-8 | 01/23/90 | 160 | 730 | 47.0 | 3,300 | NA | NA | 22,000 |
| | 04/10/90 | 2,600 | 630 | 250 | 2,100 | NA | NA | 21,000 |
| MW-9 | 01/23/90 | <0.3 | 0.3 | 0.97 | 3.0 | NA | NA | 8.8 |
| | 04/10/90 | 500 | 4.1 | 1.3 | 50 | NA | NA | 2,500 |

^aEthylene dibromide.

^b1,2-dichloroethene.

^cTotal petroleum hydrocarbons as gasoline.

^dNot detected.

^eFree product.

^fNot analyzed.

Dissolved hydrocarbons were detected in all samples collected from each monitoring well. Benzene concentrations ranged from 1.1 parts per billion (ppb) in MW-3 to 12,000 ppb benzene in MW-2.

3.0 DISCUSSION

The water level has dropped in each monitoring well. Water level decline since February 21, 1990, ranges from 0.13 foot in MW-9 to 2.3 feet in MW-6. This decline is probably due to seasonal water table fluctuations. Free product thickness in MW-1 has remained constant at approximately 0.01 foot. Dissolved benzene concentrations have increased in monitoring wells MW-2, MW-4, MW-5, MW-7, MW-8, and MW-9 between January and April 1990.

Delta will continue to monitor water levels and water quality on a quarterly basis. The next sampling event will take place in July 1990. Delta is currently seeking an encroachment permit from the city of Oakland to install an upgradient and a downgradient monitoring well to complete the hydrogeologic investigation.

4.0 REMARKS/SIGNATURES

The recommendations contained in this report represent our professional opinions and are based in part on information supplied by the client. These opinions are based on currently available information and are arrived at in accordance with currently accepted hydrogeologic and engineering practices at this time and location. This report has been prepared solely for the use of Shell and any reliance on this report by third parties shall be at such party's sole risk. Other than this, no warranty is implied or intended.

DELTA ENVIRONMENTAL CONSULTANTS, INC.

This report was prepared by: Hal E. Hansen
Hal E. Hansen
Hydrogeologist/Project Manager

Date July 30, 1990

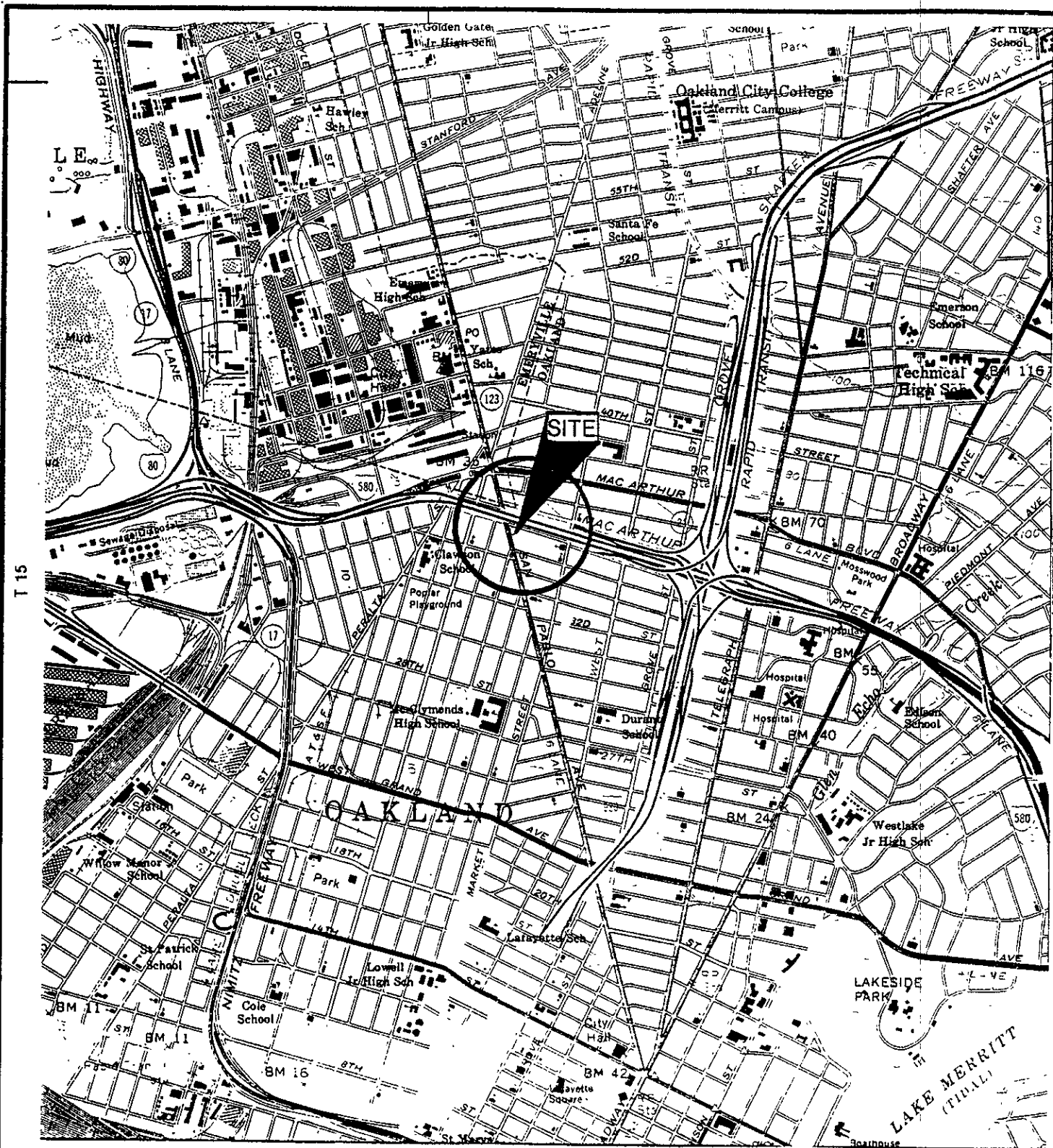
The work performed in this report was done under the supervision of a California Registered Geologist:

Dale A. van Dam
Dale A. van Dam, R.G.
California Registered
Geologist #4632

Date 8/2/90

/law





GENERAL NOTES:

BASE MAP FROM U.S.G.S.
 OAKLAND WEST, CA.
 7.5 MINUTE TOPOGRAPHIC
 SCALE 1 : 24,000'



QUADRANGLE LOCATION



SCALE

R 4 W



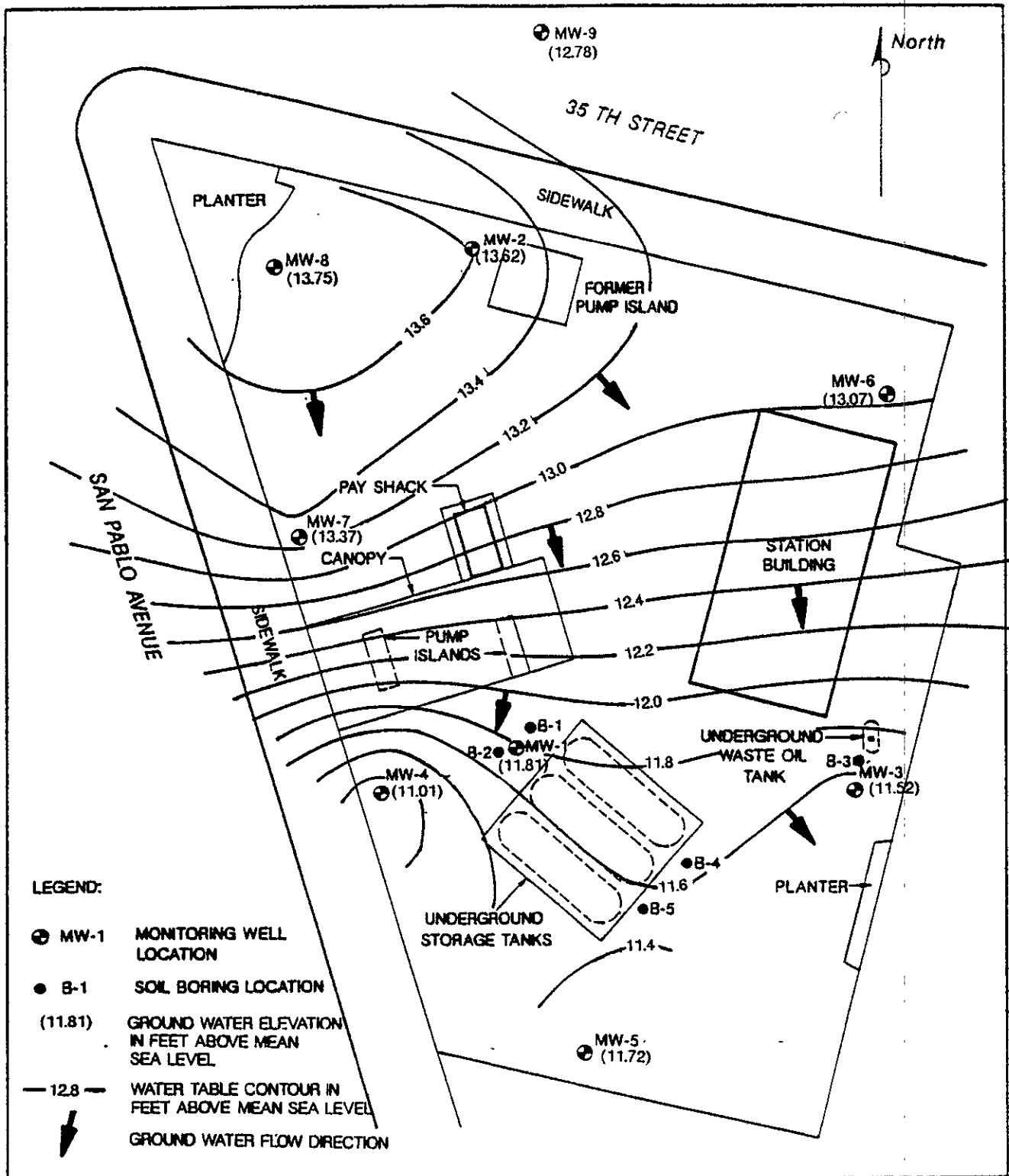
Delta
 Environmental
 Consultants, Inc.

FIGURE 1
 SITE LOCATION MAP
 3420 SAN PABLO AVENUE
 OAKLAND, CA.

DRAWN BY: *GM 1-6-89*

CHK BY:

JOB NC 40-88-666



LEGEND:

- ⊕ MW-1 MONITORING WELL LOCATION
- B-1 SOIL BORING LOCATION
- (11.81) GROUND WATER ELEVATION IN FEET ABOVE MEAN SEA LEVEL
- 12.8 — WATER TABLE CONTOUR IN FEET ABOVE MEAN SEA LEVEL
- ↘ GROUND WATER FLOW DIRECTION

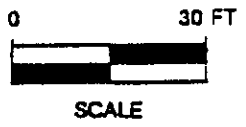



FIGURE 2
WATER TABLE CONTOUR MAP - 4/10/90
3420 SAN PABLO AVENUE
OAKLAND, CA.

| | | |
|--------------------------|----------------------------|---|
| PROJECT NO. 40-88-666 | PREPARED BY HEH 5/22/90 |  Delta Environmental Consultants, Inc. |
| AUTOCAD NO. — | REVIEWED BY | |

APPENDIX A

Certified Analytical Laboratory Reports



SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

APR 20 1990

Delta Environmental Consultants
3330 Data Drive
Rancho Cordova, CA 95670
Attention: Hal Hanson

Project: #40-88-666, Shell, Oakland

Enclosed are the results from 8 water samples received at Sequoia Analytical on April 11, 1990. The requested analyses are listed below:

| SAMPLE # | SAMPLE DESCRIPTION | DATE OF COLLECTION | TEST METHOD |
|-----------|--------------------|--------------------|--------------------|
| 0041660 A | Water, MW-2 | 4/10/90 | EPA 5030/8015/8020 |
| 0041661 A | Water, MW-3 | 4/10/90 | EPA 5030/8015/8020 |
| 0041662 A | Water, MW-4 | 4/10/90 | EPA 5030/8015/8020 |
| 0041663 A | Water, MW-5 | 4/10/90 | EPA 5030/8015/8020 |
| 0041664 A | Water, MW-6 | 4/10/90 | EPA 5030/8015/8020 |
| 0041665 A | Water, MW-7 | 4/10/90 | EPA 5030/8015/8020 |
| 0041666 A | Water, MW-8 | 4/10/90 | EPA 5030/8015/8020 |
| 0041667 A | Water, MW-9 | 4/10/90 | EPA 5030/8015/8020 |

Please contact me if you have any questions. In the meantime, thank you for the opportunity to work with you on this project.

Very truly yours,

SEQUOIA ANALYTICAL


Vickie Tague
Project Manager



SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

| | | |
|---|--|--|
| Delta Environmental Consultants 3330 Data Drive Rancho Cordova, CA 95670 Attention: Hal Hanson | Client Project ID: #40-88-666, Shell, Oakland Matrix Descript: Water Analysis Method: EPA 5030/8015/8020 First Sample #: 004-1660 A | Sampled: Apr 10, 1990 Received: Apr 11, 1990 Analyzed: Apr 12-16, 1990 Reported: Apr 18, 1990 |
|---|--|--|

TOTAL PETROLEUM FUEL HYDROCARBONS with BTEX DISTINCTION (EPA 8015/8020)

| Sample Number | Sample Description | Low/Medium B.P. Hydrocarbons mg/L (ppm) | Benzene mg/L (ppm) | Toluene mg/L (ppm) | Ethyl Benzene mg/L (ppm) | Xylenes mg/L (ppm) |
|---------------|--------------------|--|-----------------------|-----------------------|-----------------------------|-----------------------|
| 0041660 A | MW-2 | 45 | 12 | 0.57 | 0.56 | 6.8 |
| 0041661 A | MW-3 | 0.25 | 0.0011 | N.D. | N.D. | 0.0012 |
| 0041662 A | MW-4 | 1.0 | 0.15 | 0.0035 | 0.0098 | 0.011 |
| 0041663 A | MW-5 | 0.75 | 0.040 | 0.00059 | 0.00063 | 0.0027 |
| 0041664 A | MW-6 | 9.2 | 0.46 | 0.021 | 0.040 | 0.17 |
| 0041665 A | MW-7 | 15 | 4.3 | 0.023 | 0.018 | 0.55 |
| 0041666 A | MW-8 | 21 | 2.6 | 0.63 | 0.25 | 2.1 |
| 0041667 A | MW-9 | 2.5 | 0.50 | 0.0041 | 0.0013 | 0.050 |

| | | | | | |
|--------------------------|--------------|----------------|----------------|----------------|----------------|
| Detection Limits: | 0.030 | 0.00030 | 0.00030 | 0.00030 | 0.00030 |
|--------------------------|--------------|----------------|----------------|----------------|----------------|

Low to Medium Boiling Point Hydrocarbons are quantitated against a gasoline standard.
Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL

V. Tague
Vickie Tague
Project Manager

| |
|--|
| Please Note: 3420 San Pablo Avenue, Oakland, CA |
|--|



Sample Identification/Field Chain of Custody Record

Project: Oakland Shell 3420 San Pablo Ave W.O.# 40-88-6666
 Shipped by: G. Mostad Delta
 Shipped to: Sequoia Analytical Lab Redwood City CA
 Results to the attention of: Hal Hanson

| Sampling Point | Location | Field ID # | Date | Sample Type | No. of Containers | Analysis Required |
|----------------|----------------------------|------------|---------|------------------|-------------------|-----------------------|
| MW-2 | San Pablo Shell Oakland CA | MW-2 | 4/10/90 | H ₂ O | 2 | BT EX-TP/H 0041660 |
| 3 | | 3 | | | | 0041661 |
| 4 | | 4 | | | | 0041662 |
| 5 | | 5 | | | | 0041663 |
| 6 | | 6 | | | | 0041664 |
| 7 | | 7 | | | | 0041665 |
| 8 | | 8 | | | | 0041666 |
| 9 | | 9 | | | | 0041667 |

A-B
 ✓
 ✓
 "
 ✓
 "
 "
 "
 "
 "

| Sampler(s) (signature) Field ID | Relinquished by: (signature) | Received by: (signature) | Date/Time | Comments |
|---------------------------------------|------------------------------|--------------------------|----------------|----------|
| <u>Gary A. Mostad</u> all of above | <u>Gary Mostad</u> | <u>Paul Phil</u> | <u>4/11/90</u> | |
| | | | | |
| | | | | |

Sealed for shipment by: (signature) _____ Date/Time _____ Shipment method: Fed. Express
 Comments: Shell Contact - Diane Lundquist
Shell wic #: 204-5308-5306 Shell CT/DL 5441
Shell AFE #: 986642

Receiving Laboratory: Please return original form after signing for receipt of samples.