GETTLER-RYAN INC.
1364 North McDowell Blvd. Suite B2
Petaluma, CA 94954-1116
Phone (707) 789-3251, Fax (707) 789-3218

TRANSMITTAL

TO: Mr. Barney Chan
Alameda County Environmental
Health Services
1131 Harbor Bay Parkway
Alameda, CA 94502

#1059

DATE: June 19, 2000
PROJECT NO. 140123.04
SUBJECT: Tosco Service Station #5325
Site Conceptual Model

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COPIES	DATED	DESCRIPTION
1	6/19/00	Site Conceptual Model

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- ☐ For review and comment
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- ☐ For Approval
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- ☐ Approved as noted
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- ☐ For your use
- ☐ As noted below

COMMENTS:

Signed: _____

COPIES TO: David De Witt – Tosco Marketing Company

GETTLER-RYAN INC.

June 19, 2000

Mr. Barney Chan
Alameda County Environmental Health Services
1131 Harbor Bay Parkway
Alameda, CA 94502

Subject: **Site Conceptual Model for Tosco (76) Service Station No. 5325, located at 3220 Lakeshore Avenue, Oakland, California.**

Mr. Chan:

At the request of Tosco Marketing Company (Tosco), Gettler-Ryan Inc. (GR), has prepared this Site Conceptual Model (SCM) for the subject site. This SCM was prepared in response to a letter from the Alameda County Environmental Health Services (ACEHS), dated November 12, 1999. The ACEHS letter requested the preparation of an SCM and how source areas will be remediated.

Site Description

The subject site is an operating 76 Service Station situated on the southeast corner of the intersection of Lakeshore Avenue and Lake Park Avenue in Oakland, California (Figure 1). The site is bounded to the north by Lakeshore Avenue, to the west and southwest by Lake Park Avenue, to the southeast by a Lucky Supermarket parking lot and to the east by a Longs Pharmacy. Properties in the immediate site vicinity are used for commercial purposes that include grocery stores, restaurants and shopping facilities. Interstate 580 is located on the west side of Lake Park Avenue.

Current site facilities consist of the service station building with the service bays currently used for storage, three product dispenser islands, and two 12,000-gallon double-wall fiberglass gasoline underground storage tanks (USTs). Six groundwater monitoring wells (U-1 through U-6) have been installed at the site. Locations of the pertinent site features are shown on the Site Plan (Figure 2).

Geology and Hydrogeology

The subject site is situated on estuarine deposits northeast of the Lake Merritt basin and southwest of the Piedmont Hills at an elevation of approximately 7 to 11 feet (City of Oakland datum). These estuarine deposits consist primarily of unconsolidated, water-saturated, dark plastic clay and silty clay rich in organic material (GSI, 1994).

Based on previous subsurface investigations, the site is underlain by clay and silt to depths of approximately 25 feet below ground surface (bgs). Minor amounts of sand and gravel are occasionally noted, which apparently are dis-continuous across the site in an east-west orientation, and continuous across the site in a north-south orientation. Silt and sand fill were observed in the vadose zone to depths up to 10 feet bgs. The water-bearing zone is composed of sand and silt, and is encountered at depths of 6 to 17 feet bgs. This water-bearing zone is underlain by silt, clay, and gravel to a total explored depth of 25 feet bgs. The well borings all terminate in clay or silt, which appears to be laterally continuous beneath the site.

Historically, groundwater in the wells has been encountered at depths ranging from 6 to 10 feet bgs. During past drilling events at the site, groundwater was typically encountered at approximately 6 to 10 feet bgs, except during drilling of well U-4, where groundwater was first encountered at a depth of 19.2 feet bgs in June of 1994. Groundwater elevation data for the site indicates unconfined aquifer conditions.

Previous Environmental Investigations

In May 1990, three exploratory soil borings (U-A, U-B, and U-C) were drilled adjacent to the UST complex to depths ranging from 10 to 12.5 feet below ground surface (bgs). Soil samples collected from the soil borings were analyzed for total petroleum hydrocarbons as gasoline (TPHg) and benzene, toluene, ethylbenzene, and xylenes (BTEX). The samples contained TPHg concentrations ranging from 2 to 7,500 parts per million (ppm) and benzene concentrations ranging from 0.14 to 13 ppm (GSI; *Soil Boring Report*, dated June 12, 1990).

Two 10,000-gallon gasoline USTs, one 550-gallon waste oil UST, and related product dispensers were replaced in June 1990. Soil samples collected from the UST excavation sidewalls and bottom and product line trenches were reported to contain TPHg and benzene at concentrations ranging from 12 to 2,800 ppm and 0.008 to 11 ppm, respectively. Approximately 850 cubic yards of soil and imported backfill were aerated on-site to less than 100 ppm TPHg and then transported to an appropriate soil disposal facility. Groundwater was encountered at approximately 7.5 feet bgs (GSI, *Tank Replacement Report*, dated August 31, 1990).

Groundwater wells U-1, U-2 and U-3 were installed on September 24, 1990. TPHg was detected in soil samples collected from the capillary fringe in well borings U-1 and U-2 at concentrations of 110 and 480 ppm, respectively. Benzene was detected in the soil sample from well boring U-1 at a concentration of 4.5 ppm. Well U-3 was reported as not detected (ND) for petroleum hydrocarbons in soil and groundwater samples. Groundwater samples collected from wells U-1 and U-2 were reported to contain 690 and 38 parts per billion (ppb) TPHg and 780 and 27 ppb benzene, respectively (GSI; *Monitoring Well Installation Report*, dated December 19, 1990).

Groundwater wells U-4, U-5, and U-6 were installed on June 2, 1994. TPHg and benzene concentrations were detected in the capillary fringe soil sample collected from well boring U-5 at 400 and 1.9 ppm, respectively. TPHg and benzene were not detected in soil samples collected from well borings U-4 and U-6. Groundwater levels stabilized at depths between 8.8 and 9.2 feet bgs (GSI; *Monitoring Well Installation Report*, dated August 8, 1994).

One 550-gallon waste oil UST was removed and the product lines and dispensers were replaced in November 1996. A sample collected from the sidewall of the waste oil UST excavation was reported to contain 1.5 ppm total petroleum hydrocarbons as diesel (TPHd) and 78 ppm total oil and grease (TOG). TPHg, benzene, methyl tertiary butyl ether (MtBE), halogenated volatile organics (HVOs), and semivolatile organics (SVOs) were not detected in the sample. Product line trench excavation and overexcavation samples were reported to contain petroleum hydrocarbon concentrations ranging from ND to 880 ppm TPHg, ND to 3.6 ppm benzene, and ND to 23 ppm MtBE. A total of 276 tons of excavated soil were transported to an appropriate disposal facility (GSI; *Waste Oil Tank Removal and Product Line Replacement Report*, dated January 24, 1997).

Quarterly groundwater monitoring has been performed on the site wells since their installation. Well U-1 (crossgradient from the UST complex) contained floating product (0.01 to 0.55 feet) during 1995 to 1998. Well U-2 contained floating product (sheen to 0.03 feet) during 1997 and 1998. Historically, upgradient wells U-3 and U-4 have not contained dissolved petroleum hydrocarbons. Groundwater flow has been predominantly toward the northwest with a hydraulic gradient ranging from 0.002 to 0.02 feet/feet (GR; *Groundwater Monitoring and Sampling Report*, dated October 27, 1999).

Site Conceptual Model

The SCM is presented in Figure 3. Components of the SCM include figures, tables and charts presented in the appendices. Information utilized to create the SCM includes:

- Vicinity and site maps showing site location, site features, locations of groundwater monitoring wells, and locations of geologic cross-sections.
- Potentiometric surface contour map with groundwater elevations, flow direction and calculated gradient.
- Historical groundwater flow directions.
- Groundwater concentration maps with iso-contours for Total Petroleum Hydrocarbons as gasoline (TPHg) and Methyl Tert-Butyl Ether (MtBE).
- Geologic cross-sections with subsurface features.
- Charts of TPHg, benzene and MtBE concentrations in monitoring wells U-1, U-2, U-5 and U-6, from data collected since 1990.
- Charts of TPHg, benzene and MtBE concentrations versus distance from the UST pit (source area). – Is this the only source area?
- Historical groundwater data tables.
- Historical soil data tables.
- Boring logs and well construction details.
- 2000 foot radius well search report

Discussion of Site Conceptual Model

The SCM and geologic cross-sections (Figures 3, 4 and 5) show that the site is underlain primarily with clay and silt interspersed with coarser zones of silt, sand and gravel. Review of the site graphs showing change in hydrocarbon concentrations over time (Appendix A) reveal the following trends. TPHg and MtBE concentrations in the source area (UST pit) were affected by the recurring presence of free product in groundwater monitoring well U-1 during 1995 to 1997. As distance from the source area increases, hydrocarbon concentrations tend to decrease. Hydrocarbon concentrations in the soil at distance from the source area tend to follow the rise and fall in groundwater levels.

TPHg impacted groundwater is limited to the vicinity of monitoring wells U-1, U-2 and U-5 (Figure 6) and appears to be limited to the subject site. Historical occurrences of TPHg in well U-6 (12/24/94, 3/25/95, 12/9/96) appear to be related to episodes of high groundwater and have not been detected since 1996. The MtBE groundwater plume (Figure 7) has moved off-site underneath the southern portion of Lakeshore Avenue in the vicinity of well U-6. However, concentrations of MtBE in well U-6 have remained relatively constant since 1996, indicating that the plume is probably stable.

The site is situated northeast of Lake Merritt, and regional groundwater flow is expected to be toward the southwest, toward the Lake and San Francisco Bay. Historical data indicates that groundwater beneath the site predominantly flows toward the northwest, following the slope of the surface topography, with occasional components of flow toward the southeast and southwest. Figure 8 presents a chart of the historical groundwater flow directions.

Due to the reluctance of MtBE to bio-degrade as quickly as other petroleum hydrocarbons, MtBE appears in groundwater further from the source area. Bio-parameters for the site were reviewed and the data was presented in a letter report to the Alameda County Environmental Health Services, dated November 15, 1999. Data reviewed indicated ongoing natural degradation of petroleum hydrocarbons at the site. Review of bio-parameters collected during the March 13, 2000 quarterly groundwater sampling event also indicate ongoing natural degradation of petroleum hydrocarbons at the site. Two charts are included in Appendix A, which present bio-parameters from wells along the same lines as the two geologic cross-sections

The site is located in an industrial/commercial area of Oakland, and a 2,000 foot radius well search performed by the Alameda County Water Resources Department revealed no domestic, industrial or municipal wells in the area. The well search is included in Appendix A. The only sensitive receptor identified in the site vicinity is Lake Merritt, located approximately 1300 feet southwest of the site. Lake Merritt has a hydraulic connection with San Francisco Bay as evidenced by changes in surface water elevation from tidal influence.

GR spoke with Mr. Chuck Hedley of the RWQCB - San Francisco Bay Region on June 2, 1999. Mr. Hedley indicated the RWQCB uses the following values to evaluate risk to marine water: TPHg=3,700 ppb and TPHd=640 ppb. Wells within 300 feet of the Bay that contain petroleum hydrocarbon concentrations in excess of these values will require additional work. Mr. Hedley indicated that these concentrations are interim, or draft, and the Board does not plan to issue any formal guidelines based on these numbers. Mr. Ravi Arulanantham of the RWQCB – San Francisco Bay Region, utilizes the following concentrations for MtBE: acute effects in freshwater = 115,000 ppb; chronic effects in freshwater = 66,000 ppb; acute effects in marine water = 14,000 ppb; and, chronic effects in marine water = 8,000 ppb. Wells at the subject site are over 1,300 feet from Lake Merritt, while the Lake itself is over 3,000 feet from waters of the Oakland Inner Harbor. Based on the distance from Lake Merritt and the Bay, and the concentrations present in groundwater at the site, it does not appear that the RWQCB will require additional investigation or delineation of the hydrocarbons detected in these wells. However, Tosco will address the impacted groundwater beneath the site.

Recommendations

Based on the latest Draft Guidelines for Investigation and Cleanup of MTBE and other ether-based oxygenates (2/23/00), Tosco Service Station No. 5325 is assigned an investigation priority of Class D. A Class D site is described as "not located in an area that is most vulnerable to contamination and has concentrations of MTBE in groundwater over 5 ppb". Based on conversation with the RWQCB, the site is unlikely to be located within a vulnerable groundwater basin, and no domestic or municipal drinking water wells were identified within 2,000 feet of the site. Class D sites should have a cleanup priority classification determined within five years.

Based on the SCM, hydrocarbon impact to groundwater appears to fluctuate with the historical rise and fall of the groundwater surface beneath the site. Due to the current extent of MtBE impact predominantly confined to the site and immediate vicinity, and the lack of sensitive receptors in the immediate site vicinity, GR recommends continued monitoring of groundwater chemical concentrations as well as collection of bio-parameter measurements.

Due to the lack of available off-site locations for installing additional monitoring wells, (numerous subsurface utilities and encroachment permit unavailable) GR recommends purging approximately 5,000 gallons of groundwater from the UST pit area every two weeks for a period of three months, to yield a total of approximately 30,000 gallons of groundwater removed. The groundwater purging is expected to control the movement of MtBE impacted groundwater, and to remove hydrocarbons from the source area. After the purging operation is complete, GR recommends hand auguring one soil boring adjacent to boring U-D in order to collect a grab groundwater sample for chemical analysis and a soil sample representative of the aquifer materials for geo-technical analysis.

In conclusion, GR recommends the following:

- Continue quarterly groundwater monitoring and sampling
- Collect bio-parameters during quarterly monitoring events
- Purge 30,000 gallons of groundwater from the UST pit over a three month period.
- Hand auger one soil boring adjacent to boring U-D, collect soil and grab groundwater samples for laboratory analysis.

If you have any questions or comments please feel free to call either of us.

Sincerely
Gettler-Ryan Inc.,

707-789-3251

Jed A. Douglas
Project Geologist

REGISTERED GEOLOGIST
STEPHEN J. CARTER
No. 5577
STATE OF CALIFORNIA

Stephen J. Carter
Senior Geologist
R.G. 5577

Attachments: Figure 1 – Vicinity Map
Figure 2 – Site Plan
Figure 3 – Site Conceptual Model
Figure 4 – Cross-Section A – A'
Figure 5 – Cross-Section B – B'
Figure 6 – Concentration Map TPHg
Figure 7 – Concentration Map MtBE
Figure 8 – Historical Groundwater Flow Directions
Appendix A – Graphs and Well Search
Appendix B – Historical Groundwater Data
Appendix C – Historical Soil Data and Boring Logs

cc: Mr. David De Witt, Tosco Marketing Company, San Ramon, California

References

U.S. Geological Survey, 1959, Oakland East Quadrangle, California, 7.5 Minute Series (Topographic): Scale 1:24,000, photorevised 1980.

State Water Resources Control Board, 2000, Draft Guidelines for Investigation and Cleanup of MTBE and Other Ether-Based Oxygenates, dated February 23, 2000.

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Gettler-Ryan Inc., 2000, Groundwater Monitoring and Sampling Report, First Quarter 2000 – Event of March 13, 2000, dated April ??, 2000.

GeoStrategies Incorporated, 1997, Soil Boring and Well Installation Report, Unocal Service Station No. 5325, 3220 Lakeshore Avenue, Oakland, California, Dated August 4, 1997.

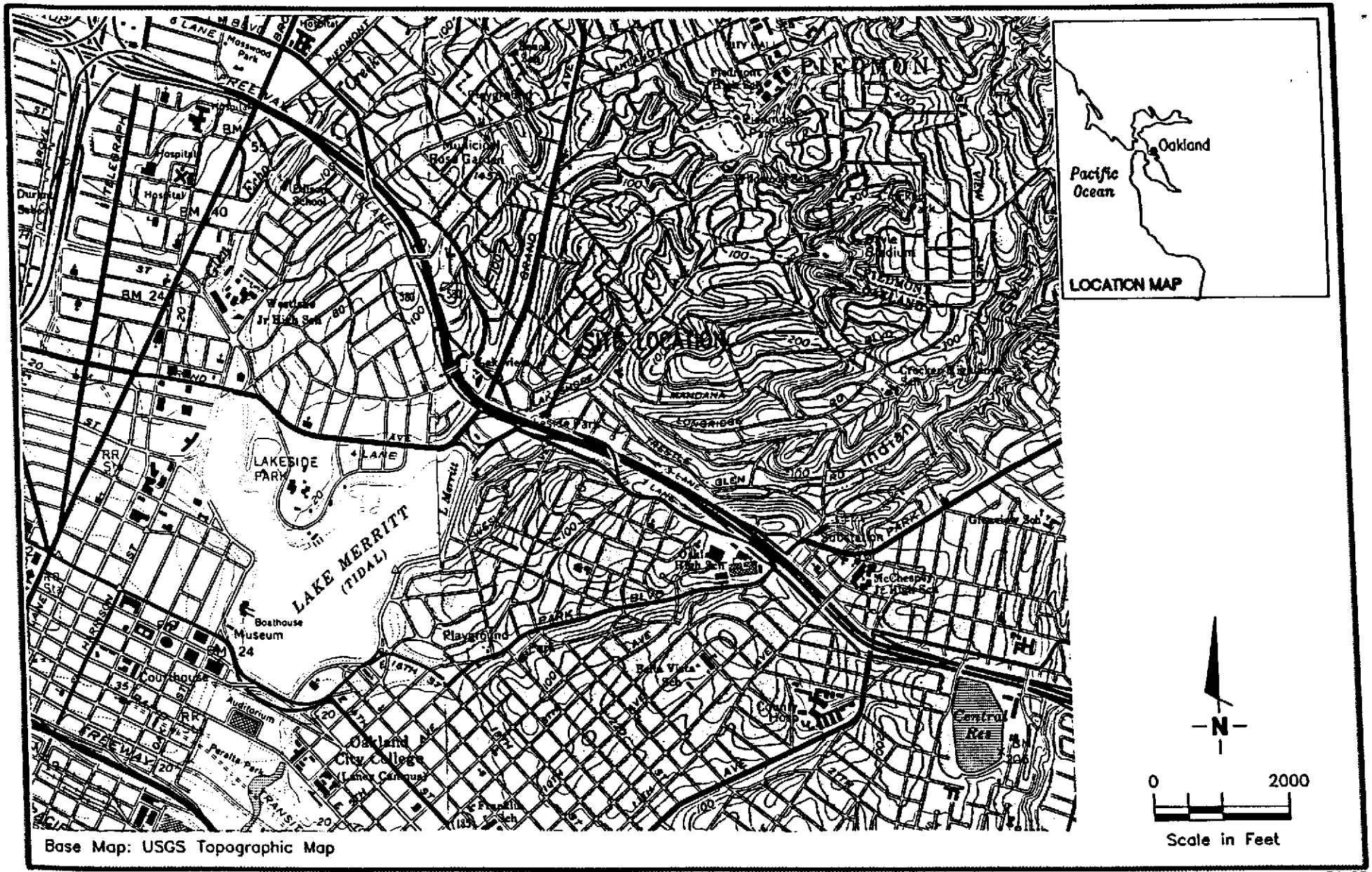
GeoStrategies Incorporated, 1997, Waste Oil Tank Removal and Product Line Replacement Report, Unocal Service Station No. 5325, 3220 Lakeshore Avenue, Oakland, California, Dated January 24, 1997.

GeoStrategies Incorporated, 1994, Monitoring Well Installation Report, Unocal Service Station No. 5325, 3220 Lakeshore Avenue, Oakland, California, Dated November 16, 1994.

GeoStrategies Incorporated, 1990, Tank Replacement Report, Unocal Service Station No. 5325, 3220 Lakeshore Avenue, Oakland, California, Dated August 31, 1990.

GeoStrategies Incorporated, 1990, Soil Boring Report, Unocal Service Station No. 5325, 3220 Lakeshore Avenue, Oakland, California, Dated June 12, 1990.

✓ – 21610 Letter



Base Map: USGS Topographic Map

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VICINITY MAP
Tosco 76 Service Station No. 5325
3220 Lakeshore Avenue
Oakland, California

FIGURE
1

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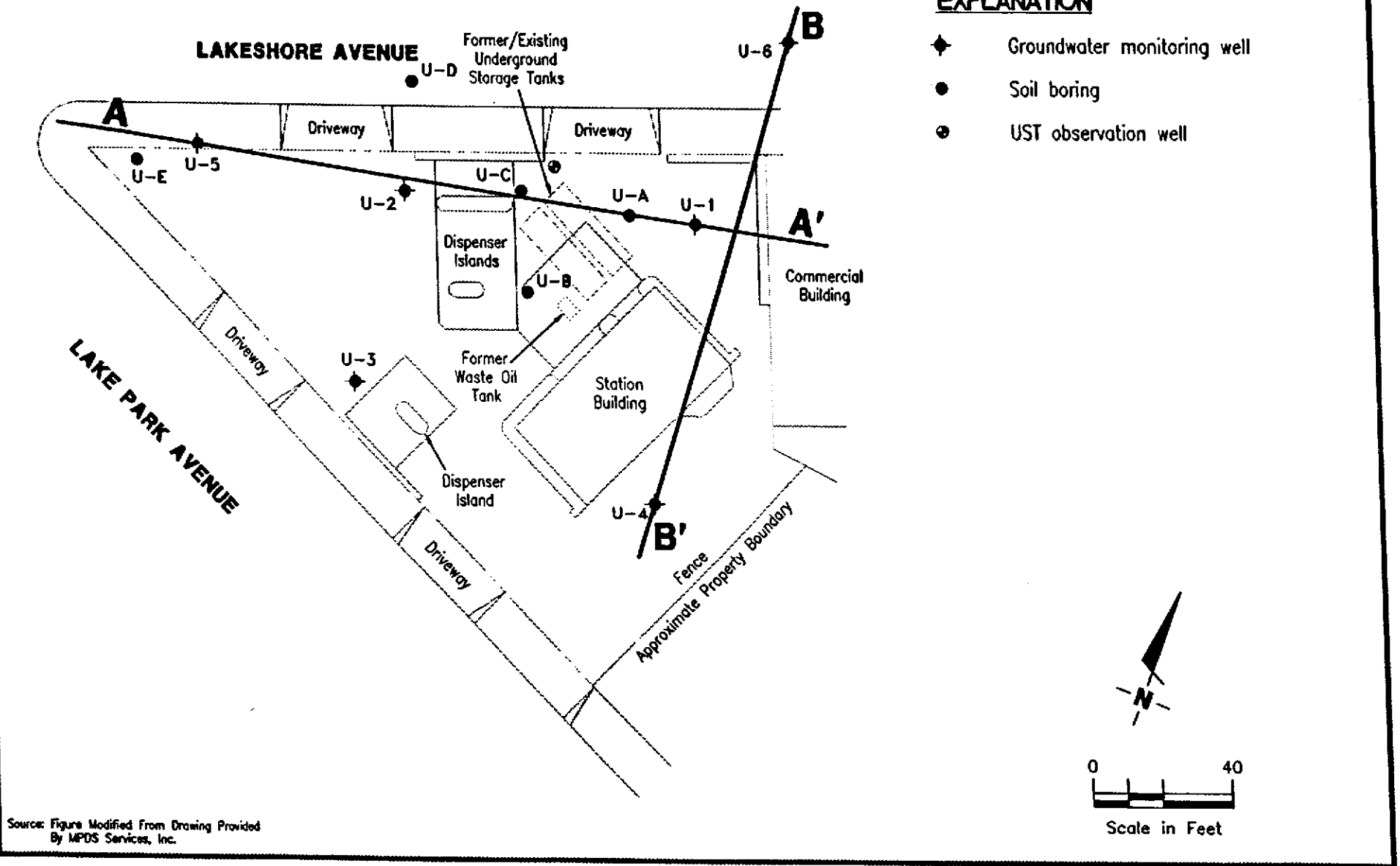

Source: Figure Modified From Drawing Provided By MPDS Services, Inc.

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SITE PLAN
Tosco (76) Service Station No. 5325
3220 Lakeshore Avenue
Oakland, California

FIGURE
2

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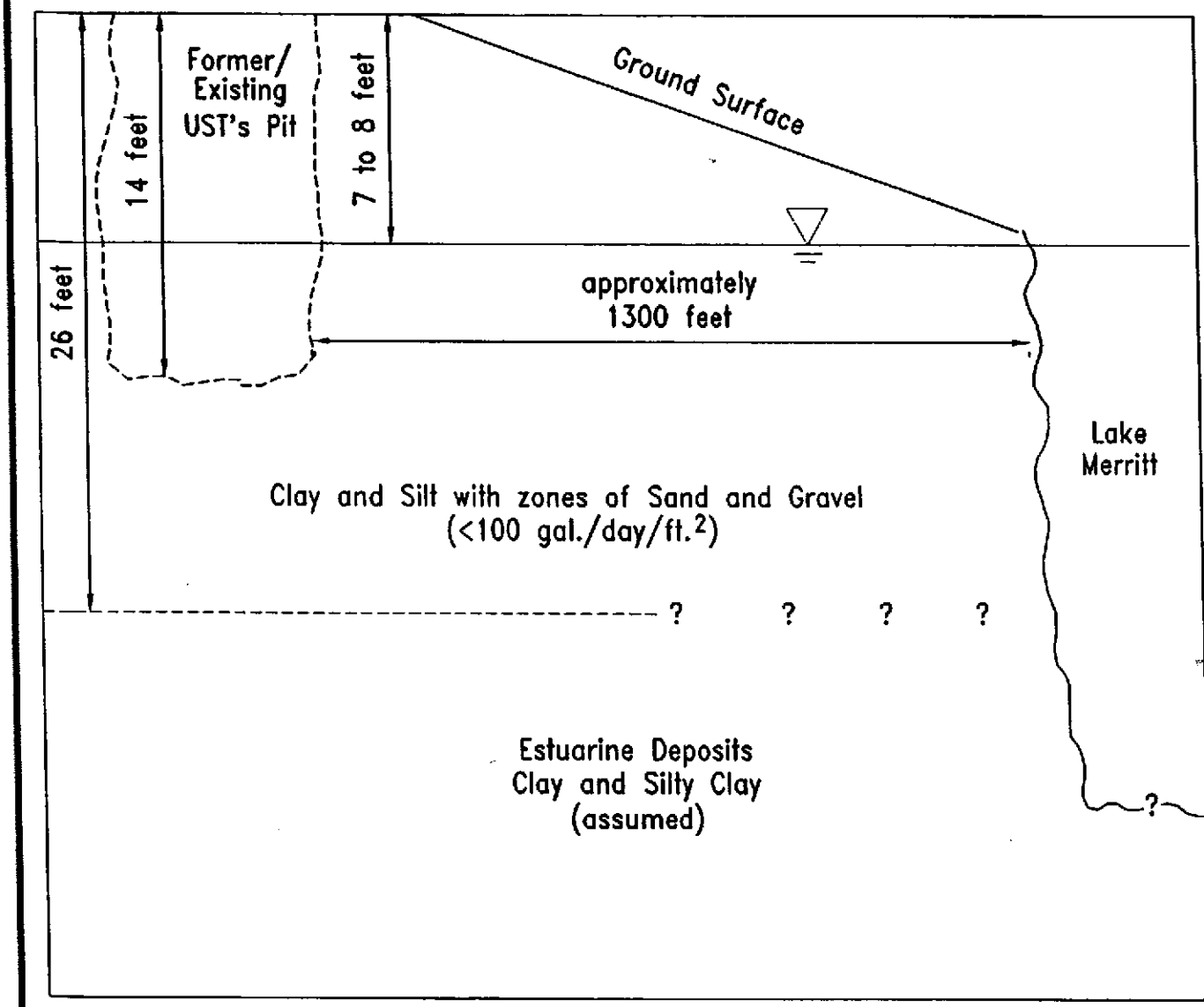

Type:
Shallow groundwater

Source:
MTBE = 26,000 ppb

Pathways:
Incomplete

Receptor:
Lake Merritt
approximately
1300 feet away

Remediation:
Excavation
~~Natural attenuation~~
Vapor and groundwater extraction

Investigation Priority:
Class D
Determine cleanup priority classification within 5 years

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SITE CONCEPTUAL MODEL
Tosco 76 Service Station No. 5325
3220 Lakeshore Avenue
Oakland, California

FIGURE
3

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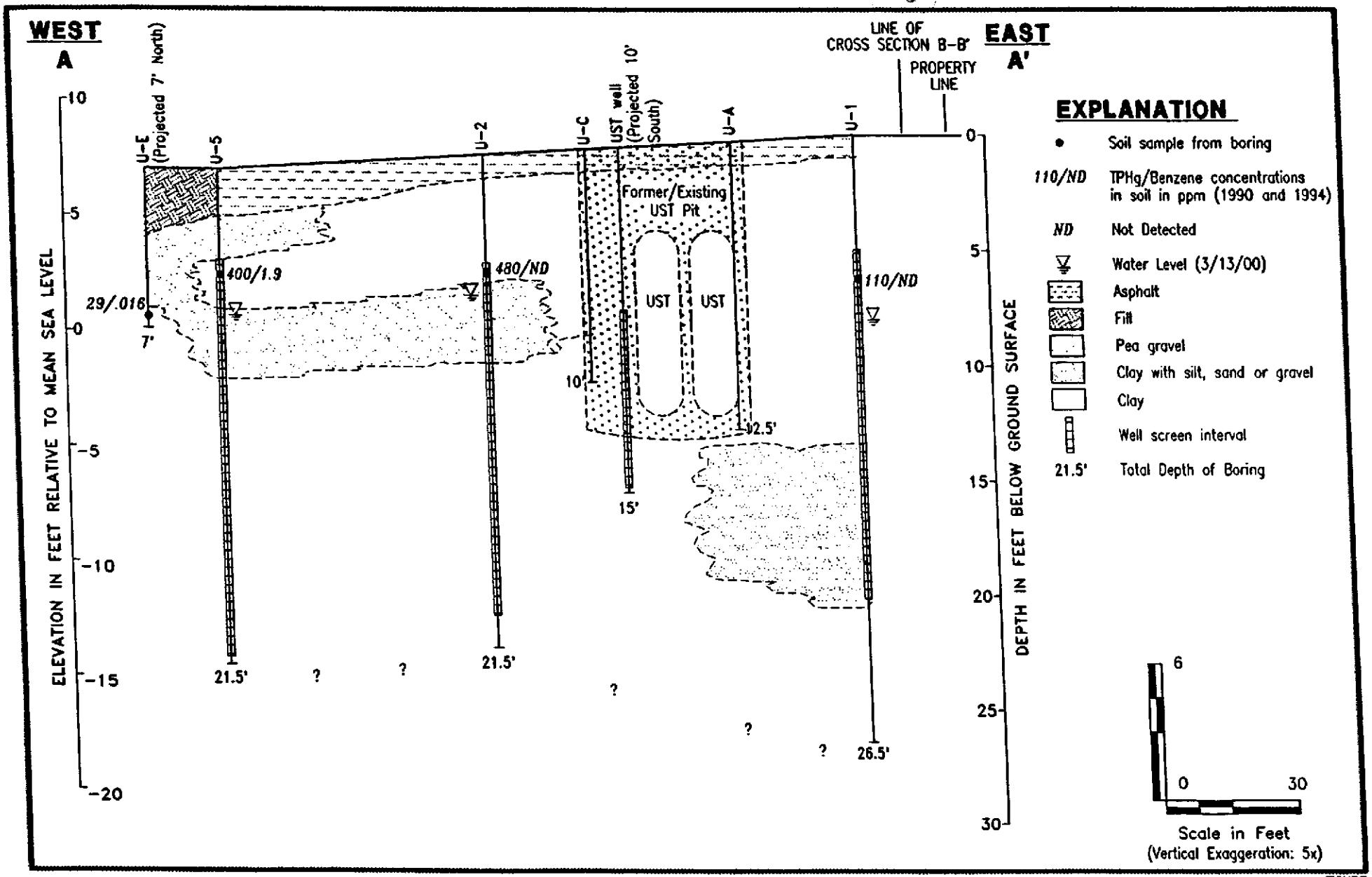

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CROSS SECTION A-A'
Tosco 76 Service Station No. 5325
3220 Lakeshore Avenue
Oakland, California

FIGURE
4

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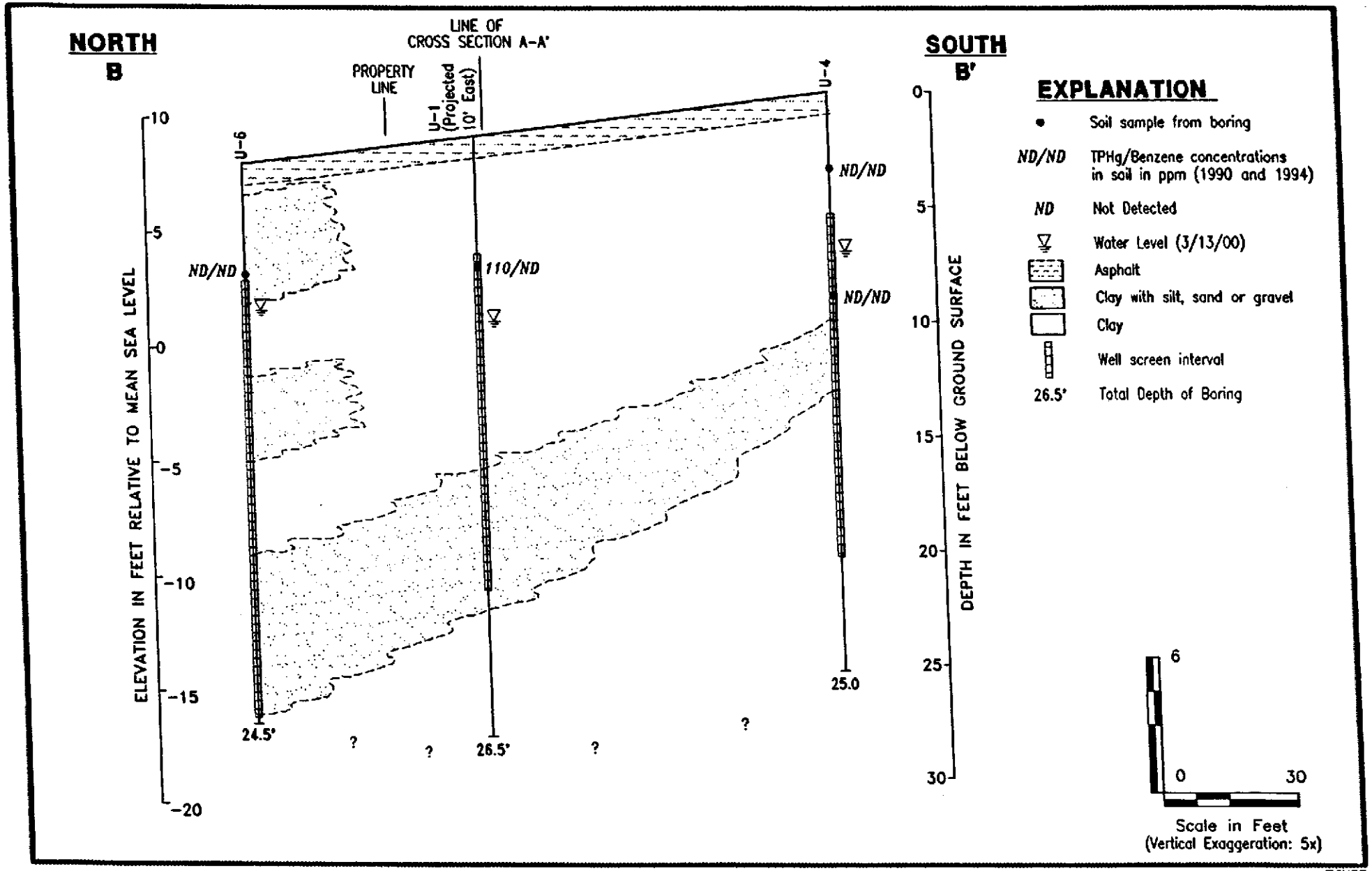

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CROSS SECTION B-B'
Tosco 76 Service Station No. 5325
3220 Lakeshore Avenue
Oakland, California

FIGURE
5

JOB NUMBER	REVIEWED BY	DATE	REVISED DATE
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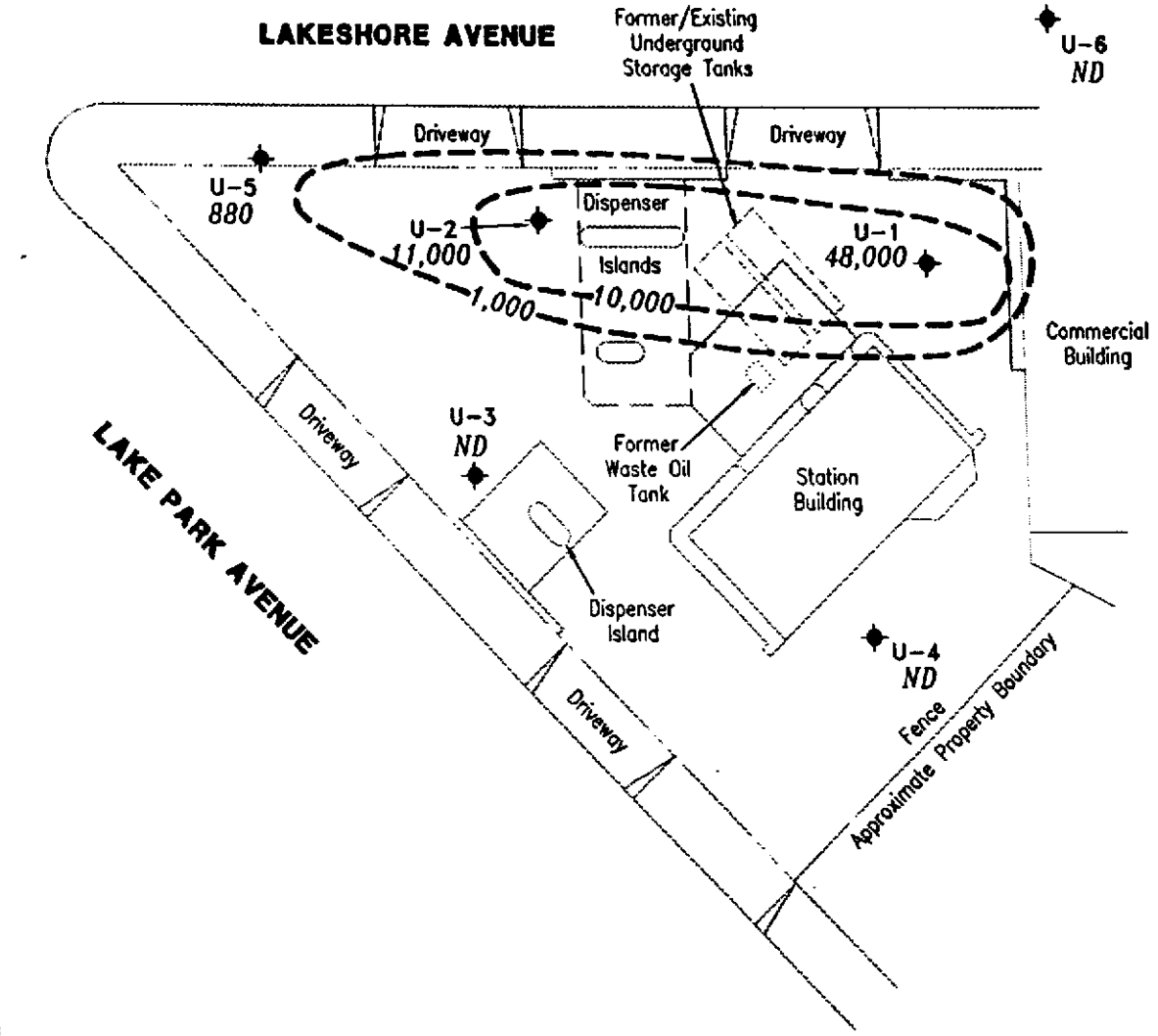
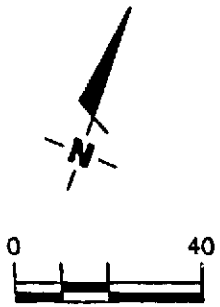


EXPLANATION

- Groundwater monitoring well
- 500 — TPH-G (Total Petroleum hydrocarbons as Gasoline) concentrations in ppb (3/13/00)
- 500 — TPH-G isoconcentration contour dashed where inferred
- ND — Not Detected

NOTE: Range of historical groundwater flow directions presented on Figure 8.



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TPH(G) ISOCONCENTRATION MAP
Tosco 76 Service Station No. 5325
3220 Lakeshore Avenue
Oakland, California

FIGURE
6

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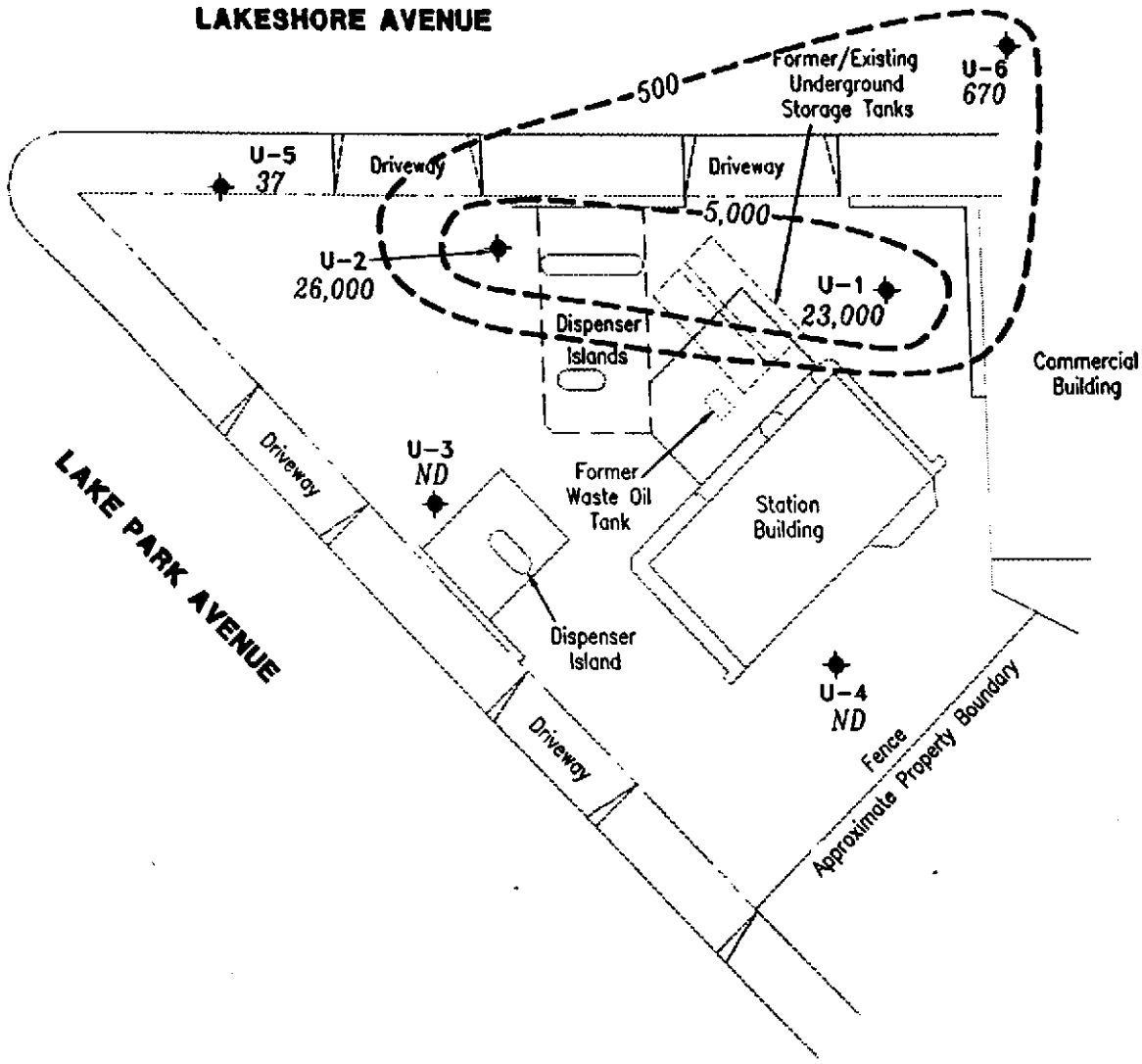
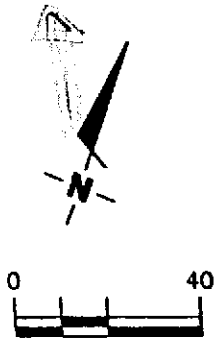


EXPLANATION

- ◆ Groundwater monitoring well
- 239 MTBE concentration in ppb (3/13/00) by EPA method 8260
- 100 MTBE isoconcentration contour dashed where inferred
- ND Not Detected

NOTE: Range of historical groundwater flow directions presented on Figure 8.



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MTBE ISOCONCENTRATION MAP
Tosco 76 Service Station No. 5325
3220 Lakeshore Avenue
Oakland, California

FIGURE
7

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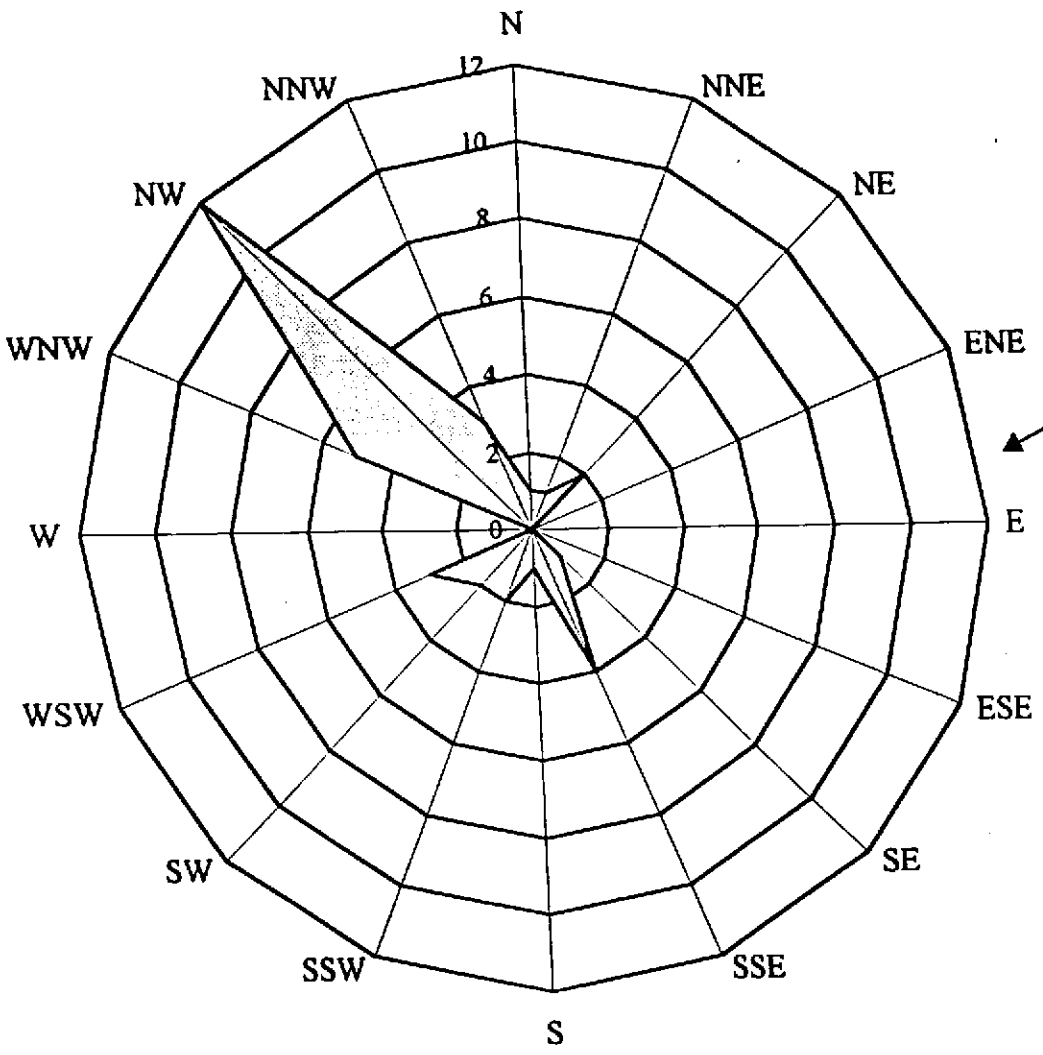

Number of monitoring events in which groundwater was reported to flow in a particular direction.
(Note: multiple flow directions were reported during some of the historical monitoring events)

☐ Groundwater Flow Directions

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HISTORICAL GROUNDWATER FLOW DIRECTIONS
Tosco 76 Service Station No. 5325
3220 Lakeshore Avenue
Oakland, California

FIGURE
8

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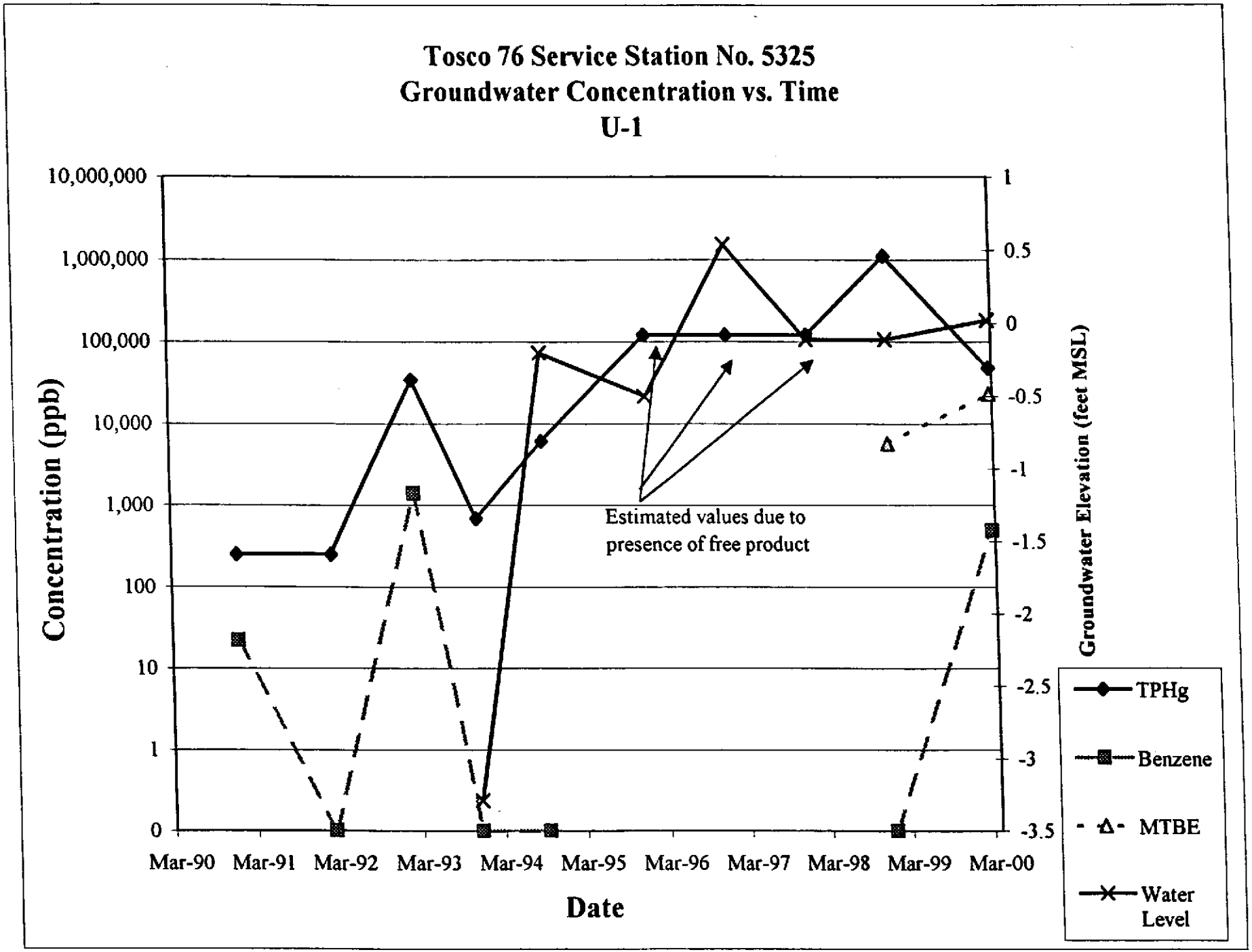
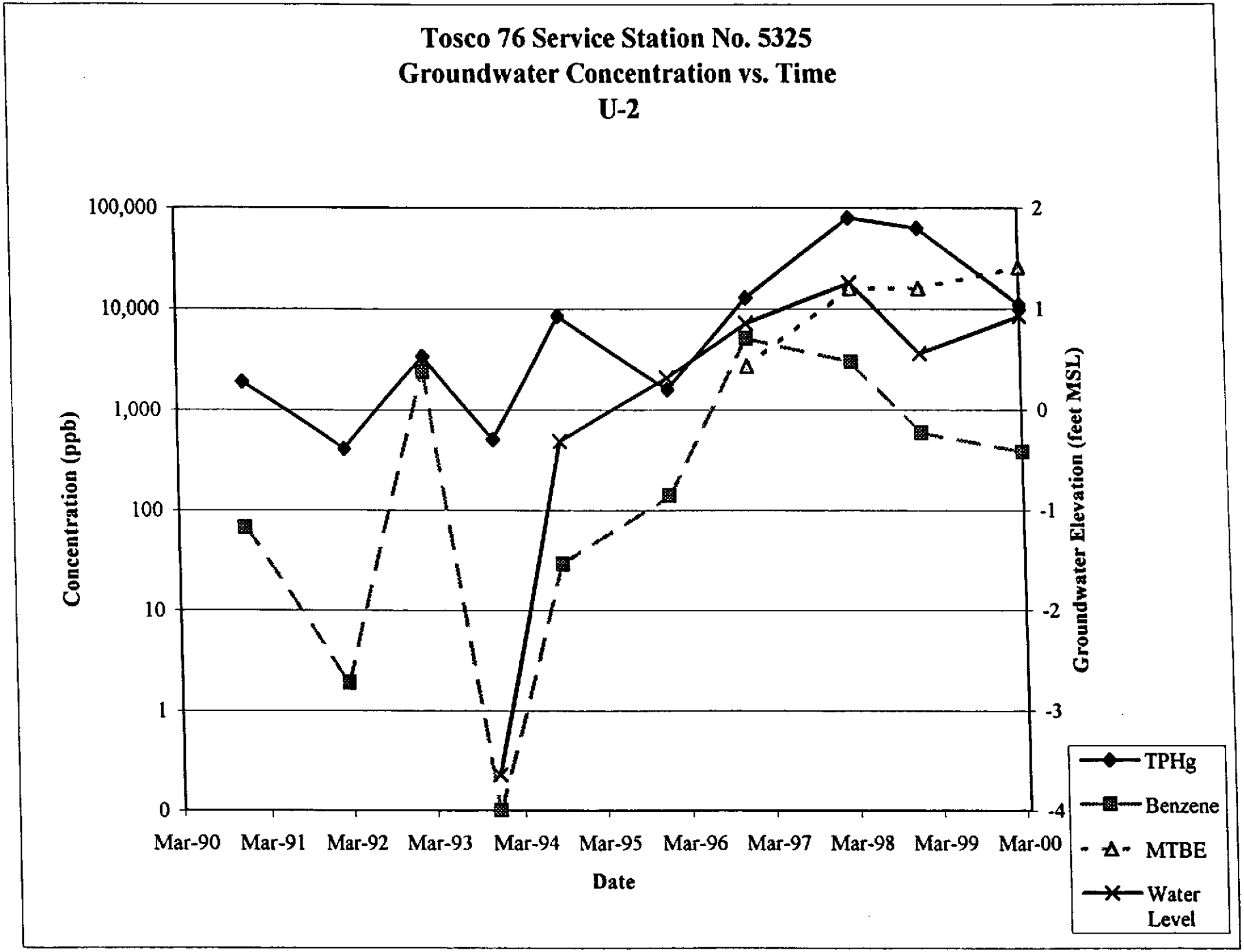
REVISED DATE

APPENDIX A

GRAPHS AND WELL SEARCH

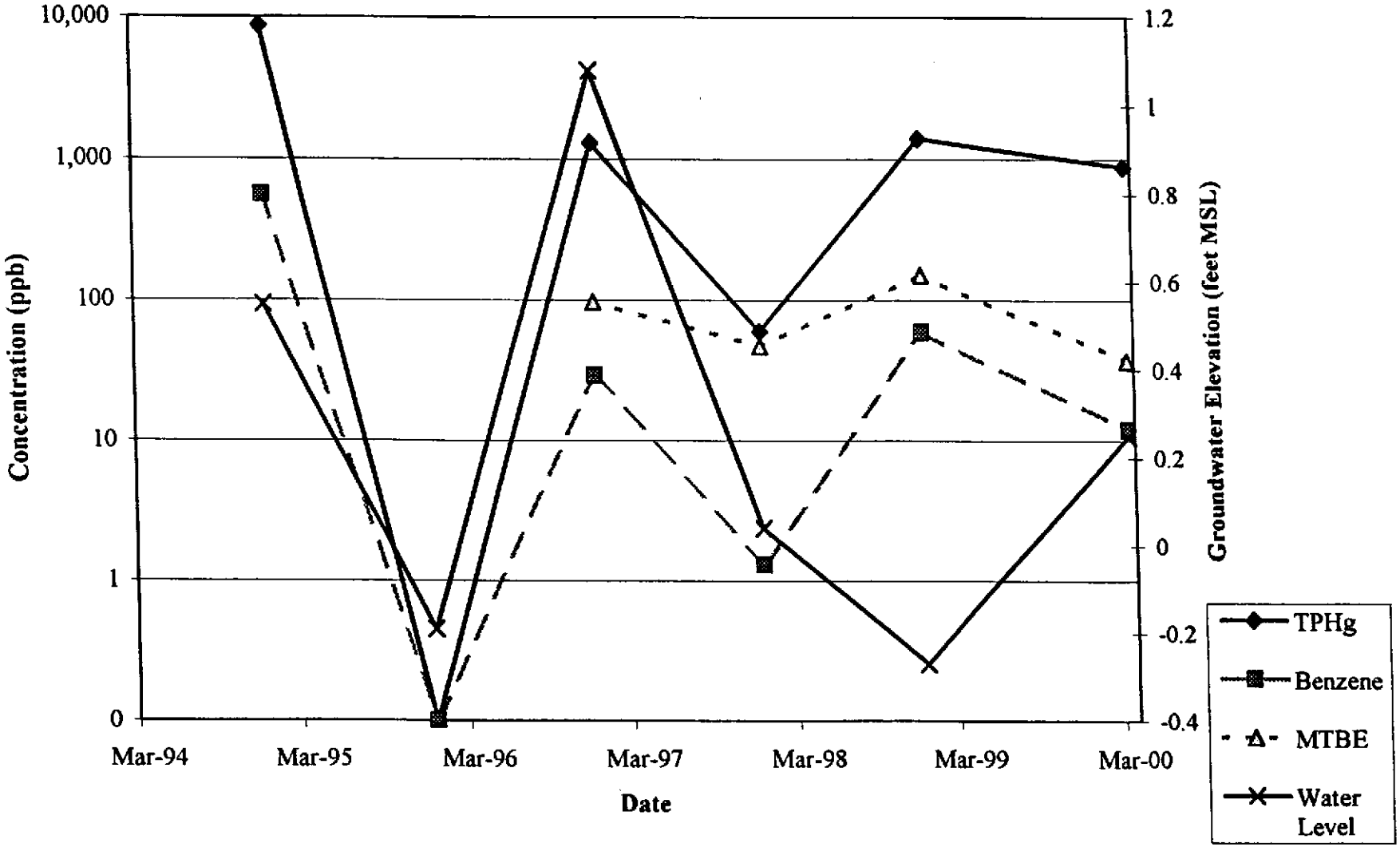

Tosco 76 Service Station No. 5325
Groundwater Concentration vs. Time
U-1
Concentration (ppb)
10,000,000
1,000,000
100,000
10,000
1,000
100
10
1
0
Groundwater Elevation (feet MSL)
1
0.5
0
-0.5
-1
-1.5
-2
-2.5
-3
-3.5
Mar-90
Mar-91
Mar-92
Mar-93
Mar-94
Mar-95
Mar-96
Mar-97
Mar-98
Mar-99
Mar-00
Date
Estimated values due to presence of free product
TPHg
Benzene
MTBE
Water Level

140123.04


Tosco 76 Service Station No. 5325
Groundwater Concentration vs. Time
U-2
Concentration (ppb)
100,000
10,000
1,000
100
10
1
0
Groundwater Elevation (feet MSL)
2
1
0
-1
-2
-3
-4
Mar-90
Mar-91
Mar-92
Mar-93
Mar-94
Mar-95
Mar-96
Mar-97
Mar-98
Mar-99
Mar-00
Date
TPHg
Benzene
MTBE
Water Level

140123.04

Tosco 76 Service Station No. 5325
Groundwater Concentration vs. Time
U-5



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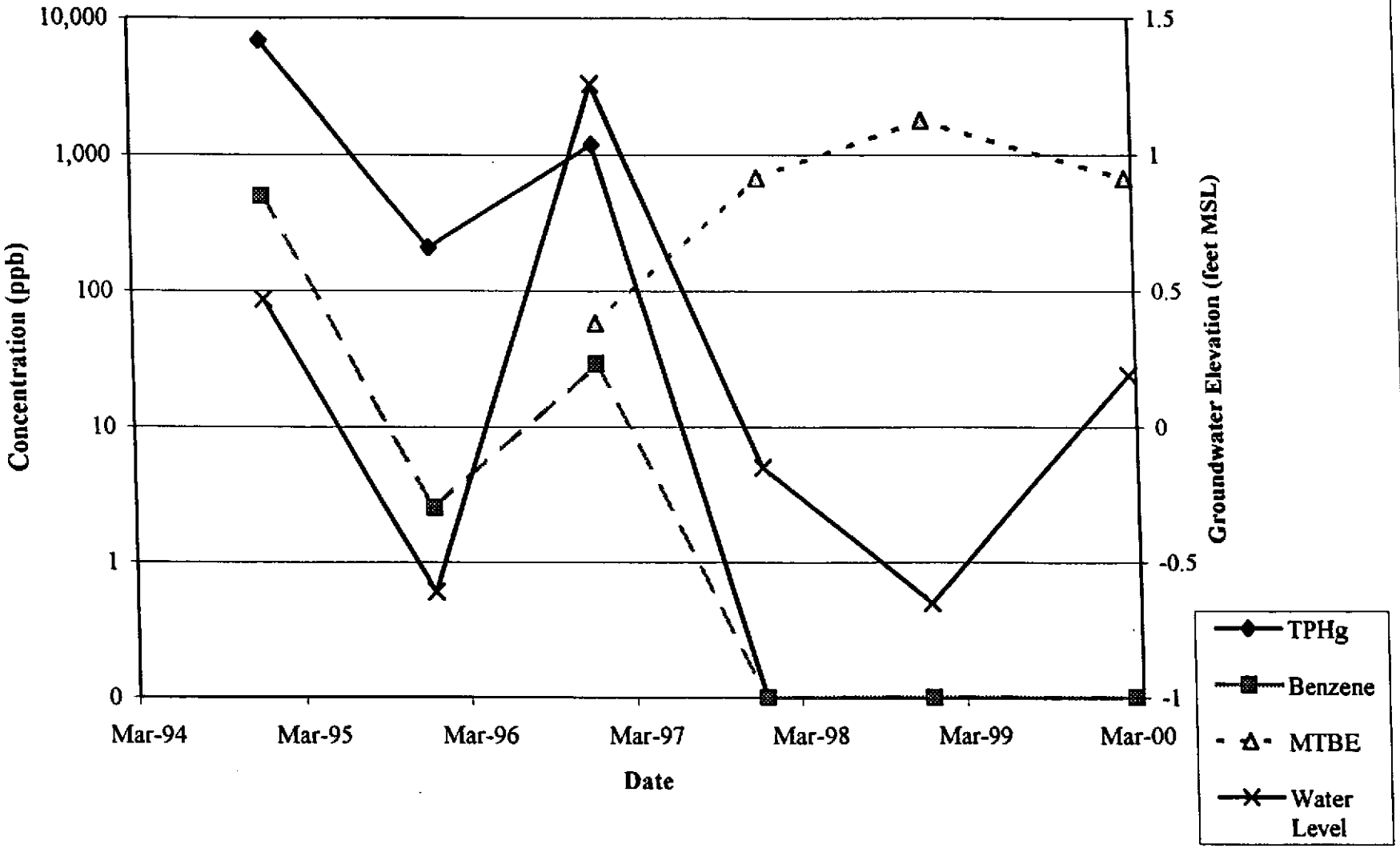
Tosco 76 Service Station No. 5325
Groundwater Concentration vs. Time
U-6



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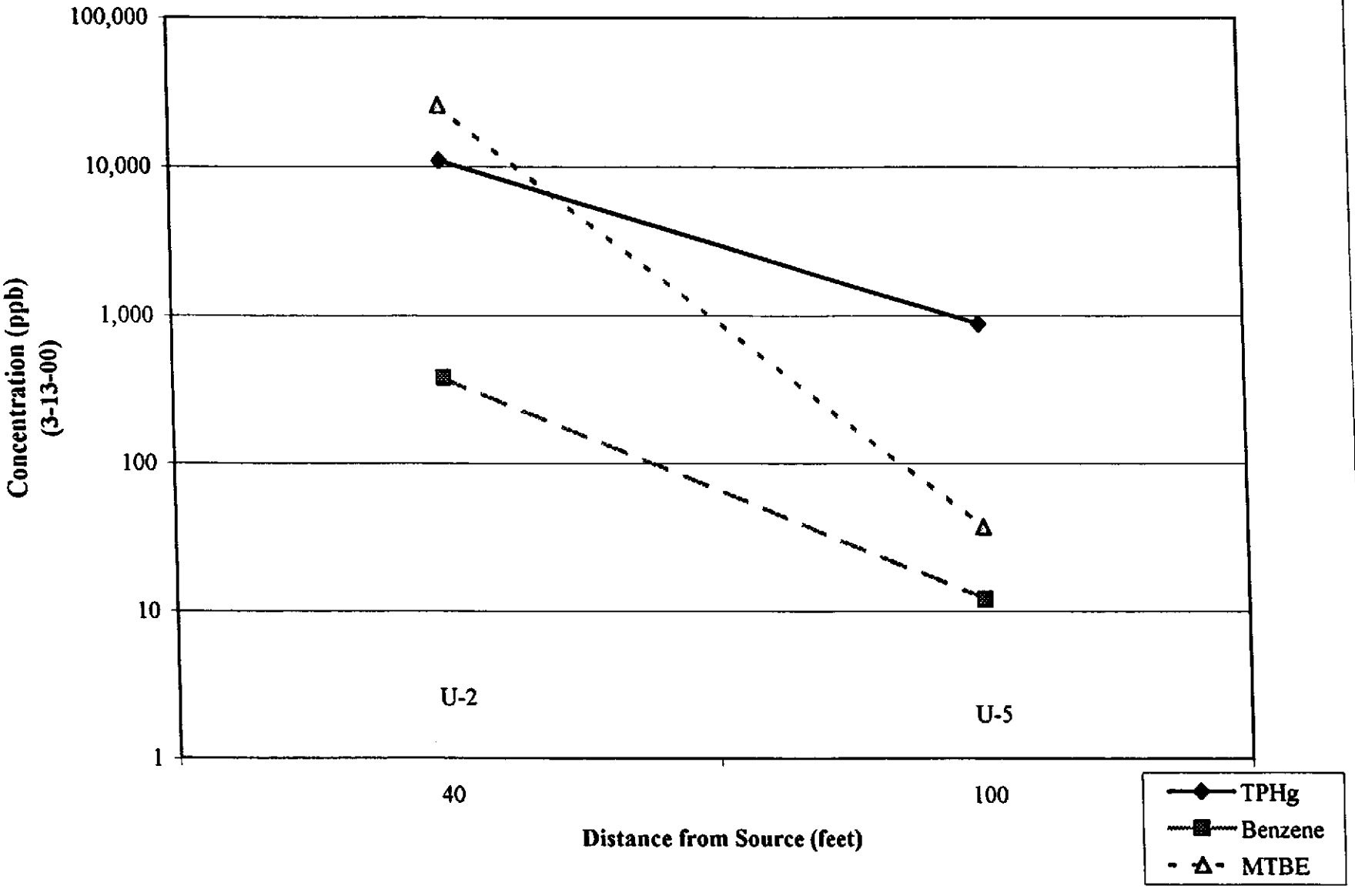
Tosco 76 Service Station No. 5325
Groundwater Concentrations vs. Distance from Tank Pit



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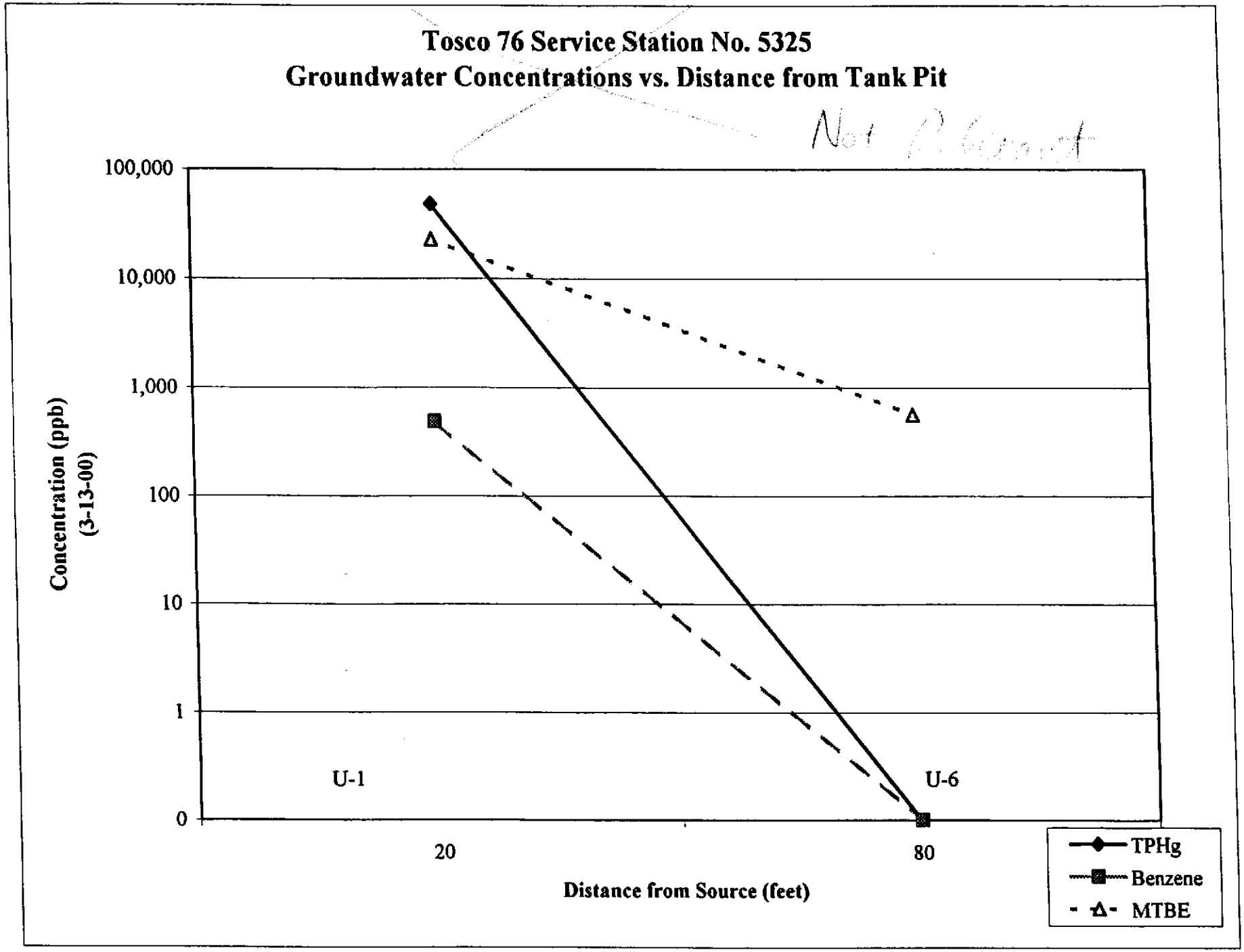
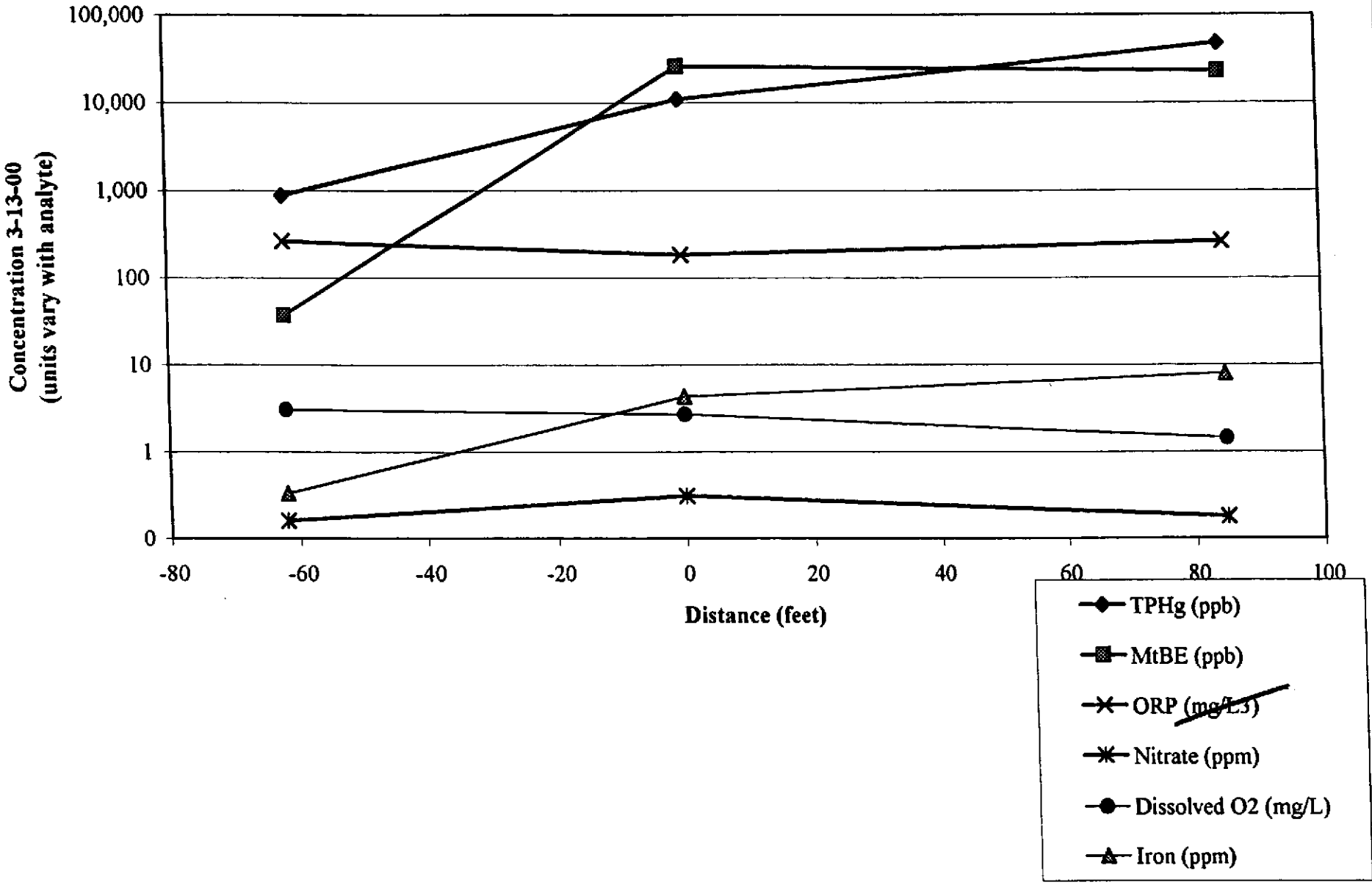

Tosco 76 Service Station No. 5325
Groundwater Concentrations vs. Distance from Tank Pit
Not Present
100,000
10,000
1,000
100
10
1
0
Concentration (ppb)
(3-13-00)
U-1
U-6
20
80
Distance from Source (feet)
TPHg
Benzene
MTBE

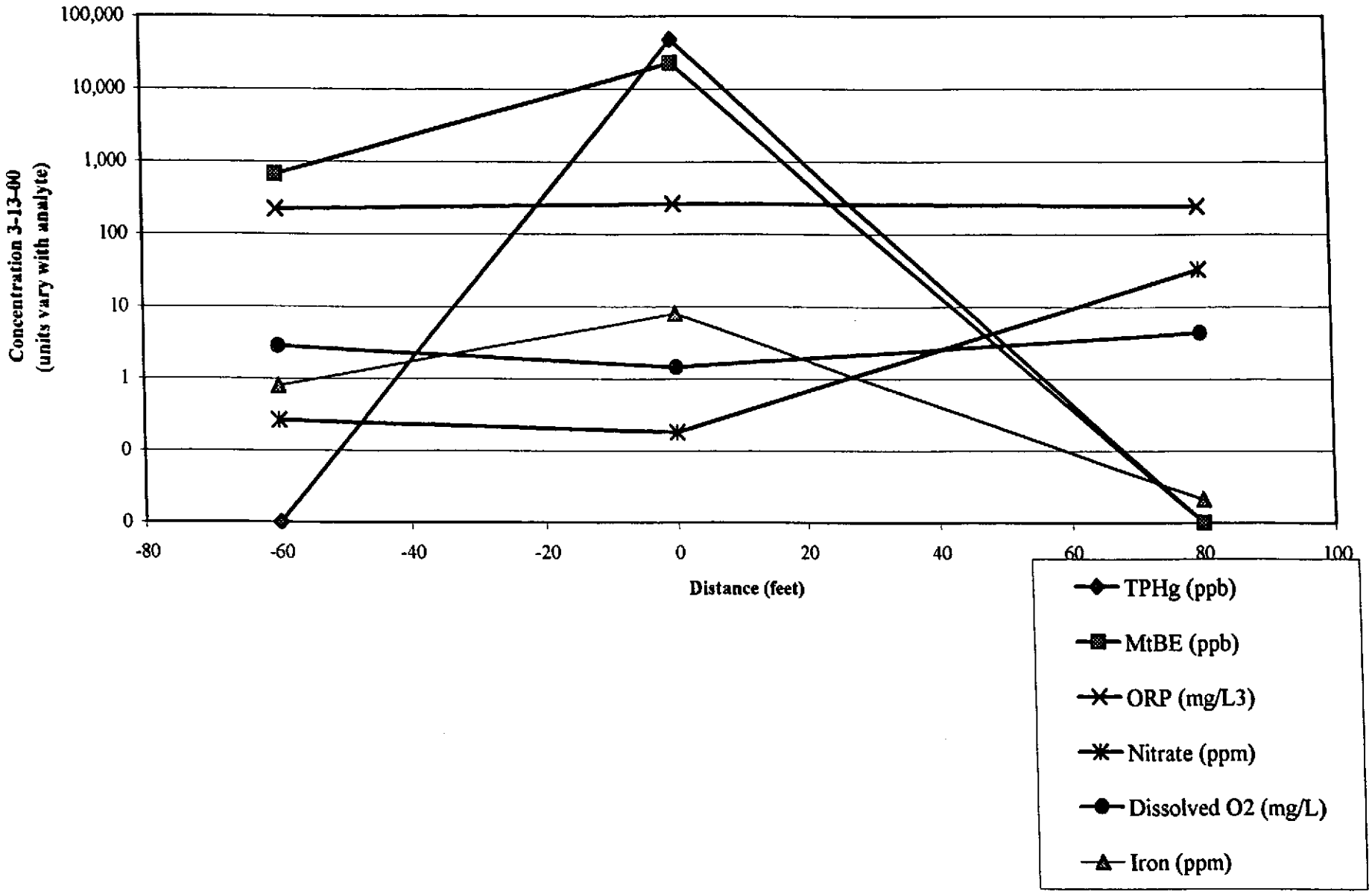
140123.04

Bio-Parameters at
Tosco 76 Service Station No. 5325
Cross-Section A-A'

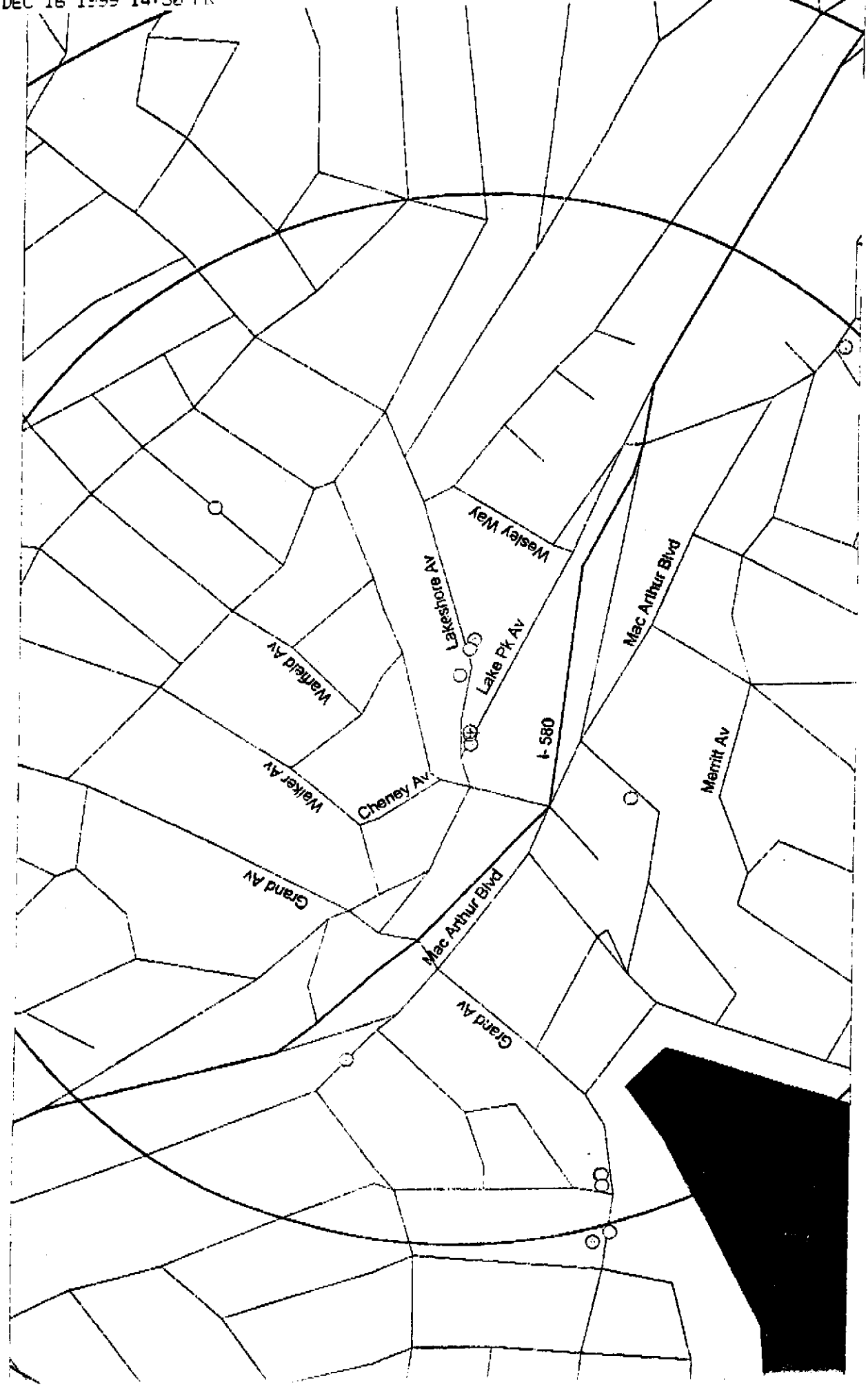


140123.04

Bio-Parameters at
Tosco 76 Service Station No. 5325
Cross-Section B-B'



140123.04


Wesley Way
Lakeshore Av
Lake Pk Av
Mac Arthur Blvd
Wanfield Av
I-580
Merritt Av
Walker Av
Cheney Av
Grand Av
Mac Arthur Blvd
Grand Av

Permit	Tr	Section	Address	Longcity	Owner	Update	Xcoord	Ycoord	Matchlevel	Target	Rec code
	1S/4W	25R 2	3220 Lakeshore Ave	Oakland	Unocal Corporation	03/22/1991	122,245,320	37,810,600	0	1S/4W 25F	1,424
	1S/4W	25R 3	3220 Lakeshore Ave	Oakland	Unocal Corporation	03/22/1991	122,245,320	37,810,600	0	1S/4W 25F	1,425
	1S/4W	25R 4	3220 Lakeshore Ave	Oakland	Unocal Corporation	03/22/1991	122,245,320	37,810,600	0	1S/4W 25F	1,426
	1S/4W	25Q 1	500 GRAND AVE.	Oakland	TEXACO INC.	09/01/1989	122,251,176	37,809,214	0	1S/4W 25C	2,434
	1S/4W	25Q 2	500 GRAND AVE.	Oakland	TEXACO INC.	09/01/1989	122,251,176	37,809,214	0	1S/4W 25C	2,435
	1S/4W	25J 1	3329 Lakeshore Av	Oakland	Lamorinda Development	09/19/1997	122,244,409	37,810,719	1	1S/4W 25J	0
94124	1S/4W	25R22	3220 Lakeshore Av	Oakland	Unocal Corp	10/01/1997	122,245,187	37,810,610	1	1S/4W 25F	0
94124	1S/4W	25R23	3220 Lakeshore Av	Oakland	Unocal Corp	10/01/1997	122,245,187	37,810,610	1	1S/4W 25F	0
94124	1S/4W	25R24	3220 Lakeshore Av	Oakland	Unocal Corp	10/01/1997	122,245,187	37,810,610	1	1S/4W 25F	0
97344	1S/4W	25R25	3220 Lakeshore Ave	Oakland	Unocal	07/30/1998	122,245,153	37,810,610	1	1S/4W 25F	0
	1S/4W	25Q 3	500 Grand Avenue	Oakland	Texaco Refining & Mrkti	06/04/1990	122,251,176	37,809,214	0	1S/4W 25C	119
	1S/4W	25Q 4	500 Grand Avenue	Oakland	Texaco Refining & Mrkti	06/04/1990	122,251,176	37,809,214	0	1S/4W 25C	120
	1S/4W	25Q 5	500 Grand Avenue	Oakland	Texaco Refining & Mrkti	06/04/1990	122,251,176	37,809,214	0	1S/4W 25C	121
	1S/4W	25Q	500 Grand Avenue	Oakland	Texaco Refining & Mrkti	06/04/1990	122,251,176	37,809,214	0	1S/4W 25C	122
	1S/4W	25R 1	637 Beacon	Oakland	Ranger Pipeline	07/13/1990	122,246,102	37,808,986	3	1S/4W 25F	564
	1S/4W	25R	637 Beacon	Oakland	Ranger Pipeline	07/13/1990	122,246,102	37,808,986	3	1S/4W 25F	565
	1S/4W	25R 5	3026 Lakeshore Ave	Oakland	Chevron Station #9-012	08/01/1991	122,244,067	37,810,623	8	1S/4W 25F	1,876
	1S/4W	25R 6	3026 Lakeshore Ave	Oakland	Chevron Station #9-012	08/01/1991	122,244,067	37,810,623	8	1S/4W 25F	1,877
	1S/4W	25R 7	3026 Lakeshore Ave	Oakland	Chevron Station #9-012	08/01/1991	122,244,067	37,810,623	8	1S/4W 25F	1,878
	1S/4W	25R12	3026 Lakeshore Ave	Oakland	Chevron Station #9-012	08/01/1991	122,244,067	37,810,623	8	1S/4W 25F	1,879
	1S/4W	25R11	3026 Lakeshore Ave	Oakland	Chevron Station #9-012	08/01/1991	122,244,067	37,810,623	8	1S/4W 25F	1,880
	1S/4W	25R10	3026 Lakeshore Ave	Oakland	Chevron Station #9-012	08/01/1991	122,244,067	37,810,623	8	1S/4W 25F	1,881
	1S/4W	25R 8	3026 Lakeshore Ave	Oakland	Chevron Station #9-012	08/01/1991	122,244,067	37,810,623	8	1S/4W 25F	1,882
97WR173	1S/3W	31D 1	Athol Av && Macarthur	Oakland	EBMUD	03/29/1998	122,240,183	37,806,896	1	1S/3W 31D	0
	1S/4W	25R 9	3026 Lakeshore Ave	Oakland	Chevron Station #9-012	08/01/1991	122,244,067	37,810,623	8	1S/4W 25F	1,883
	1S/3W	25Q 1	500 GRAND AVE	Oakland	TEXACO STA 6248800	12/21/1988	122,251,176	37,809,214	0	1S/3W 25C	2,132
	1S/3W	25Q 2	500 GRAND AVE	Oakland	TEXACO STA 6248800	12/21/1988	122,251,176	37,809,214	0	1S/3W 25C	2,133
	1S/3W	25Q 3	500 GRAND AVE	Oakland	TEXACO STA 6248800	12/21/1988	122,251,176	37,809,214	0	1S/3W 25C	2,134
	1S/3W	25Q 4	500 GRAND AVE	Oakland	TEXACO STA 6248800	12/21/1988	122,251,176	37,809,214	0	1S/3W 25C	2,135
	1S/4W	25Q 7	500 Grand Ave	Oakland	Texaco Rfng & Mktg M	06/25/1993	122,251,176	37,809,214	1	1S/4W 25C	7,766
	1S/3W	30M 1	800 York St	Oakland	BLT - Baymark	04/08/1993	122,242,121	37,813,179	1	1S/3W 30A	8,367
	1S/4W	25Q 8	500 Grand Ave.	Oakland	Texaco MW-8B	06/17/1993	122,251,028	37,809,236	1	1S/4W 25C	0
	1S/4W	25Q 9	500 Grand Ave.	Oakland	Texaco MW-8C	06/17/1993	122,251,028	37,809,236	1	1S/4W 25C	0
	1S/4W	25R17	3026 Lakeshore Ave	Oakland	Chevron USA MW	06/18/1993	122,243,944	37,810,575	1	1S/4W 25F	0
	1S/4W	25R18	3026 Lakeshore Ave	Oakland	Chevron USA MW	06/18/1993	122,243,944	37,810,575	1	1S/4W 25F	0
	1S/4W	25R19	3026 Lakeshore Ave	Oakland	Chevron USA MW	06/18/1993	122,243,944	37,810,575	1	1S/4W 25F	0
	1S/4W	25R20	3026 Lakeshore Ave	Oakland	Chevron USA MW	06/18/1993	122,243,944	37,810,575	1	1S/4W 25F	0
	1S/4W	25R21	3026 Lakeshore Ave	Oakland	Chevron USA MW	06/18/1993	122,243,944	37,810,575	1	1S/4W 25F	0
	1S/4W	25Q10	500 Grand Ave.	Oakland	Texaco MW-8L	07/13/1993	122,251,031	37,809,221	1	1S/4W 25C	0
	1S/4W	25Q11	500 Grand Ave.	Oakland	Texaco MW-8K	07/13/1993	122,251,031	37,809,221	1	1S/4W 25C	0
	1S/3W	31H 2	MACARTHUR & BRIGHT	Oakland	EBMUD	07/23/1984	122,249,500	37,811,300	2	1S/3W 31F	2,175
	1S/4W	25R13	3026 Lakeshore Ave	Oakland	Chevron USA mw	08/13/1992	122,244,067	37,810,623	1	1S/4W 25F	7,566

Phone	City	Drilldate	Elevation	Totaldepth	Waterdepth	Diameter	Use	Log	W	Wl	Yield	Dtwcalc	Old_dbase
0	OAK	9/90	0	30	15	2	MON	D	0	0	0	0	D
0	OAK	9/90	0	20	18	3	TES	D	0	0	0	0	D
0	OAK	9/90	0	20	10	3	TES	D	0	0	0	0	D
0	OAK	03/89	0	17	12	4	MON	D	0	0	0	0	L
0	OAK	03/89	0	17	9	4	MON	D	0	0	0	0	L
0	OAK	9/94	0	17	9	2	MON	G	0	0	0	0	D
0	OAK	6/94	0	20	10	4	MON	D	0	0	0	0	D
0	OAK	6/94	0	20	6	4	MON	D	0	0	0	0	D
0	OAK	6/94	0	24	7	2	MON	D	0	0	0	0	D
0	OAK	6/97	0	15	0	4	OBS	G	0	0	0	0	D
0	OAK	1/90	0	15	4	4	MON	D	0	0	0	0	D
0	OAK	1/90	0	15	6	4	MON	D	0	0	0	0	D
0	OAK	1/90	0	15	6	4	MON	D	0	0	0	0	D
0	OAK	10/89	0	0	0	8	BOR	G	0	0	0	0	D
0	OAK	10/89	0	36	19	2	MON	D	0	0	0	0	D
0	OAK	10/89	0	20	18	6	BOR	G	0	0	0	0	D
0	OAK	4/91	0	35	21	2	MON	D			0	0	D
0	OAK	4/91	0	34	21	2	MON	D			0	0	D
0	OAK	4/91	0	15	0	0	DES	?			0	0	D
0	OAK	4/91	0	15	0	0	DES	?			0	0	D
0	OAK	3/91	0	16	0	8	DES	?			0	0	D
0	OAK	3/91	0	10	0	12	DES	?			0	0	D
0	OAK	3/91	0	10	0	12	DES	?			0	0	D
0	OAK	1/98	0	130	0	6	CAT	D	0	0	0	0	D
0	OAK	3/91	0	10	0	12	DES	?			0	0	D
0	OAK	07/88	100	15	3	2	MON	G	0	0	0	0	L
0	OAK	07/88	101	20	2	2	MON	G	0	0	0	0	L
0	OAK	07/88	98	24	7	2	MON	G	0	0	0	0	L
0	OAK	07/88	98	5	1	2	MON	G	0	0	0	0	L
0	OAK	8/92	0	20	0	4	DES	D	0	0	0	0	D
0	OAK	2/93	0	37	0	2	DES	D	0	0	0	0	D
0	OAK	3/93	0	0	0	0	DES	D	0	0	0	0	D
0	OAK	3/93	0	0	0	0	DES	D	0	0	0	0	D
0	OAK	6/92	0	22	5	4	MON	G	0	0	0	0	D
0	OAK	6/92	0	35	12	2	MON	G	0	0	0	0	D
0	OAK	6/92	0	20	5	2	MON	G	0	0	0	0	D
0	OAK	6/92	0	19	4	2	MON	G	0	0	0	0	D
0	OAK	6/92	0	30	24	2	MON	G	0	0	0	0	D
0	OAK	5/93	0	18	3	2	MON	G	0	0	0	0	D
0	OAK	5/93	0	18	4	2	MON	G	0	0	0	0	D
0	OAK	6/81	0	65	0	0	CAT	D	0	0	0	0	L
0	OAK	8/91	0	14	6	2	MON	G	0	0	0	0	D

Permit	Tr	Section	Address	Longcity	Owner	Update	Xcoord	Ycoord	Matchlevel	Tsrqq	Rec_code
	1S/4W	25R14	3026 Lakeshore Ave	Oakland	Chevron USA MM	08/13/1992	122,244,067	37,810,623	1	1S/4W 25F	7,567
	1S/4W	25R15	3026 Lakeshore Ave	Oakland	Chevron USA MM	08/13/1992	122,244,067	37,810,623	1	1S/4W 25F	7,568
	1S/4W	25R16	3026 Lakeshore Ave	Oakland	Chevron USA MM	08/13/1992	122,244,067	37,810,623	1	1S/4W 25F	7,569
	1S/4W	25Q 6	500 Grand Ave	Oakland	Texaco Rfng & Mktg M	06/25/1993	122,251,176	37,809,214	1	1S/4W 25(	7,765

Phone	City	Drilldate	Elevation	Totaldepth	Waterdepth	Diameter	Use	Log	W	W	Yield	Dtwcalc	Old_dbase
0	OAK	8/91	0	12	9	2	MON	G	0	0	0	0	D
0	OAK	8/91	0	18	12	2	MON	G	0	0	0	0	D
0	OAK	8/91	0	15	8	2	MON	G	0	0	0	0	D
0	OAK	8/92	0	16	0	2	DES	D	0	0	0	0	D

APPENDIX B

HISTORICAL GROUNDWATER DATA

Table 1

Groundwater Monitoring Data and Analytical Results

Tosco (Unocal) Service Station #5325

3220 Lakeshore Avenue

Oakland, California

Well ID/ TOC*	Date	DTW (ft.)	GWE (ft.)	Product Thickness (ft.)	TPH(G) (ppb)	B (ppb)	T (ppb)	E (ppb)	X (ppb)	MTBE (ppb)
U-1	08/10/90	--	--	--	690	38	75	8.6	130	--
	01/07/91	--	--	--	250	22	16	4.2	17	--
	04/01/91	--	--	--	160	13	8.6	1.0	15	--
	07/03/91	--	--	--	140	21	4.3	0.36	17	--
	10/09/91	--	--	--	ND	ND	ND	ND	ND	--
	02/12/92	--	--	--	250	ND	ND	ND	ND	--
	05/05/92	--	--	--	230	1.2	ND	ND	ND	--
	06/11/92	--	--	--	1,000	80	1.4	6.7	41	--
	08/20/92	--	--	--	400[1]	1.0	ND	ND	0.6	--
	02/22/93	--	--	--	34,000	1,400	5,500	910	7,300	--
	05/07/93	--	--	--	8,700	600	240	650	3,300	--
	08/08/93	--	--	--	4,900[2]	79	ND	832	270	--
5.32	11/16/93	8.61	-3.29	0.00	690[3]	ND	ND	ND	ND	--
	02/16/94	8.54	-3.22	0.00	6,800[4]	ND	ND	ND	ND	--
8.46	06/22/94	8.39	0.07	0.00	200	ND	ND	5.9	21	--
	09/22/94	8.66	-0.20	0.00	6,100[3]	ND	ND	ND	ND	--
	12/24/94	8.04	0.42	0.00	50,000	2,500	9,700	2,400	17,000	--
	03/25/95	7.72	1.02**	0.37	NOT SAMPLED DUE TO THE PRESENCE OF FREE PRODUCT				--	--
	06/21/95	9.30	-0.69**	0.20	NOT SAMPLED DUE TO THE PRESENCE OF FREE PRODUCT				--	--
	09/19/95	9.29	-0.53**	0.40	NOT SAMPLED DUE TO THE PRESENCE OF FREE PRODUCT				--	--
	12/19/95	8.98	-0.50**	0.03	NOT SAMPLED DUE TO THE PRESENCE OF FREE PRODUCT				--	--
	03/18/96	8.25	0.21	0.00	27,000	ND	2,300	1,400	11,000	4,900
	06/27/96	7.92	0.54	<0.01	120,000	540	4,300	2,600	26,000	ND
	09/26/96	9.10	-0.62**	0.02	NOT SAMPLED DUE TO THE PRESENCE OF FREE PRODUCT				--	--
	12/09/96	6.88	1.60**	0.03	NOT SAMPLED DUE TO THE PRESENCE OF FREE PRODUCT				--	--
	03/14/97	9.02	-0.15**	0.55	NOT SAMPLED DUE TO THE PRESENCE OF FREE PRODUCT				--	--
	06/30/97	8.41	0.07**	0.02	NOT SAMPLED DUE TO THE PRESENCE OF FREE PRODUCT				--	--
	09/19/97	8.56	-0.08**	0.02	NOT SAMPLED DUE TO THE PRESENCE OF FREE PRODUCT				--	--
	12/12/97	8.58	-0.11**	0.01	NOT SAMPLED DUE TO THE PRESENCE OF FREE PRODUCT				--	--
	03/03/98	8.23	0.26**	0.04	NOT SAMPLED DUE TO THE PRESENCE OF FREE PRODUCT				--	--
	06/15/98	8.37	0.09	Sheen	52,000	ND[7]	900	1,800	13,000	ND[7]
	09/30/98	8.94	-0.48	Sheen	1,000,000[8]	ND[7]	2,600	13,000	83,000	4,800

Table 1

Groundwater Monitoring Data and Analytical Results

Tosco (Unocal) Service Station #5325

3220 Lakeshore Avenue

Oakland, California

Well ID/ TOC*	Date	DTW (ft.)	GWE (ft.)	Product Thickness (ft.)	TPH(G) (ppb)	B (ppb)	T (ppb)	E (ppb)	X (ppb)	MTBE (ppb)
U-1	12/28/98	8.57	-0.11	<0.01	1,100,000[9]	ND[7]	1,600	8,600	71,000	5,700
(cont)	03/22/99	8.18	0.28	Sheen	130,000	470	1,100	2,000	28,000	5,700
	06/09/99	9.37	-0.91	0.00	40,000	230	640	590	13,000	3,500/2,100[10]
	09/08/99	9.53	-1.07	0.00	55,000[11]	217	202	745	14,300	6,890/6,690[10]
	12/07/99	9.67	-1.21	0.00	41,200[13]	89.3	ND[7]	385	6,930	15,800/14,700[12]
	03/13/00	**8.44**	**0.02**	**0.00**	**48,000[11]**	**490**	**610**	**2,400**	**10,000**	**22,000/23,000[10]**
U-2	08/10/90	--	--	--	780	27	46	15	130	--
	01/07/91	--	--	--	1,900	67	5.8	58	69	--
	04/01/91	--	--	--	1,700	250	89	34	190	--
	07/03/91	--	--	--	2,100	150	25	3.1	290	--
	10/09/91	--	--	--	230	7.1	ND	ND	11	--
	02/12/92	--	--	--	410	1.9	ND	0.36	0.4	--
	05/05/92	--	--	--	1,600	120	52	6.2	290	--
	06/11/92	--	--	--	620	17	2.1	ND	37	--
	08/20/92	--	--	--	700	28	6.5	1.3	4.6	--
	02/22/93	--	--	--	3,400	2,400	2,100	1,200	5,800	--
	05/07/93	--	--	--	17,000	1,800	660	1,700	4,000	--
	08/08/93	--	--	--	5,600[2]	420	ND	410	670	--
4.53	11/16/93	8.17	-3.64	0.00	510[3]	ND	ND	ND	ND	--
	02/16/94	7.73	-3.20	0.00	980[4]	49	13	2.7	40	--
7.62	06/22/94	7.60	0.02	0.00	31,000	2,200	62	1,500	3,500	--
	09/22/94	7.93	-0.31	0.00	8,500[3]	29	ND	ND	ND	--
	12/24/94	7.27	0.35	0.00	32,000	1,500	890	1,300	5,000	--
	03/25/95	7.01	0.61	0.00	170,000	1,900	21,000	4,800	33,000	--
	06/21/95	6.98	0.64	0.00	16,000	2,100	ND	1,800	1,700	--
	09/19/95	7.70	-0.08	0.00	3,000	610	ND	78	240	--[5]
	12/19/95	7.30	0.32	0.00	1,600	140	55	52	270	--[6]
	03/18/96	6.45	1.17	0.00	12,000	2,200	ND	1,200	2,200	22,000
	06/27/96	7.41	0.21	0.00	28,000	3,400	ND	2,800	3,100	3,000
	09/26/96	7.90	-0.28	0.00	5,900	750	ND	ND	ND	18,000

Table 1

Groundwater Monitoring Data and Analytical Results

Tosco (Unocal) Service Station #5325

3220 Lakeshore Avenue

Oakland, California

Well ID/ TOC*	Date	DTW (ft.)	GWE (ft.)	Product Thickness (ft.)	TPH(G) (ppb)	B (ppb)	T (ppb)	E (ppb)	X (ppb)	MTBE (ppb)
U-2	12/09/96	6.76	0.86	0.00	13,000	5,100	290	980	370	2,700
(cont)	03/14/97	7.12	0.52**	0.03	NOT SAMPLED DUE TO THE PRESENCE OF FREE PRODUCT				--	--
	06/30/97	6.19	1.43	<0.01	NOT SAMPLED DUE TO THE PRESENCE OF FREE PRODUCT				--	--
	09/19/97	7.31	0.31	<0.01	NOT SAMPLED DUE TO THE PRESENCE OF FREE PRODUCT				--	--
	12/12/97	6.75	0.88**	<0.01	NOT SAMPLED DUE TO THE PRESENCE OF FREE PRODUCT				--	--
	03/03/98	6.36	1.26	Sheen	80,000	3,000	1,100	820	16,000	16,000
	06/15/98	6.51	1.11	Sheen	48,000	1,800	330	470	7,900	20,000
	09/30/98	7.17	0.45	Sheen	60,000	1,300	ND[7]	500	9,700	19,000
	12/28/98	7.06	0.56	0.00	63,000	590	160	320	5,600	16,000
	03/22/99	6.82	0.80	0.00	28,000	1,100	ND[7]	360	2,900	25,000
	06/09/99	7.51	0.11	0.00	21,000	110	190	310	2,600	7,900/7,800[10]
	09/08/99	8.16	-0.54	0.00	23,300[11]	477	138	286	4,110	16,400/15,300[10]
	12/07/99	8.31	-0.69	0.00	4,840[13]	17.2	ND[7]	ND[7]	157	14,900/15,600[12]
	03/13/00	6.69	0.93	0.00	11,000[11]	380	160	ND[7]	2,100	22,000/26,000[10]
U-3	08/10/90	--	--	--	ND	ND	ND	ND	ND	--
	01/07/91	--	--	--	ND	ND	ND	ND	1.8	--
	04/01/91	--	--	--	ND	1.0	2.9	0.53	5.4	--
	07/03/91	--	--	--	ND	ND	ND	ND	ND	--
	10/09/91	--	--	--	ND	ND	ND	ND	ND	--
	02/12/92	--	--	--	ND	ND	ND	ND	ND	--
	05/05/92	--	--	--	ND	ND	ND	ND	ND	--
	06/11/92	--	--	--	ND	ND	ND	ND	ND	--
	08/20/92	--	--	--	ND	ND	ND	ND	ND	--
	02/22/93	--	--	--	ND	ND	ND	ND	ND	--
	05/07/93	--	--	--	ND	ND	ND	ND	ND	--
	08/08/93	--	--	--	210	5.0	9.7	0.7	4.1	--
7.86	11/16/93	11.82	-3.96	0.00	ND	ND	ND	ND	ND	--
	02/16/94	11.62	-3.76	0.00	ND	ND	ND	ND	ND	--
10.98	06/22/94	11.64	-0.66	0.00	ND	ND	ND	ND	ND	--
	09/22/94	11.76	-0.78	0.00	ND	ND	ND	ND	ND	--

Table 1

Groundwater Monitoring Data and Analytical Results

Tosco (Unocal) Service Station #5325

3220 Lakeshore Avenue

Oakland, California

Well ID/ TOC*	Date	DTW (ft.)	GWE (ft.)	Product Thickness (ft.)	TPH(G) (ppb)	B (ppb)	T (ppb)	E (ppb)	X (ppb)	MTBE (ppb)
U-3	12/24/94	11.28	-0.30	0.00	ND	ND	ND	ND	ND	--
(cont)	03/25/95	10.96	0.02	0.00	ND	ND	ND	ND	ND	--
	06/21/95	11.37	-0.39	0.00	ND	ND	ND	ND	ND	--
	09/19/95	11.55	-0.57	0.00	ND	ND	ND	ND	ND	--[5]
	12/19/95	11.45	-0.47	0.00	ND	ND	ND	ND	ND	--
	03/18/96	11.10	-0.12	0.00	ND	ND	ND	ND	ND	--
	06/27/96	11.16	-0.18	0.00	440	49	50	51	140	50
	09/26/96	11.55	-0.57	0.00	ND	ND	ND	ND	ND	ND
	12/09/96	10.12	0.86	0.00	ND	ND	ND	ND	ND	29
	03/14/97	10.87	0.11	0.00	ND	ND	ND	ND	ND	ND
	06/30/97	11.08	-0.10	0.00	ND	ND	ND	ND	ND	ND
	09/19/97	11.05	-0.07	0.00	ND	ND	ND	ND	ND	ND
	12/12/97	10.58	0.40	0.00	ND	ND	ND	ND	ND	ND
	03/03/98	9.84	1.14	0.00	ND	ND	ND	ND	ND	ND
	06/15/98	10.56	0.42	0.00	ND	ND	ND	ND	ND	ND
	09/30/98	11.12	-0.14	0.00	ND	ND	ND	ND	ND	ND
	12/28/98	10.96	0.02	0.00	ND	ND	ND	ND	ND	ND
	03/22/99	9.46	1.52	0.00	ND	ND	ND	ND	ND	ND
	06/09/99	11.01	-0.03	0.00	ND	ND	ND	ND	ND	ND
	09/08/99	11.31	-0.33	0.00	ND	ND	ND	ND	ND	ND
	12/07/99	11.26	-0.28	0.00	ND	ND	ND	ND	ND	ND
	03/13/00	**8.28**	**2.70**	**0.00**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**
U-4										
11.15	06/22/94	10.16	0.99	0.00	ND	ND	ND	ND	ND	--
	09/22/94	10.79	0.36	0.00	ND	0.78	1.3	ND	1.4	--
	12/24/94	9.81	1.34	0.00	ND	ND	ND	ND	ND	--
	03/25/95	9.51	1.64	0.00	ND	ND	ND	ND	ND	--
	06/21/95	9.54	1.61	0.00	ND	ND	ND	ND	ND	--
	09/19/95	10.17	0.98	0.00	ND	ND	ND	ND	ND	--
	12/19/95	9.98	1.17	0.00	ND	ND	ND	ND	ND	--

Table 1

Groundwater Monitoring Data and Analytical Results

Tosco (Unocal) Service Station #5325

3220 Lakeshore Avenue

Oakland, California

Well ID/ TOC*	Date	DTW (ft.)	GWE (ft.)	Product Thickness (ft.)	TPH(G) (ppb)	B (ppb)	T (ppb)	E (ppb)	X (ppb)	MTBE (ppb)
U-4	03/18/96	9.66	1.49	0.00	ND	ND	ND	ND	ND	--
(cont)	06/27/96	9.74	1.41	0.00	ND	ND	ND	ND	ND	ND
	09/26/96	10.14	1.01	0.00	ND	ND	ND	ND	ND	ND
	12/09/96	8.67	2.48	0.00	ND	ND	ND	ND	ND	33
	03/14/97	9.35	1.80	0.00	ND	ND	ND	ND	ND	ND
	06/30/97	9.89	1.26	0.00	ND	ND	ND	ND	ND	ND
	09/19/97	9.96	1.19	0.00	ND	ND	ND	ND	ND	ND
	12/12/97	8.56	2.59	0.00	ND	ND	ND	ND	ND	ND
	03/03/98	7.85	3.30	0.00	ND	ND	ND	ND	ND	ND
	06/15/98	9.08	2.07	0.00	ND	ND	ND	ND	ND	ND
	09/30/98	9.75	1.40	0.00	ND	ND	ND	ND	ND	ND
	12/28/98	9.59	1.56	0.00	ND	ND	ND	ND	ND	ND
	03/22/99	8.34	2.81	0.00	ND	ND	ND	ND	ND	ND
	06/09/99	9.39	1.76	0.00	ND	ND	ND	ND	ND	ND
	09/08/99	9.90	1.25	0.00	ND	ND	ND	ND	ND	ND
	12/07/99	10.05	1.10	0.00	ND	ND	ND	ND	ND	ND
	03/13/00	7.24	3.91	0.00	ND	ND	ND	ND	ND	ND
U-5										
6.98	06/22/94	6.83	0.15	0.00	210	7.1	13	4.5	26	--
	09/22/94	6.90	0.08	0.00	170	8.4	10	8.5	18	--
	12/24/94	6.43	0.55	0.00	8,700	560	70	670	430	--
	03/25/95	6.35	0.63	0.00	44,000	390	960	1,500	7,600	--
	06/21/95	7.11	-0.13	0.00	400	2.3	ND	9.1	3.5	--
	09/19/95	6.99	-0.01	0.00	850	14	7.1	13	66	--
	12/19/95	7.17	-0.19	0.00	ND	ND	ND	ND	ND	--
	03/18/96	6.65	0.33	0.00	100	0.67	0.5	0.51	5.4	--
	06/27/96	6.49	0.49	0.00	16,000	280	150	1,400	4,600	530
	09/26/96	7.13	-0.15	0.00	ND	ND	0.57	ND	0.96	ND
	12/09/96	5.90	1.08	0.00	1,300	29	46	ND	140	97
	03/14/97	6.99	-0.01	0.00	ND	ND	ND	ND	ND	14.

Table 1

Groundwater Monitoring Data and Analytical Results

Tosco (Unocal) Service Station #5325

3220 Lakeshore Avenue

Oakland, California

Well ID/ TOC*	Date	DTW (ft.)	GWE (ft.)	Product Thickness (ft.)	TPH(G) (ppb)	B (ppb)	T (ppb)	E (ppb)	X (ppb)	MTBE (ppb)
U-5	06/30/97	7.08	-0.10	0.00	4,200	74	51	180	980	270
(cont)	09/19/97	6.78	0.20	0.00	6,300	160	13	370	1000	480
	12/12/97	6.94	0.04	0.00	60	1.3	ND	1.6	2.1	47
	03/03/98	6.50	0.48	0.00	1,700	29	ND[7]	150	190	330
	06/15/98	6.85	0.13	0.00	1,500	32	ND[7]	91	83	330
	09/30/98	7.31	-0.33	0.00	1,700	44	ND[7]	39	150	60
	12/28/98	7.25	-0.27	0.00	1,400	59	ND[7]	13	27	150
	03/22/99	6.86	0.12	0.00	780	8.9	ND	0.76	4.5	350
	06/09/99	7.28	-0.30	0.00	1,000	ND[7]	ND[7]	10	35	280/350[10]
	09/08/99	7.52	-0.54	0.00	2,620[11]	26.2	ND[7]	32.2	157	280/239[12]
	12/07/99	7.67	-0.69	0.00	949[11]	9.26	ND[7]	11.2	22.7	235/301[12]
	03/13/00	6.73	0.25	0.00	880[14]	12	1.0	5.6	8.7	46/37[10]
U-6										
7.14	06/22/94	7.14	0.00	0.00	ND	ND	ND	ND	ND	--
	09/22/94	7.34	-0.20	0.00	130	1.3	0.8	ND	0.73	--
	12/24/94	6.67	0.47	0.00	6,900	500	59	600	380	--
	03/25/95	6.29	0.85	0.00	47,000	450	1,300	1,700	8,200	--
	06/21/95	7.60	-0.46	0.00	ND	ND	ND	ND	ND	--
	09/19/95	7.70	-0.56	0.00	ND	ND	ND	ND	ND	--[5]
	12/19/95	7.75	-0.61	0.00	210	2.5	1.0	2.9	17	--
	03/18/96	6.86	0.28	0.00	ND	ND	ND	ND	ND	--
	06/27/96	6.52	0.62	0.00	ND	ND	ND	ND	ND	510
	09/26/96	7.62	-0.48	0.00	ND	ND	ND	ND	ND	1,400
	12/09/96	5.88	1.26	0.00	1,200	29	48	6.4	140	58
	03/14/97	7.30	-0.16	0.00	ND	ND	ND	ND	ND	1,500
	06/30/97	7.35	-0.21	0.00	ND	ND	ND	ND	ND	990
	09/19/97	7.25	-0.11	0.00	ND	ND	ND	ND	ND	1,400
	12/12/97	7.29	-0.15	0.00	ND	ND	ND	ND	ND	680
	03/03/98	7.00	0.14	0.00	ND	ND	ND	ND	ND	1,600
	06/15/98	7.18	-0.04	0.00	ND[7]	ND[7]	ND[7]	ND[7]	ND[7]	1,000

Table 1

Groundwater Monitoring Data and Analytical Results

Tosco (Unocal) Service Station #5325

3220 Lakeshore Avenue

Oakland, California

Well ID/ TOC*	Date	DTW (ft.)	GWE (ft.)	Product Thickness (ft.)	TPH(G) (ppb)	B (ppb)	T (ppb)	E (ppb)	X (ppb)	MTBE (ppb)
U-6	09/30/98	7.90	-0.76	0.00	ND	ND	ND	ND	ND	1,200
(cont)	12/28/98	7.79	-0.65	0.00	ND[7]	ND[7]	ND[7]	ND[7]	ND[7]	730
	03/22/99	7.47	-0.33	0.00	ND	ND	ND	ND	ND	1,800
	06/09/99	7.73	-0.59	0.00	ND[7]	ND[7]	ND[7]	ND[7]	ND[7]	1,000/850[10]
	09/08/99	7.95	-0.81	0.00	ND	ND	ND	ND	ND	851/1,040[10]
	12/07/99	8.10	-0.96	0.00	ND	ND	ND	ND	ND	1,140/1,150[12]
	03/13/00	6.95	0.19	0.00	ND	ND	ND	ND	ND	560/670[10]
Trip Blank										
TB-LB	03/03/98	--	--	--	ND	ND	ND	ND	ND	ND
	06/15/98	--	--	--	ND	ND	ND	ND	ND	ND
	09/30/98	--	--	--	ND	ND	1.7	ND	2.2	ND
	12/28/98	--	--	--	ND	ND	0.71	ND	0.72	9.5
	03/22/99	--	--	--	ND	ND	ND	ND	ND	ND
	06/09/99	--	--	--	ND	ND	ND	ND	ND	ND
	09/08/99	--	--	--	ND	ND	ND	ND	ND	ND
	12/07/99	--	--	--	ND	ND	0.762	ND	ND	ND
	03/13/00	--	--	--	ND	ND	ND	ND	ND	ND

Table 1

Groundwater Monitoring Data and Analytical Results

Tosco (Unocal) Service Station #5325

3220 Lakeshore Avenue

Oakland, California

EXPLANATIONS:

Groundwater monitoring data and laboratory analytical results prior to March 3, 1998, were compiled from reports prepared by MPDS Services, Inc.

TOC = Top of Casing
DTW = Depth to Water
(ft.) = Feet
GWE = Groundwater Elevation
TPH(G) = Total Petroleum Hydrocarbons as Gasoline

B = Benzene
T = Toluene
E = Ethylbenzene
X = Xylenes
MTBE = Methyl tertiary butyl ether

ppb = Parts per billion
ppm = Parts per million
ND = Not Detected
-- = Not Measured/Not Analyzed

* TOC elevations are surveyed relative to City of Oakland Benchmark, at the northeasterly corner of Weller and Cheney Avenue (Elevation = 9.055 feet, city datum; add 3.00' to U.S.G.S. datum). Prior to November 16, 1993, the DTW measurements were taken from the well cover.

** Groundwater elevation corrected due to the presence of free product; correction factor = [(TOC-DTW)+(Product Thickness x 0.75)].

1 The positive result for gasoline does not appear to have a typical gasoline pattern.
2 The concentration reported as gasoline is primarily due to the presence of a combination of gasoline and a discrete peak not indicative of gasoline.
3 Laboratory report indicates the hydrocarbons detected did not appear to be gasoline
4 Laboratory report indicates the hydrocarbons detected appeared to be a gasoline and non-gasoline mixture.
5 Laboratory has potentially identified the presence of MTBE at reportable levels in the groundwater sample collected from this well.
6 Laboratory has identified the presence of MTBE at a level above or equal to the taste and odor threshold of 40 ppb in the sample collected from this well.
7 Detection limit raised. Refer to analytical reports.
8 Laboratory report indicates unidentified hydrocarbons C6-C12.
9 Laboratory report indicates gasoline and unidentified hydrocarbons >C8.
10 MTBE by EPA Method 8260.
11 Laboratory report indicates gasoline C6-C12.
12 MTBE by EPA Method 8260 analyzed past the recommended holding time.
13 Laboratory report indicates weathered gasoline C6-C12.
14 Laboratory report indicates gasoline C6-C12 + unidentified hydrocarbons <C6.

Table 2

Groundwater Analytical Results

Tosco (Unocal) Service Station #5325

3220 Lakeshore Avenue

Oakland, California

Well ID	Date	Iron (ppm)	Nitrate as NO3 (ppm)	Phosphate as PO4 (ppm)	Redox Potential mV[2]
U-1	06/15/98	39	ND	ND	382[2]
	09/30/98	17	ND	ND	366[2]
	12/28/98	4.3	6.3	28	298[2]
	03/22/99	4.9	ND	3.5	320[3]
	06/09/99	1.2	ND	ND	260[3]
	09/08/99	1.80	ND[1]	ND[1]	85[3]
	12/07/99	5.70	ND[1]	17.0	404[3]
	03/13/00	8.0	0.18	ND	[2]117/262[3]
U-2	03/03/98	25	ND	ND	369[2]
	06/15/98	42	ND	ND	341[2]
	09/30/98	25	ND	ND	354[2]
	12/28/98	28	ND	ND	276[2]
	03/22/99	0.68	ND	2.3	320[3]
	06/09/99	0.50	ND	ND	290[3]
	09/08/99	1.90	ND[1]	ND[1]	235[3]
	12/07/99	0.250	ND[1]	ND[1]	389[3]
	03/13/00	4.3	0.31	ND	[2]121/184[3]
U-3	06/30/97	1.4	21	0.86	190[3]
	09/19/97	0.57	19	ND	75[3]
	12/12/97	1.9	23	0.85	390[3]
	03/03/98	0.013	36	ND	358[2]
	06/15/98	0.16	33	ND	318[2]
	09/30/98	0.040	31	ND	295[2]
	12/28/98	ND	29	ND	281[2]
	03/22/99	0.015	30	0.14	310[3]
	06/09/99	ND	26	1.2	350[3]
	09/08/99	ND	32.9	ND[1]	417[3]
	12/07/99	0.0520	27.9	ND[1]	437[3]
	03/13/00	0.15	33	ND	[2]226/307[3]
U-4	06/30/97	0.13	35	0.52	200[3]
	09/19/97	0.35	30	ND	45[3]
	12/12/97	0.68	31	0.73	380[3]
	03/03/98	0.018	3.2	ND	284[2]
	06/15/98	0.14	33	ND	256[2]
	09/30/98	0.049	31	ND	276[2]
	12/28/98	0.36	31	ND	280[2]
	03/22/99	ND	30	0.14	320[3]
	06/09/99	ND	35	0.91	340[3]
	09/08/99	ND	24	ND[1]	391[3]
	12/07/99	ND	27.7	ND[1]	478[3]
	03/13/00	0.021	33	ND	[2]219/244[3]

As of 03/13/00

Table 2

Groundwater Analytical Results

Tosco (Unocal) Service Station #5325

3220 Lakeshore Avenue

Oakland, California

Well ID	Date	Iron (ppm)	Nitrate as NO3 (ppm)	Phosphate as PO4 (ppm)	Redox Potential mV^2
U-5	06/30/97	16	ND	ND	160[3]
	09/19/97	0.22	ND	ND	63[3]
	12/12/97	6.7	ND	ND	400[3]
	03/03/98	18	3.1	ND	345[2]
	06/15/98	17	ND	ND	333[2]
	09/30/98	17	ND	ND	318[2]
	12/28/98	17	6.6	ND	305[2]
	03/22/99	0.12	ND	2.4	340[3]
	06/09/99	0.23	ND	ND	320[3]
	09/08/99	2.10	ND[1]	ND[1]	335[3]
	12/07/99	0.310	ND[1]	ND[1]	408[3]
	03/13/00	**0.33**	**0.16**	**ND**	[2]111/264[3]
U-6	06/30/97	88	0.80	ND	190[3]
	09/19/97	2.9	1.80	ND	ND[3]
	12/12/97	51	ND	ND	380[3]
	03/03/98	60	3.5	ND	327[2]
	06/15/98	590	4.8	ND	315[2]
	09/30/98	33	ND	ND	345[2]
	12/28/98	83	7.2	ND	297[2]
	03/22/99	2.1	ND	0.98	330[3]
	06/09/99	0.47	0.20	ND	320[3]
	09/08/99	0.140	5.59	ND[1]	305[3]
	12/07/99	0.260	ND[1]	ND[1]	443[3]
	03/13/00	**0.79**	**0.26**	**ND**	[2]68/222[3]

EXPLANATIONS:

Groundwater analytical results prior to March 3, 1998, were compiled from reports prepared by MPDS Services, Inc.

ppm = Parts per million
ND = Not Detected
mV = millivolts

[1] Detection limit raised. Refer to analytical reports.
[2] Field measurement.
[3] Analyzed by laboratory.

Table 3

Dissolved Oxygen Concentrations

Tosco (Unocal) Service Station #5325
3220 Lakeshore Avenue
Oakland, California

Well ID	Date	Before Purge (mg/L)
U-1	12/07/99	1.36
	03/13/00	1.44
U-2	12/07/99	2.28
	03/13/00	2.68
U-3	06/30/97	4.1
	09/19/97	4.2
	12/12/97	2.97
	03/03/98	2.63
	06/15/98	2.93
	09/30/98	3.11
	12/28/98	3.59
	03/22/99	4.02
	06/09/99	3.70
	09/08/99	3.96
	12/07/99	4.21
	03/13/00	4.82
U-4	06/30/97	5.4
	09/19/97	5.1
	12/12/97	3.11
	03/03/98	2.94
	06/15/98	3.08
	09/30/98	4.05
	12/28/98	4.57
	03/22/99	4.26
	06/09/99	3.61
	09/08/99	3.75
	12/07/99	4.03
	03/13/00	4.33
U-5	06/30/97	3.4
	09/19/97	0.6
	12/12/97	1.75
	03/03/98	2.36
	06/15/98	2.55
	09/30/98	1.93
	12/28/98	1.64
	03/22/99	1.99
	06/09/99	2.10
	09/08/99	2.21
	12/07/99	2.66
	03/13/00	3.04

Table 3

Dissolved Oxygen Concentrations

Tosco (Unocal) Service Station #5325

3220 Lakeshore Avenue

Oakland, California

Well ID	Date	Before Purge (mg/L)
U-6	06/30/97	0.30
	09/19/97	0.60
	12/12/97	2.70
	03/03/98	2.18
	06/15/98	2.48
	09/30/98	3.06
	12/28/98	3.42
	03/22/99	3.88
	06/09/99	3.29
	09/08/99	3.12
	12/07/99	3.44
	03/13/00	**2.81**

EXPLANATIONS:

Dissolved oxygen concentrations prior to March 3, 1998, were compiled from reports prepared by MPDS Services, Inc.

mg/L = milligrams per liter

APPENDIX C

HISTORICAL SOIL DATA AND BORING LOGS

TABLE 1 - SOIL CHEMICAL ANALYTICAL DATA
Unocal Service Station No. 5325
3220 Lakeshore Avenue
Oakland, California

Sample Location and ID	Sample Depth (feet)	Date Collected	TPHg (ppm)	Benzene (ppm)	Toluene (ppm)	Ethyl-benzene (ppm)	Xylenes (total) (ppm)
U1-6.5	6.5	9/24/90	480	4.5	29	14	74
U1-11.5	11.5	9/24/90	1.4	0.64	0.019	0.015	0.051
U2-6.0	6.0	9/24/90	110	ND	1.6	2.4	12
U2-11.5	11.5	9/24/90	ND	0.007	ND	ND	0.005
U2-21.5	21.5	9/24/90	ND	ND	ND	ND	ND
U3-6.5	6.5	9/24/90	ND	ND	ND	ND	ND
U3-11.5	11.5	9/24/90	ND	ND	ND	ND	ND

EXPLANATION:

feet = feet below ground surface
ppm = parts per million
ND = not detected

ANALYTICAL LABORATORY:

IT Analytical Services - San Jose

ANALYTICAL METHODS:

TPHg = Total Petroleum Hydrocarbons as gasoline according to EPA Method 8015 Modified.
BTEX = Benzene, Toluene, Ethylbenzene, and Xylenes according to EPA Method 8020.

TABLE 1 - SOIL CHEMICAL ANALYTICAL DATA

Unocal Service Station No. 5325
3220 Lakeshore Avenue
Oakland, California

Sample No.	Sample Depth (ft.)	Sample Date	TPHg (ppm)	Benzene (ppm)	Toluene (ppm)	Ethylbenzene (ppm)	Xylenes (ppm)	MtBE (ppm)	Total Lead (ppm)
Boring U-D									
U-D-5.5	5.5	6/23/97	450	ND	1.2	9.8	35	1.1	NA
Boring U-E									
U-E-6.5	6.5	6/23/97	29	0.16	0.034	ND	0.050	ND	NA
Stockpile									
US-1A-D	--	6/23/97	7.6	0.042	ND	0.0086	0.067	NA	6.4

EXPLANATION:

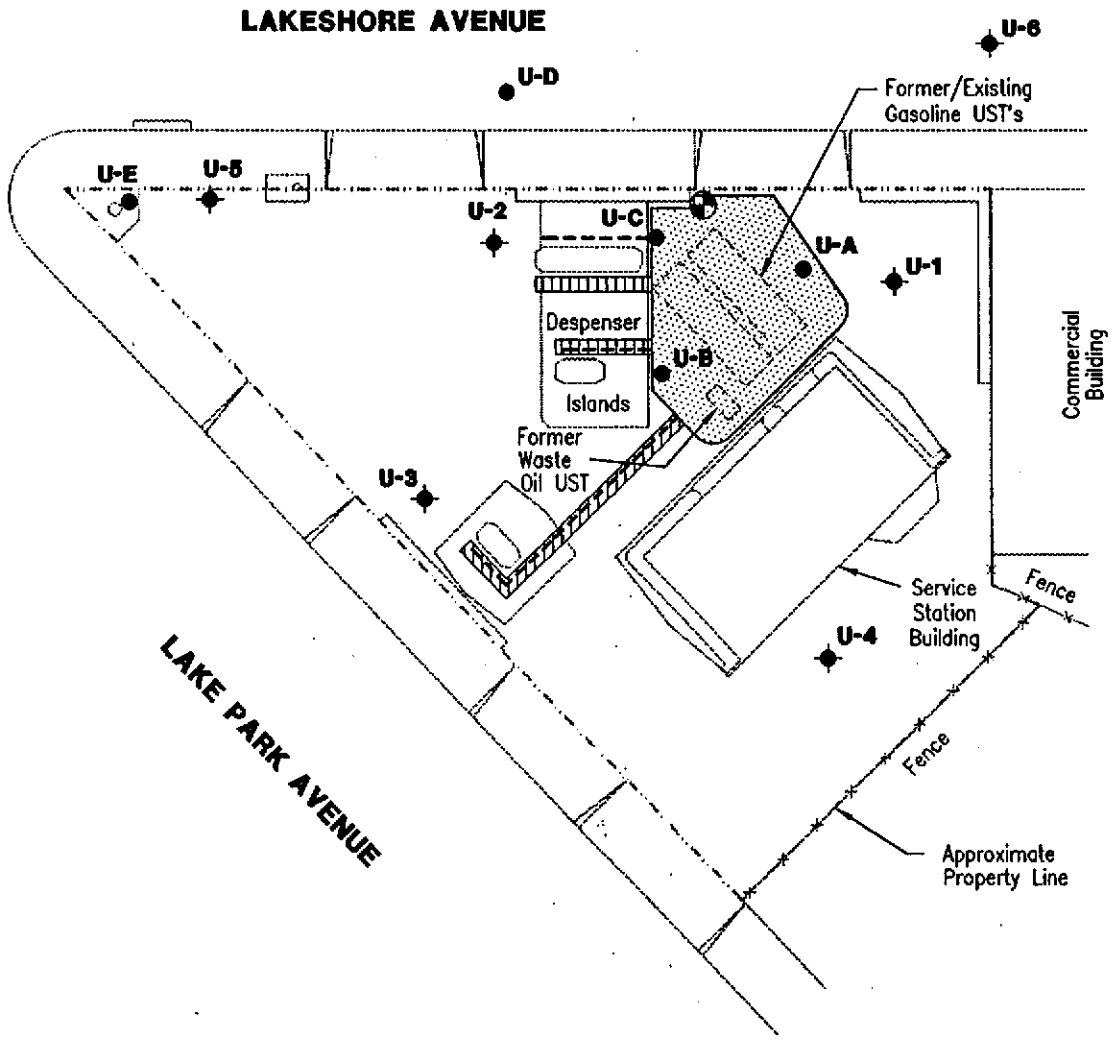
ft. = feet
ppm = parts per million
-- = not applicable
NA = not analyzed for this constituent
ND = Not detected. See laboratory analytical data for detection limits.

ANALYTICAL LABORATORY:

Sequoia Analytical (ELAP #1210)

ANALYTICAL DATA:

TPHg = Total Petroleum Hydrocarbons as gasoline according to EPA Method 8015 Modified
MtBE = Methyl tertiary butyl ether according to EPA Method 8020



EXPLANATION

- Ground-water monitoring well
- Soil boring
- UST observation well
- Former product line trench (1990)
- Limit of 1990 excavation
- Former product line trench (1996)

N

0 40

Scale in Feet

GeoStrategies Inc.

SITE PLAN
UNOCAL Service Station NO. 5325
3220 Lakeshore Avenue
Oakland, California

FIGURE
2

JOB NUMBER	REVIEWED BY	DATE	REVISED DATE
7814.21		June, 1997	

Table 1. Analytical Results - Unocal Service Station #5325, 3220 Lakeshore, Oakland, California.

Sample Name	Depth (ft)	Date	TPHg	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE	TPHd	TOG	HVOs	SVOs	Cadmium	Chromium	Nickel	Lead	Zinc
			<--------					ppm									-------->
WOT-8.0	8.0	11/15/96	<1.0[1]	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	1.5[2]	78	ND[3]	ND[4]	<0.50	31	43	9.9	48
PL1-3.5	3.5	11/15/96	19	0.0061	0.018	0.20	0.32	0.79	—	—	—	—	—	—	—	—	—
PL2-3.5	3.5	11/15/96	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	—	—	—	—	—	—	—	—	—
PL3-3.5	3.5	11/15/96	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	—	—	—	—	—	—	—	—	—
PL4-3.5	3.5	11/15/96	800	1.8	9.0	12	64	23	—	—	—	—	—	—	—	—	—
PL4-5.0	5.0	11/15/96	220	3.6	17	5.3	29	1.7	—	—	—	—	—	—	—	—	—
PL5-3.5	3.5	11/15/96	49	0.20	0.30	0.71	3.6	0.66	—	—	—	—	—	—	—	—	—
PL5-5.0	5.0	11/15/96	450	2.3	16	9.2	51	3.7	—	—	—	—	—	—	—	—	—
PL6-3.5	3.5	11/15/96	72	0.18	0.83	1.2	7.9	0.63	—	—	—	—	—	—	—	—	—
PL6-5.0	5.0	11/15/96	270	0.86	10	6.0	39	2.3	—	—	—	—	—	—	—	—	—
SP-A,B,C,D-Comp		11/15/96	270	0.99	9.5	4.0	23	—	—	—	—	—	—	—	—	13	—
SP-1(A-D)		11/25/96	2.0[5]	0.0082	0.0098	0.025	0.026	—	—	—	—	—	—	—	—	16	—
SP2-(A,B,C,D)Comp		12/13/96	5.5[6]	0.011	0.015	0.0088	0.084	—	—	—	—	—	—	—	—	32	—

EXPLANATION:

TPHg = Total Petroleum Hydrocarbons as gasoline
MTBE = Methyl t-Butyl Ether
TPHd = Total Petroleum Hydrocarbons as diesel
TOG = Total Oil and Grease
HVOs = Halogenated Volatile Organics
SVOs = Semivolatile Organics
ppm = Parts per million
ND = Not detected
— = Not analyzed/not applicable

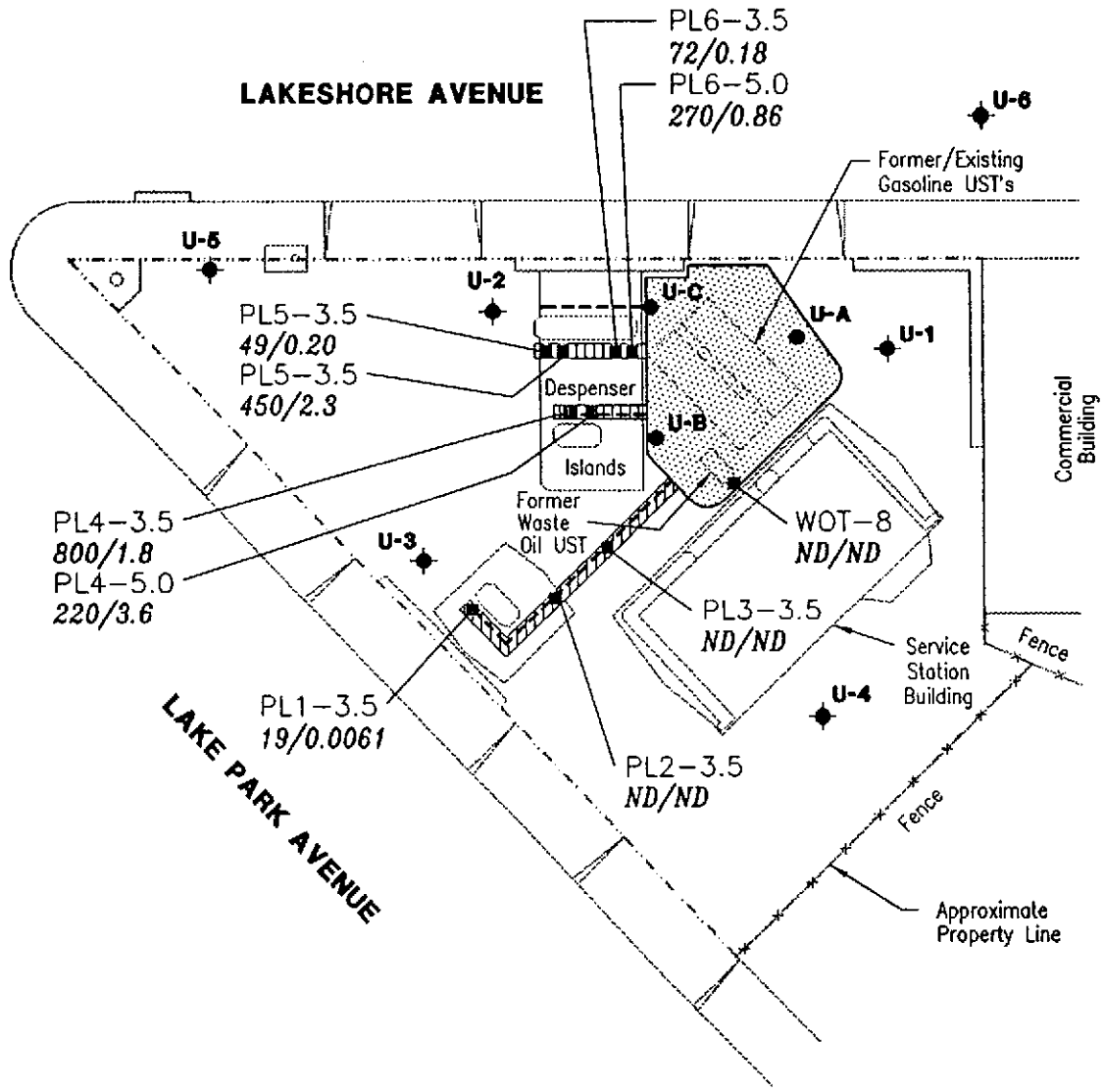
[1] = Results shown as <x were reported by laboratory as not detected above the stated detection limit.
[2] = Unidentified hydrocarbons C9-C24.
[3] = None detected at detection limits of 25, 50, or 250 ppm.
[4] = None detected at detection limits of 250 or 500 ppm.
[5] = Unidentified hydrocarbons >C8.
[6] = Unidentified hydrocarbons C6-C12.

ANALYTICAL METHODS:

TPHg, BTEX, MTBE = EPA Method 8015Mod/8020
TPHd = EPA Method 8015
TOG = Standard Method 5520E&F
HVOS = EPA Method 8010
SVOs = EPA Method 8270
Metals = EPA Method 6010

ANALYTICAL LABORATORY:

Sequoia Analytical (ELAP #1210 or #1271)



EXPLANATION

- ✦ Ground-water monitoring well
- ● Soil boring
- ■ Soil sample
- *99/9.9* TPH-G (Total Petroleum Hydrocarbons calculated as Gasoline)/Benzene concentrations in ppm
- *ND* Not Detected (See laboratory reports for detection limits)
- ----- Former product line trench (1990)
- Limit of 1990 excavation
- Former product line trench (1996)

N

0 40

Scale in Feet

GSI GeoStrategies Inc.

SOIL CONCENTRATION MAP
UNOCAL Service Station NO. 5325
3220 Lakeshore Avenue
Oakland, California

FIGURE
2

JOB NUMBER	REVIEWED BY	DATE	REVISED DATE
4814.07		December, 1996	

TABLE 1

SOIL ANALYTICAL DATA
Unocal Service Station No. 5325
3220 Lakeshore Avenue
Oakland, California

SAMPLE I.D.	SAMPLE DEPTH (FEET)	SAMPLE DATE	TPH-G (PPM)	BENZENE (PPM)	TOLUENE (PPM)	ETHYLBENZENE (PPM)	XYLENES (PPM)	STLC LEAD (PPM)
U-4-4.0	4.0	02-Jun-94	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	NA
U-4-9.5	9.5	02-Jun-94	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	NA
U-5-6.0	6.0	02-Jun-94	400	1.9	12	9.9	43	NA
U-6-5.5	5.5	02-Jun-94	<1.0	<0.0050	0.0090	<0.0050	0.17	NA
US-1-A-D	—	02-Jun-94	590	3.2	8.6	11	47	0.34

TPH-G = Total Petroleum Hydrocarbons as Gasoline.
PPM = Parts Per Million.
STLC = Soluble Threshold Limit Concentration.
NA = Not Analyzed.

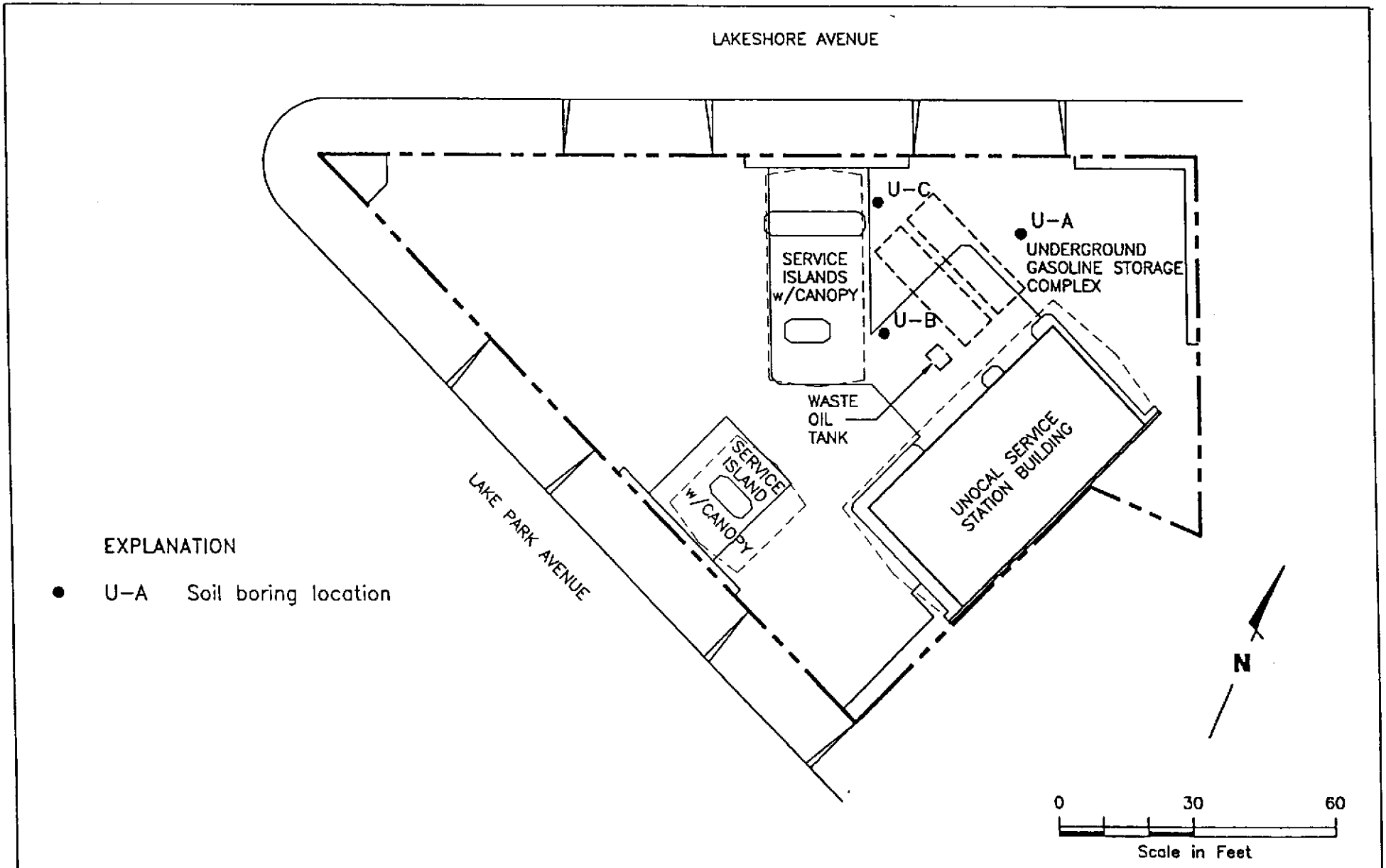
Notes: 1. All data shown as <x are reported as ND (none detected).

TABLE 1

SOIL ANALYSES DATA

SAMPLE NO	SAMPLE DATE	ANALYZED DATE	TPH (PPM)	BENZENE (PPM)	TOLUENE (PPM)	ETHYLBENZENE (PPM)	XYLENES (PPM)
U-A-5	24-May-90	02-Jun-90	18	0.12	0.069	0.52	0.46
U-A-7	24-May-90	02-Jun-90	2100	1.3	27	32	190
U-A-12.5	24-May-90	02-Jun-90	260	0.28	2.4	3	18
U-B-4.5	24-May-90	02-Jun-90	3100	2.6	44	46	250
U-B-8.5	24-May-90	02-Jun-90	1600	5.3	31	22	120
U-B-10.5	24-May-90	02-Jun-90	2	0.014	0.11	0.045	0.21
U-C-4.5	24-May-90	02-Jun-90	7500	13	250	160	990
U-C-7.5	24-May-90	02-Jun-90	86	0.46	3.2	1.7	10
U-C-10	24-May-90	02-Jun-90	3	0.031	0.13	0.08	0.38

TPH = Total Petroleum Hydrocarbons as Gasoline
PPM = Parts Per Million



GeoStrategies Inc.

Site Plan
UNOCAL Service Station #5325
3220 Lakeshore Avenue
Oakland, California

PLATE 2

JOB NUMBER	REVIEWED BY RG/CEG	DATE	REVISED DATE
7814	[illegible] 12/62	6/90	

TABLE 1

SOIL ANALYSIS DATA

SAMPLE NO	DEPTH	SAMPLE DATE	ANALYSIS DATE	TPH (PPM)	BENZENE (PPM)	TOLUENE (PPM)	ETHYLBENZENE (PPM)	XYLENES (PPM)
UX-5	9.5	19-Jun-90	20-Jun-90	<1	<0.005	<0.005	<0.005	<0.005
UX-6	14	20-Jun-90	20-Jun-90	<1	<0.005	<0.005	<0.005	0.013
UX-7	14	20-Jun-90	20-Jun-90	<1	0.008	0.006	<0.005	0.016
UX-8	7.0	20-Jun-90	20-Jun-90	<1	<0.005	<0.005	<0.005	0.022
UX-9	14	20-Jun-90	20-Jun-90	<1	<0.005	<0.005	<0.005	<0.005
UX-10	6.5	20-Jun-90	20-Jun-90	1300	1.7	26	2.1	100
UX-11	12.5	20-Jun-90	20-Jun-90	<1	<0.005	<0.005	<0.005	<0.005
UX-12	13	20-Jun-90	20-Jun-90	<1	0.044	0.008	<0.005	0.010
UX-13	6.5	20-Jun-90	20-Jun-90	<1	0.021	<0.005	<0.005	<0.005
UX-14	7.5	20-Jun-90	20-Jun-90	2800	11	63	11	320
UX-15	8.0	25-Jun-90	26-Jun-90	12	1.1	0.91	0.93	5.2

TPH = Total Petroleum Hydrocarbons as Gasoline
PPM = Parts Per Million

Note: 1) All data shown as <x are reported as ND (none detected)

TABLE 2

SOIL ANALYSES DATA

WELL NO	DEPTH	SAMPLE DATE	ANALYZED DATE	TPH (PPM)	BENZENE (PPM)	TOLUENE (PPM)	ETHYLBENZENE (PPM)	XYLENES (PPM)
UT-4	3.5	25-Jun-90	26-Jun-90	60	1.1	1.5	2.0	11
UT-5	3.5	25-Jun-90	26-Jun-90	28	1.7	0.76	1.3	4.4
UT-6	3.0	25-Jun-90	26-Jun-90	12	0.62	1.6	0.52	1.9
UT-7	3.5	25-Jun-90	26-Jun-90	<2.5	<0.025	<0.025	<0.025	<0.05
UT-8	3.5	25-Jun-90	26-Jun-90	<2.5	<0.025	<0.025	<0.025	<0.05
UT-9	4.0	25-Jun-90	27-Jun-90	14	<0.026	<0.026	<0.026	0.05

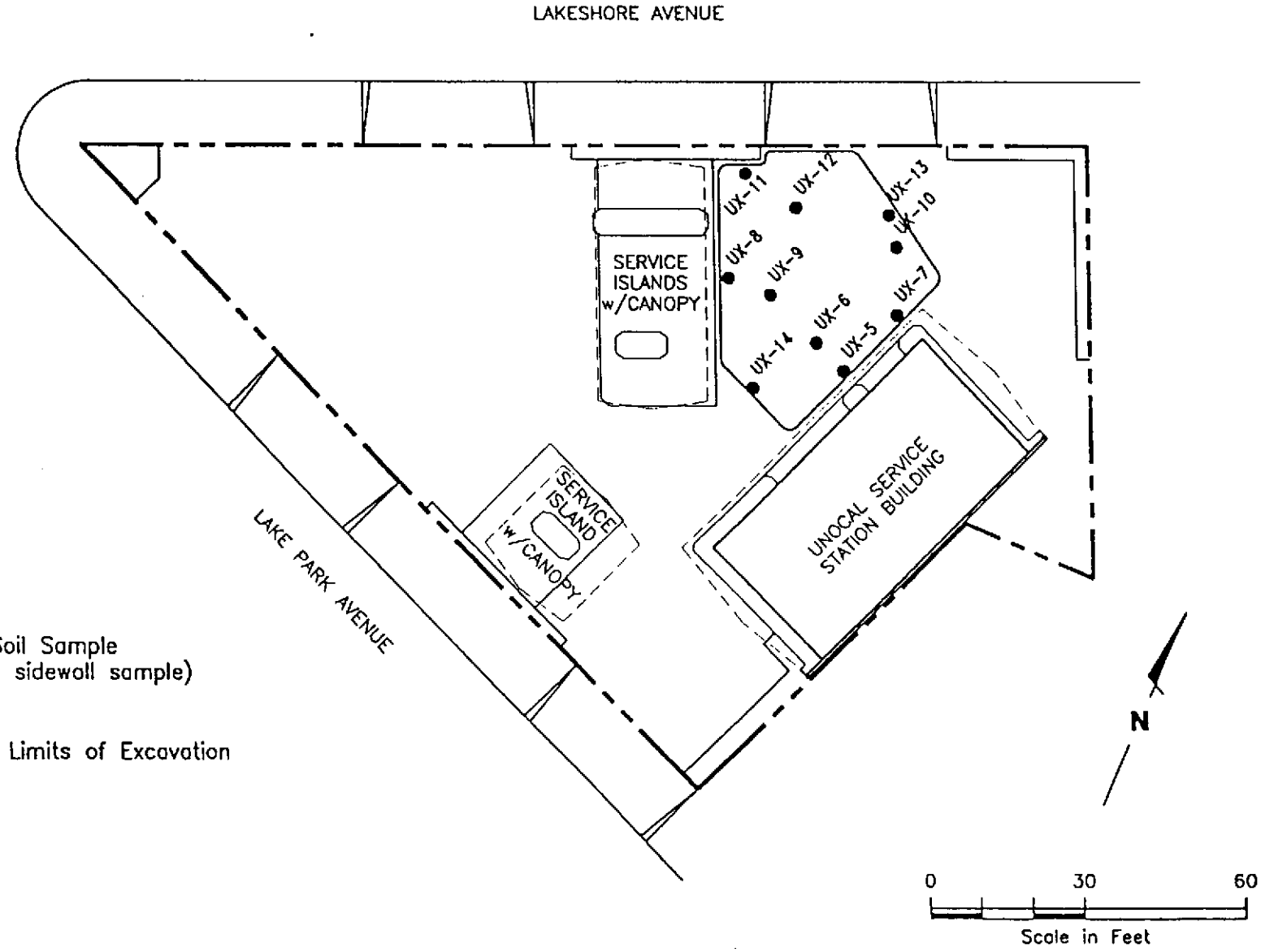
TPH = Total Petroleum Hydrocarbons as Gasoline
PPM = Parts Per Million

Note: 1. All data shown as <x are reported as ND (none detected)

TABLE 3

SOIL ANALYSIS DATA

SAMPLE NO	SAMPLE DATE	ANALYSIS DATE	TPH (PPM)	BENZENE (PPM)	TOLUENE (PPM)	ETHYLBENZENE (PPM)	XYLENES (PPM)	TRPH (PPM)	TPH-D (PPM)	PCB (PPM)	PCP (PPM)	Cd (PPM)	Cr (PPM)	Pb (PPM)	Zn (PPM)
UWO-1	22-Jun-90	09-Jul-90	<2.5	<0.026	<0.026	<0.026	<0.05	<50	<2	NA	NA	NA	NA	NA	NA
UWO-2	22-Jun-90	09-Jul-90	<2.5	<0.006	<0.0006	<0.006	<0.006	<50	7	ND	ND	5.6	28	7.9	33



EXPLANATION

● UX-12 Excavation Soil Sample (bottom and sidewall sample)

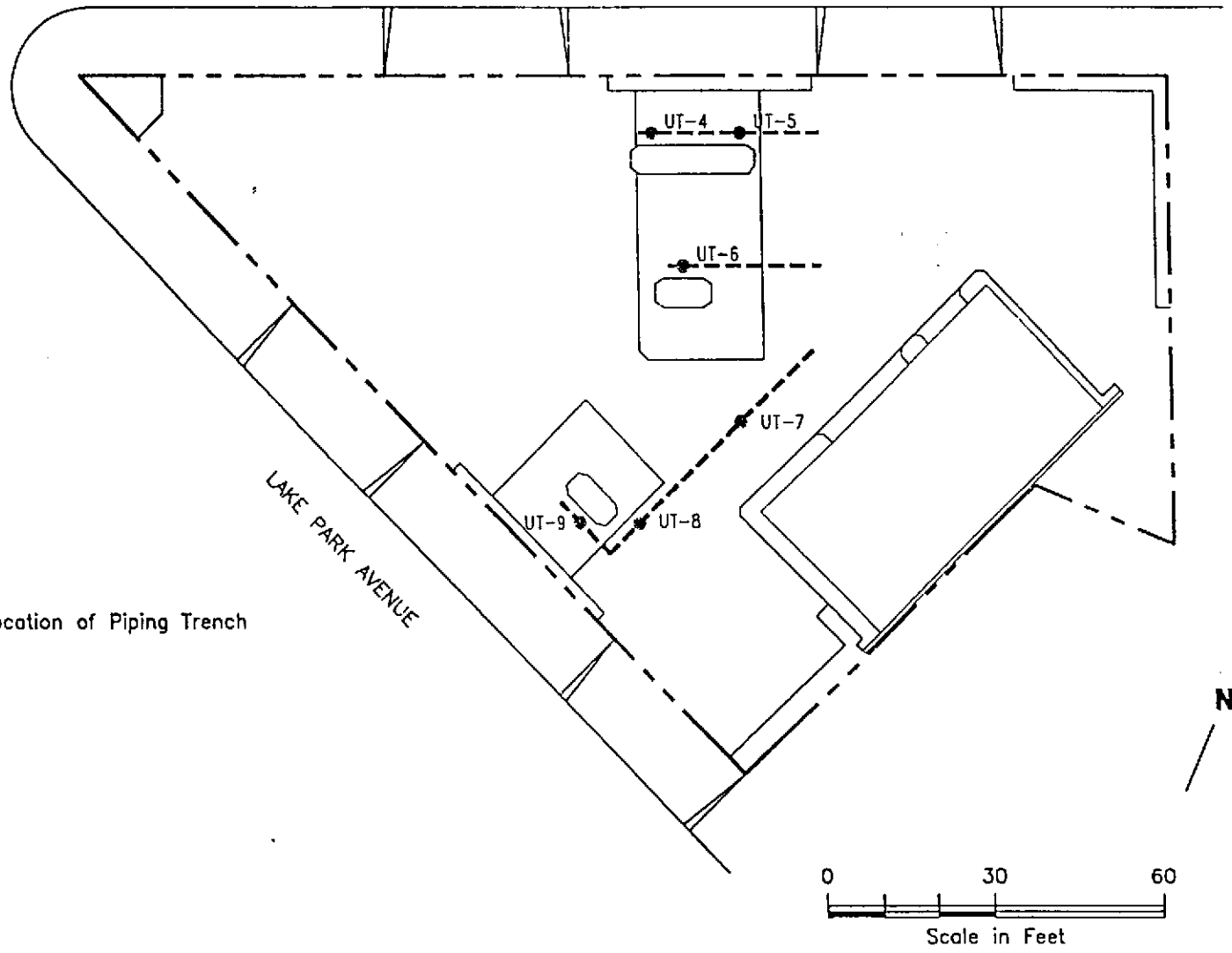
—— Approximate Limits of Excavation (6/20/90)

GeoStrategies Inc.

SOIL SAMPLE LOCATION MAP
UNOCAL Service Station #5325
3220 Lakeshore Avenue
Oakland, California

PLATE 3

JOB NUMBER	REVIEWED BY RG/CEG	DATE	REVISED DATE
7814	RG CEG 1262	6/90	



EXPLANATION

● UT-5 Approximate location of Piping Trench Soil Sample

—— Piping Trench

GeoStrategies Inc.

PIPE TRENCH SOIL SAMPLE LOCATIONS
UNOCAL Service Station #5325
3220 Lakeshore Avenue
Oakland, California

PLATE 4

JOB NUMBER	REVIEWED BY RG/CEG	DATE	REVISED DATE
7814	CEG 1262	8/90	

GSI — FIELD EXPLORATION BORING LOG

Field location of boring:

Project No.: 7614 | Date: 1/24/90 | Boring No.: V-
Client: UNOCAL | Sheet 1 of 2
Location: 3220 Lakeshore
City: Oakland
Logged by: RAC | Driller: Bayland
Casing installation data:
Drilling method: HSA
Hole diameter: 8"
Top of Box Elevation: | Datum:

Water Level	10.0	10.0
Time	9:30	1320
Date	9/24/90	9/24/90

PID (ppm)	Blows/ft. or Pressure (psi)	Type of Sample	Sample Number	Depth (ft.)	Sample	Well Detail	Soil Group Symbol (USCS)	Description
				0				BACKFILL SECTION — 1.0 feet
				1				FILL
				2				SANDY SILT (ML) - yellowish brown (10YR 5/4), m. st, ff, moist, ≈70% silt, 30% f.-c. sand, strong chem. odor
				3			ml/cl	CLAYEY SILT with sand (ML/CL) - very dark gray (10YR 3/1), m-st, ff, moist, med. plasticity, 50% silt, 30% clay, 20% f. sand, mod. wchem. odor
	350			4				
466	900	SPH	V-1-	5				
	450		6.5					
				6			ML	SANDY SILT (ML) - dark gray (N4/0) m. st, ff, moist, 75% silt, 25% f. sand, strong chem. odor
				7				
				8				
				9				
				10				saturated 10% increase clay to 25%, peat, 10% dispersed gravel, no chem odor
	1	SPH	V1-					
13	2		11.5	11				
	3							
				12				hard drilling at 12.5 feet
				13				
				14				
	9		V1-	15				
2	10	SPH	16	16			SW	sand with gravel (SW) - light olive brown (10YR 5/4), m. dense, saturated, 85% f.-c. S-wd, 15% f.-c. gravel, no chem odor
	13							
				17				
				18				
				19				

Remarks:

Post-it® Fax Note 7671 | Date 12/1 | # of pages ▶ 12

To Zea | From Clyde
Co./Dept. | Co.
Phone # | Phone #
Fax # | Fax #

GSI GeoStrategies Inc.

FIELD EXPLORATORY BORING LOG

Field location of boring:

Project No.: 7815
Date: 9/24/90
Boring No.:
Client: UNOCAL
Location: 3220 Lakeshore
City: Oakland
Sheet 2 of 2
Logged by: DAL
Driller: Bayland
Casing installation data:

Drilling method: HSA
Hole diameter: 4

Top of Box Elevation:
Datum:

Water Level			
Time			
Date			

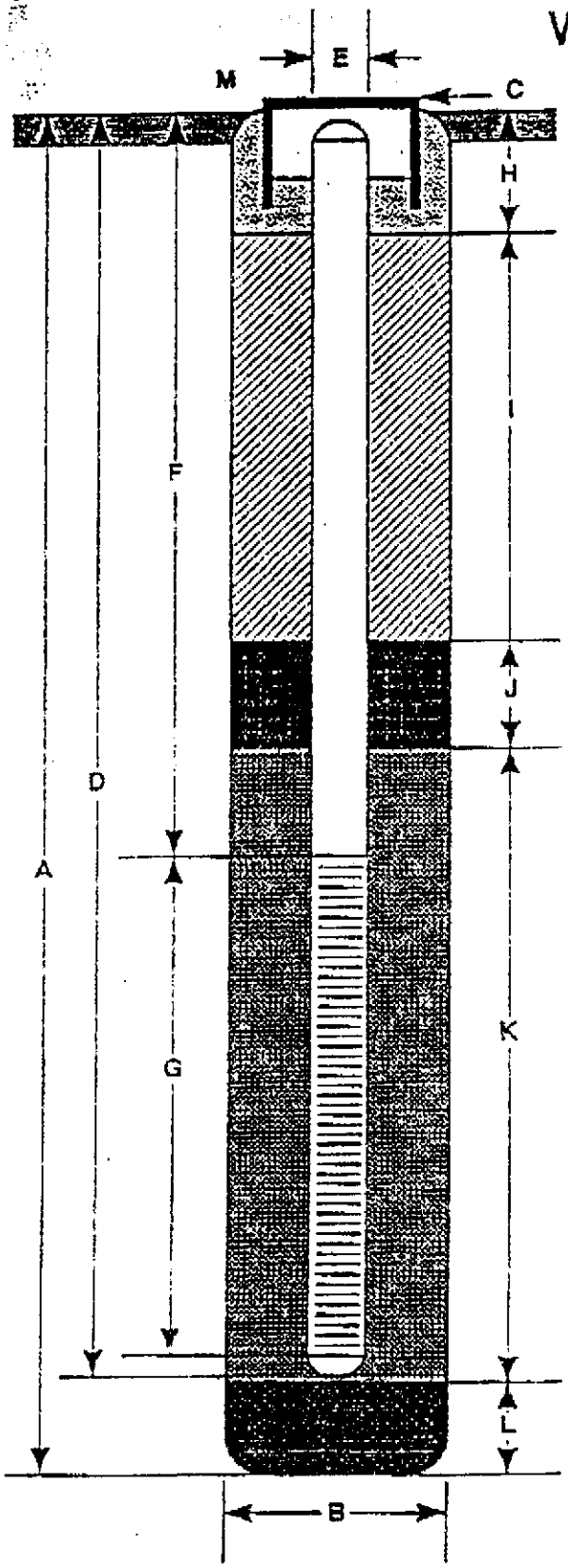
PID (ppm)	Blows/ft. or Pressure (psi)	Type of Sample	Sample Number	Depth (ft.)	Sample	Well Detail	Soil Group Symbol (USCS)	Description
	7		21					
	5		21.5					CLAY (CL) greenish gray (5GY 4/1)
	5.7							stiff, moist, 100% clay, no chem
				22			CL	odor (weathered bedrock?)
				23				
				24				
				25				very stiff
1	7							no chem odor
	13	SPT		26				
	17							Bottom of boring at 26.5 feet
				27				" Sample at 26.5 feet
								9/24/90

Remarks:
screen 5-20' sand 4-20
slough 23.0-26.5 pull augers, open to 23'

DEC 1 '99 15:01 FROM GETTLER-RYAN INC TO 14158931517 PAGE.002/012

WELL CONSTRUCTION DETAIL

FIGURE 2



A Total Depth of Boring 26.5 ft.

B Diameter of Boring 8 in.
Drilling Method Hollow-stem auger

C Top of Box Elevation _____ ft.
☐ Referenced to Mean Sea Level
☐ Referenced to Project Datum

D Casing Length 20.0 ft.
Material schedule 40 PVC

E Casing Diameter 3 in.

F Depth to Top Perforations 5.0 ft.

G Perforated Length 15.0 ft.
Perforated Interval from 5.0 to 20.0 ft.
Perforation Type machine slot
Perforation Size 0.020 in.

H Surface Seal from 0.0 to 1.5 ft.
Seal Material concrete

I Backfill from 1.5 to 3.0 ft.
Backfill Material concrete

J Seal from 3.0 to 4.0 ft.
Seal Material bentonite

K Gravel Pack from 4.0 to 20.0 ft.
Pack Material Lonestar 2/12 sand

L Bottom Seal 3.0 ft.
Seal Material bentonite

M vault with locking cap and cover

* slough from 23.0 to 26.5 feet

Note: Depths measured from initial ground surface

GeoStrategies Inc.

Well Construction Detail

WELL NO. U-1

JOB NUMBER | REVIEWED BY PG/CEG | DATE | REVISED DATE | REVISED DATE

Geostrategies Inc. — FIELD EXPLORATORY BORING LOG

Project No.: 7824	Date: 9/24/00
Client: UNOCAL	Boring No.: U-2
Location: 3220 Lakeshore	
City: Oakland	Sheet 1 of 2
Logged by: BAL	Driller: Bayland
Casing installation data:	

Drilling method: HSA

Hole diameter: 8"

Top of Box Elevation: | Datum:

Water Level	10.0	14.0	16.0
Time	1115	1146	1310
Date	9/24/00	9/24/00	9/24/00

PID (ppm)	Blows/ft. or Pressure (psi)	Type of Sample	Sample Number	Depth (ft.)	Sample	Well Detail	Soil Group Symbol (USCS)	Description
				0				PAVEMENT SECTION = 1.0 ft
				1				SANDY SILT (ML) - dark greenish gray (5G 4/1), m. stiff, moist,
				2			ML	non plastic, 70% silt, 30% f. sand,
								mod. chem. odor
				3				
				4				
	350							
846	400	SpH	U2-6.0	5				
	450							
				6				Sand with Gravel (SW) - dark greenish gray (5GY 4/1), m. dense
							SW	moist, 85% f. sand, 15% f. gravel,
				7				strong chem. odor
				8				
				9				m. stiff, 5G
		SpH	U2-11.5	10			ML/CL	CLAYEY SILT WITH SAND (ML/CL) - very dark gray (10 YR 3/1), 45%
	3							silt, 30% clay, 25% f-c. sand,
66	2			11				sand evenly dispersed, roots and
	4							rootholes, mod. chem. odor
				12				
				13				
				14				
		SpH		15				
	4		U2-16.5				CL	CLAY (CL) - light olive brown (2.5Y 5/4), stiff, moist, 100% clay
7	6			16				trace f-c gravel interspersed,
	9							no chem. odor
				17				
				18				

Remarks:

GSI GeoStrategies Inc. FIELD EXPLORATORY BORING LOG

Field location of boring:	Project No. 7814	Date: 9/24/90	Boring No.
	Client: [illegible]		[illegible]
	Location: [illegible]		
	City: Oakland		Sheet 2 of 2
	Logged by: [illegible]	Driller: Hayland	
	Casing installation data:		
Drilling method: 8" HSA			
Hole diameter: [illegible]	Top of Box Elevation:	Datum:	

Water Level				
Time				
Date				

PID (ppm)	Blows/ft. or Pressure (psi)	Type of Sample	Sample Number	Depth (ft.)	Sample	Well Detail	Soil Group Symbol (USCS)	Description
2	5			20				[illegible]
	6	SH	U-2				CL	[illegible]
	15		21.5	21				
				22				Bottom of boring at 21.5 feet
								" " sample at 21.5 feet
								9/24/90

Remarks:

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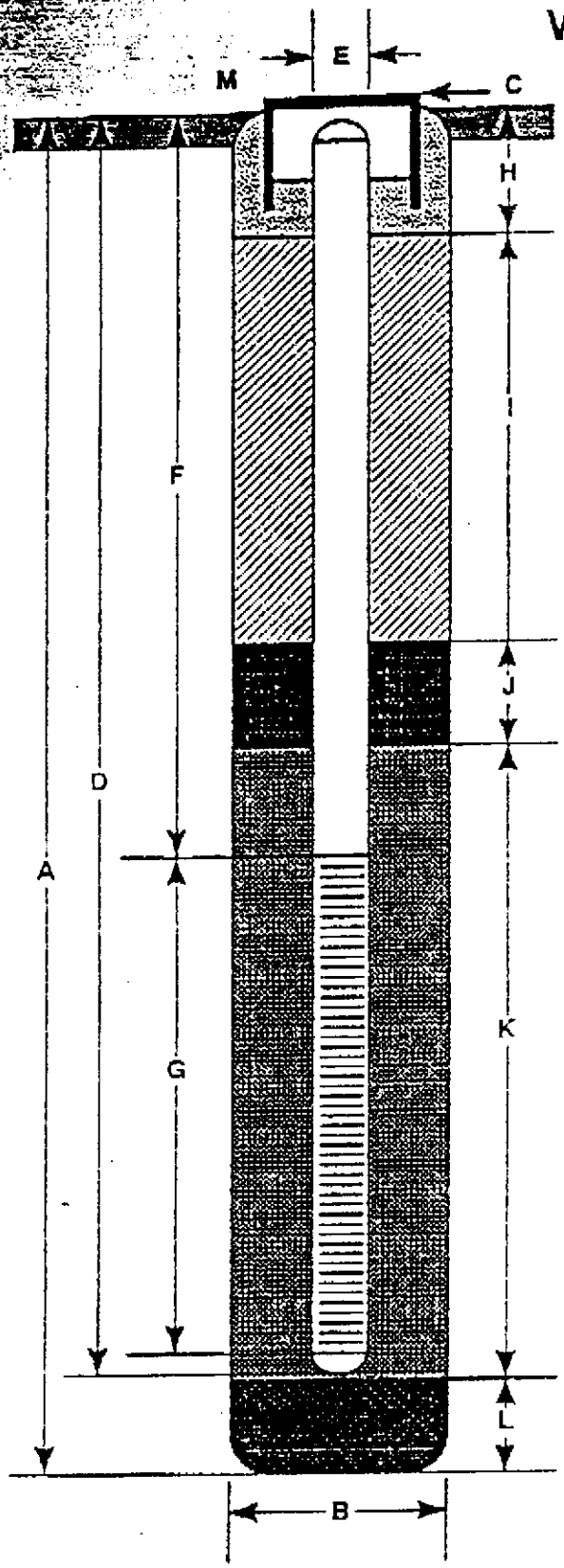
WELL CONSTRUCTION DETAIL

FIGURE 2



A Total Depth of Boring 21.5 ft.

B Diameter of Boring 8 in.
Drilling Method Hollow-stem

C Top of Box Elevation _____ ft.
☐ Referenced to Mean Sea Level
☐ Referenced to Project Datum

D Casing Length 20.0 ft.
Material Schedule 40 PVC

E Casing Diameter 3 in.

F Depth to Top Perforations 5.0 ft.

G Perforated Length 16.0 ft.
Perforated Interval from 5.0 to 20.0 ft.
Perforation Type machine slot
Perforation Size 0.020 in.

H Surface Seal from 0.0 to 1.5 ft.
Seal Material concrete

I Backfill from 1.5 to 3.0 ft.
Backfill Material concrete

J Seal from 3.0 to 4.0 ft.
Seal Material concrete

K Gravel Pack from 4.0 to 20.0 ft.
Pack Material Lonestar 2/12 sand

L Bottom Seal 1.5 ft.
Seal Material native material

M vault with locking cap and cover

Note: Depths measured from initial ground surface

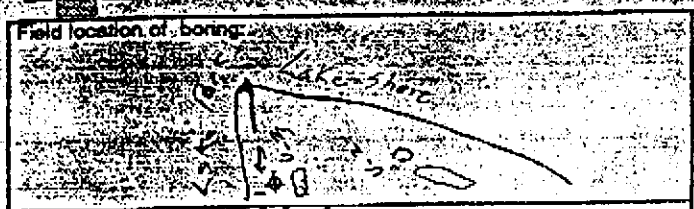
GeoStrategies Inc.

Well Construction Detail

WELL NO. U-2

JOB NUMBER | REVIEWED BY RG/CEG | DATE | REVISED DATE | REVISED DATE

GSI

Field location of boring: 

Drilling method: HSA

Hole diameter: 8"

Project No.: 7414 Date: 1/24/00 Boring No.: V-3

Client: UNOCAL

Location: 3270 Lakeshore

City: Oakland Sheet 1 of 2

Logged by: DAL Driller: Gayland

Casing installation data:

Top of Box Elevation: Datum:

Water Level	10.5	14.0
Time	1230	1330
Date	1/24/00	1/24/00

PID (ppm)	Blowsin. or Pressure (psi)	Type of Sample	Sample Number	Depth (ft.)	Sample	Well Detail	Soil Group Symbol (USCS)	Description
				0				PAVEMENT SECTION - 1.0 feet
				1				Fill - sandy silt (ml) - very dark gray (5Y 3/1), 70% silt, 30% f-c. sand, weak chem odor
				2				
				3				
				4				
	300	S&H	V3-	5				no chem odor
3	400		6.5	6				
	450			7			ML	
				8				
				9				
		S&H						SILTY SAND (sm) Dark Greenish Gray (5GY 4/1) saturated; 75% f. sand, 25% silt;
	0		V3-	10				no chem odor
2	2		11.5				SM	
	2			11				
				12				
				13				
				14				
				15				with f. sand SILT (ml) - light olive brown (2.5Y 5/4), saturated, moist,
	700							
1	500	S&H	V3-	16			ML	silt, no chem odor (20% f. sand)
	500		16.5					
				17				
				18				saturated sand on augers 17.5-19.5 feet

Remarks:

GSI GeoStrategies Inc.

FIELD EXPLORATORY BORING LOG

Field location of boring:	Project No: 7814
	Date: 9/24/90
	Boring No: U3
	Client: UNOCAL
	Location: 3220 Lakeshore
	City: Oakland
	Logged by: [illegible]
	Driller: [illegible]
	Sheet 2 of 2
	Casing installation data:
Drilling method: HSA	Top of Box Elevation:
Hole diameter: 8"	Datum:

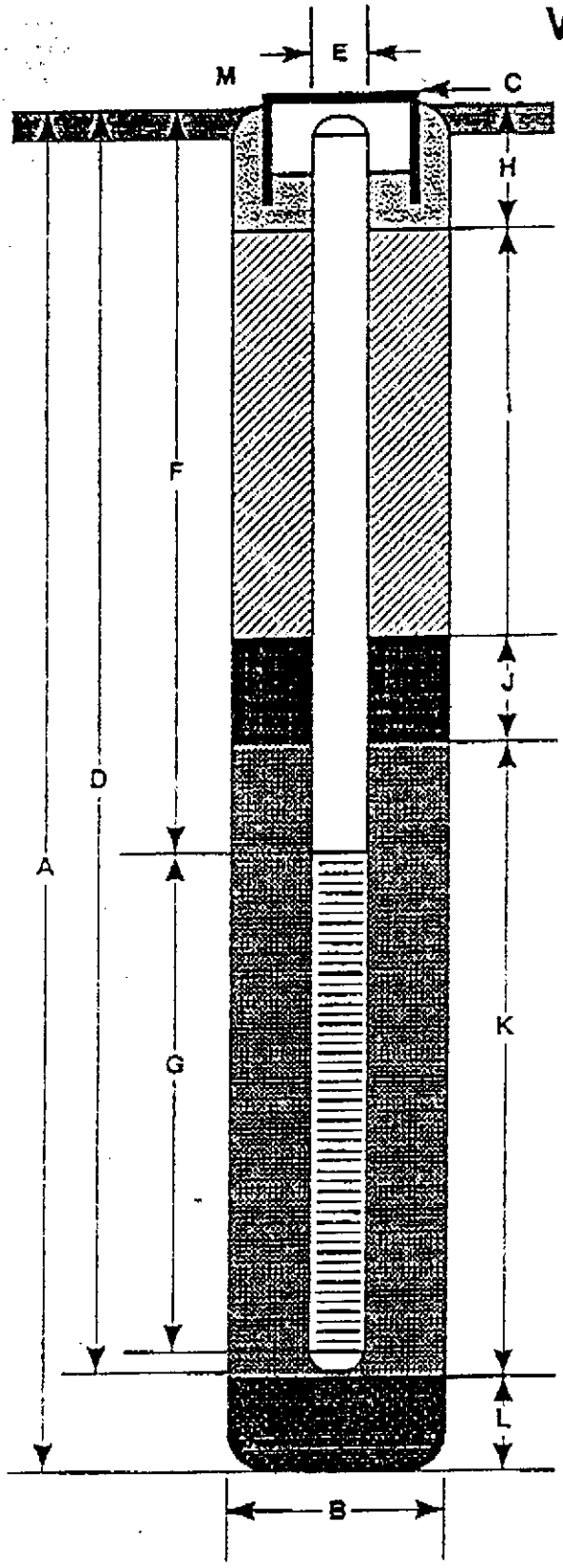
Water Level				
Time				
Date				

PID (ppm)	Blows/ft. or Pressure (psi)	Type of Sample	Sample Number	Depth (ft.)	Sample	Well Detail	Soil Group Symbol (USCS)	Description
				20				no chem odor
	300		U3-					
	500	SBH	21.5	21				
	600							
				22				Bottom of boring at 21.5 feet
								" " Sample at 21.5 feet
				23				9/24/90
				24				

Remarks:

WELL CONSTRUCTION DETAIL

FIGURE 2



A Total Depth of Boring 21.5 ft.

B Diameter of Boring 8 in.
Drilling Method Hollow-stem auger

C Top of Box Elevation _____ ft.
☐ Referenced to Mean Sea Level
☐ Referenced to Project Datum

D Casing Length 20.0 ft.
Material schedule 40 PVC

E Casing Diameter 3 in.

F Depth to Top Perforations 5.0 ft.

G Perforated Length 15.0 ft.
Perforated Interval from 5.0 to 20.0 ft.
Perforation Type machine slot
Perforation Size 0.020 in.

H Surface Seal from 0.0 to 1.5 ft.
Seal Material concrete

I Backfill from 1.5 to 3.0 ft.
Backfill Material concrete

J Seal from 3.0 to 4.0 ft.
Seal Material bentonite

K Gravel Pack from 4.0 to 20.0 ft.
Pack Material Lonestar 2/12 Sand

L Bottom Seal 1.5 ft.
Seal Material native material

M vault with locking cap and cover

Note: Depths measured from initial ground surface

GeoStrategies Inc.

Well Construction Detail

WELL NO. U-3

JOB NUMBER	REVIEWED BY RG/CEG	DATE	REVISED DATE	REVISED DATE

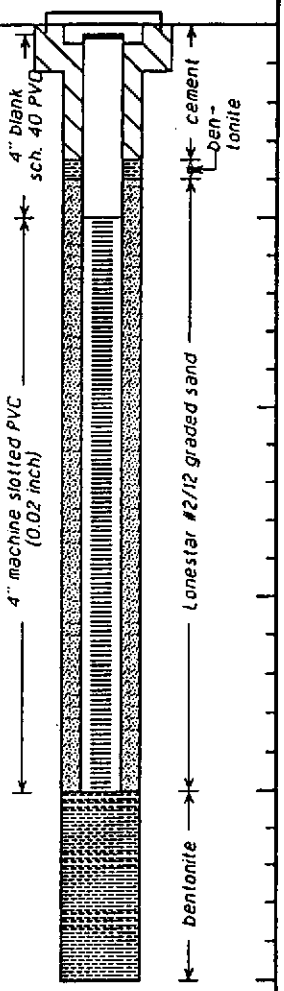
GeoStrategies, Inc.

Log of Boring U-4

PROJECT: *UNOCAL STATION #5325*	LOCATION: *3220 Lakeshore Avenue, Oakland, CA.*
GSI PROJECT NO. : *4814.702*	CASING ELEVATION: *11.15 MSL*
DATE STARTED: *6/2/94*	WL (ft. bgs): *10* DATE: *6/2/94* TIME: *07:46*
DATE FINISHED: *6/2/94*	WL (ft. bgs): *19.2* DATE: *6/2/94* TIME: *14:25*
DRILLING METHOD: *10 in. Hollow Stem Auger*	TOTAL DEPTH: *25 Feet*
DRILLING COMPANY: *Gregg Drilling Co.*	GEOLOGIST: *R. Mallory*

DEPTH feet	PID (ppm)	BLOWS/FT. *	SAMPLE NUMBER	SOIL CLASS	GEOLOGIC DESCRIPTION
					PAVEMENT
				ML	SANDY SILT (ML) – very dark grayish brown (10YR 3/2), stiff, medium plasticity, damp, 75% silt, 20% fine to coarse sand, 5% clay.
	0		U-4-4.0		
5		11			Stiff at 3.5 feet.
			U-4-9.5		COLOR CHANGE to olive brown (2.5YR 4/4), decrease sand to 5% at 8.5 feet.
10	0	44		SM	SILTY SAND (SM) – yellowish brown (10Y 5/4), dense, saturated, 65% medium to fine sand, 35% silt.
				ML	
15	0	39	U-4-15.0		SANDY SILT WITH GRAVEL (ML) – light olive brown (2.5Y 5/4), hard, low plasticity, moist, 60% silt, 25% fine to coarse sand, 15% gravel, black spherical nodules.
20	0	26	U-4-20.0		COLOR CHANGE to brownish yellow (10YR 6/8), decrease sand to 10%, decrease gravel to 0%, pale yellow (2.5Y 7/4) caliche deposits at 18.5 feet.
25	0	22	U-4-25.0		COLOR CHANGE to pale olive (5Y 6/3) at 23.5 feet.
					Bottom of boring at 25 feet. 6/2/94
30					(* – converted to equivalent standard penetration blows/ft.)
35					

WELL DIAGRAM



JOB NUMBER: *4814.702*

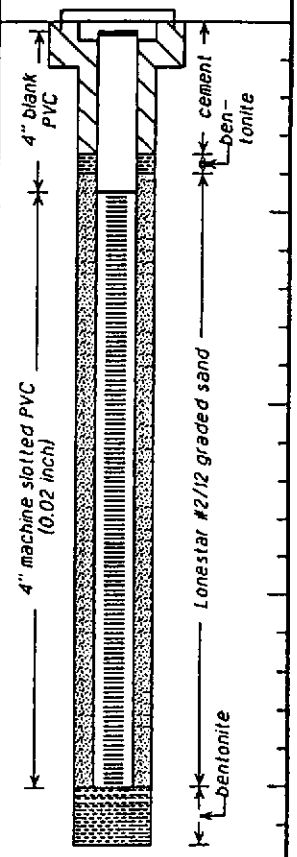
GeoStrategies, Inc.

Log of Boring U-5

PROJECT: *UNOCAL STATION #5325*	LOCATION: *3220 Lakeshore Avenue, Oakland, CA.*
GSI PROJECT NO.: *4814.702*	CASING ELEVATION: *6.98 MSL*
DATE STARTED: *6/2/94*	WL (ft. bgs): *6.25* DATE: *6/2/94* TIME: *11:32*
DATE FINISHED: *6/2/94*	WL (ft. bgs): *10.6* DATE: *6/2/94* TIME: *14:00*
DRILLING METHOD: *10 in. Hollow Stem Auger*	TOTAL DEPTH: *21.5 Feet*
DRILLING COMPANY: *Gregg Drilling Co.*	GEOLOGIST: *R. Mallory*

DEPTH feet	PID (ppm)	BLOWS/FT. *	SAMPLE NUMBER	SOIL CLASS	GEOLOGIC DESCRIPTION
0					PAVEMENT
				SP	SAND (SP) – olive gray (5YR 4/2), loose, damp, 100% medium sand, brick fragments (fill).
				ML	
5	568	15	U-5-6.0	SP	SILT (ML) – dark greenish gray (5GY 4/1), stiff, medium plasticity, moist, 90% silt, 10% fine sand, organic matter.
				ML/CL	SAND (SP) – dark greenish dray (5GY 4/1), medium dense, saturated, 95% sand, 5% silt.
10	110	4	U-5-11.5		SILTY CLAY (ML/CL) – very dark grayish brown (10YR 3/2), medium stiff, high plasticity, saturated, 60% clay, 40% silt, rootholes, roots.
				CL	
15	0	15	U-5-16.5		CLAY (CL) – very dark grayish brown (10YR 3/2), stiff, medium plasticity, saturated, 60% clay, 30% silt, rootholes, roots.
20	0	10	U-5-21.5		Increase fine sand to 15% at 20 feet. COLOR CHANGE to light olive brown (2.5Y 5/4) at 21 feet.
					Bottom of boring at 21.5 feet. 6/2/94
25					(* – converted to equivalent standard penetration blows/ft.)
30					
35					

WELL DIAGRAM



JOB NUMBER: *4814.702*

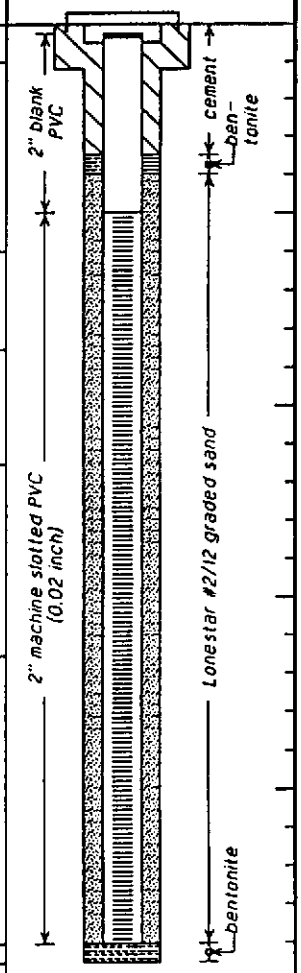
GeoStrategies, Inc.

Log of Boring U-6

PROJECT: *UNOCAL STATION #5325*	LOCATION: *3220 Lakeshore Avenue, Oakland, CA.*
GSI PROJECT NO. : *4814.702*	CASING ELEVATION: *7.14 MSL*
DATE STARTED: *6/2/94*	WL (ft. bgs): *7* DATE: *6/2/94* TIME: *04:35*
DATE FINISHED: *6/2/94*	WL (ft. bgs): *8.8* DATE: *6/2/94* TIME: *14:05*
DRILLING METHOD: *8 in. Hollow Stem Auger*	TOTAL DEPTH: *24.5 Feet*
DRILLING COMPANY: *Gregg Drilling Co.*	GEOLOGIST: *R. Mallory*

DEPTH feet	PID (ppm)	BLOWS/FT. *	SAMPLE NUMBER	SOIL CLASS	GEOLOGIC DESCRIPTION
				SM	PAVEMENT
5	0	11	U-6-5.5	ML	SILTY SAND (SM) – dark brown (10YR 3/2), medium dense, damp, 80% medium sand, 15% silt, 5% gravel, trace brick fragments (fill).
	0	11	U-6-8.0	SM	SILT WITH SAND (ML) – dark greenish gray (8GY 4/1), stiff, low plasticity, saturated, 70% silt, 25% fine sand, 5% clay.
10	0	5	U-6-10.0	CH	CLAY (CH) – very dark gray (10YR 3/1), soft to medium stiff, high plasticity, saturated, 90% clay, 10% silt, trace organic matter.
15	0	88	U-6-15.0	GW-GC	SILTY SAND (SM) – dark greenish gray (5GY 4/1), loose, saturated, 70% fine to medium sand, 30% silt. COLOR CHANGE to dark yellowish brown (10YR 4/4), medium to corase sand, decreasing silt at 15 feet.
20	0	30	U-6-20.5		GRAVEL WITH CLAY AND SAND (GW-GC) – dark grayish brown (2.5Y 4/2), dense, saturated, 65% fine to medium gravel, 25% fine to coarse sand, 10% clay.
					decrease clay to 5% at 23 feet.
25	0	44	U-6-24.5	CL/ML	CLAYEY SILT (CL/ML) – greenish gray (5G 5/1), hard, low plasticity, damp, 60% silt, 30% clay, 10% fine to medium sand.
					Bottom of boring at 24.5 feet. 6/2/94
30					(* – converted to equivalent standard penetration blows/ft.)
35					

WELL DIAGRAM



JOB NUMBER: *4814.702*

GeoStrategies

Log of UST Observation Well

PROJECT: *Unocal Station No. 5325*	LOCATION: *3220 Lakeshore Avenue, Oakland, CA*
GSI PROJECT NO.: *7814.21*	CASING ELEVATION:
DATE STARTED: *06/23/97*	WL (ft. bgs): DATE: TIME:
DATE FINISHED: *06/23/97*	WL (ft. bgs): DATE: TIME:
DRILLING METHOD: *10 in. hollow-stem auger*	TOTAL DEPTH: *15 Feet*
DRILLING COMPANY: *Woodward Drilling*	GEOLOGIST: *Clyde Galantine*

DEPTH feet	PID (ppm)	BLOWS/FT. *	SAMPLE NUMBER	SAMPLE INT.	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION	WELL DIAGRAM
0							Pea gravel (fill material).	4" blank Schedule 40 PVC 4" machine slotted PVC (0.03 inch) pea-gravel 4" concrete
5								
10								
15								
20								
25								
30								
35								

JOB NUMBER: *7814.21*

GSI FIELD EXPLORATORY BORING LOG

Field location of boring: [illegible]

Project No.: [illegible] | Date: [illegible] | Boring No.: U-A
Client: [illegible]
Location: [illegible]
City: [illegible] | Sheet 1 of 1
Logged by: [illegible] | Driller: [illegible]
Casing installation data: [illegible]

Drilling method: HAND AUGER
Hole diameter: 4"

Top of Box Elevation: | Datum:
Water Level | | | |
Time | | | |
Date | | | |

PID (ppm)	Blows/ft. or Pressure (psi)	Type of Sample	Sample Number	Depth (ft.)	Sample	Well Detail	Soil Group Symbol (USCS)	Description
				0				PAVEMENT 4" ... (MOIST)
				1				FILL - GRAVEL (GP) DARK GRAY ..., TRACE OF BRICK, SLIGHT CHEM. ODOR
				2				
17		Hand Drive	U-A-3.0	3				FILL Color change at 3.5 feet to greyish ... (5G 4/1) appears to be cont. staining. — MODERATE CHEM. ODOR
747		Hand Drive	U-A-5.0	5				FILL - Clayey Sand (SC) - dark grey (5Y4/1) Moist, loose, Moderate chemical odor.
550		Hand Drive	U-A-7.0	6–7		▽	Fill	FILL - Clay with sand (CL) greyish-green (5G 4/2) moist, medium stiff, STRONG CHEM ODOR, TRACE GRAVEL — Increasing sand at 7.0 feet strong chemical odor.
				8				
				9				
N/A		Hand Drive	U-A-10.5	10				FILL - decreasing sand at 9.0 feet, weak chemical odor.
				11				
N/A		Hand Drive	U-A-12.5	12			OH	CLAY (CH) - BLACK (color) saturated, stiff, medium plasticity, 60% clay, 20% peat (organics), 20% silt, Trace fine sand, no chemical odor.
								BOTTOM OF BORING 12.5 FEET
								BOTTOM OF SAMPLE 12.5 FEET

Remarks: BACKFILLED WITH CUTTINGS TO SURFACE

FIELD EXPLORATORY BORING LOG

GSI

Field location of boring: [illegible]

Project No.: 7814 | Date: 5/24/90 | Boring No.: MW-6

Client: UNOCAL

Location: 3220 LOVESTONE AVE

City: OAKLAND | Sheet: 1 of 1

Logged by: [illegible] | Driller: [illegible]

Casing installation date: [illegible]

Drilling method: HAND AUGER

Hole diameter: 4"

Top of Box Elevation: | Datum:

Water Level

Time

Date

PID (ppm)	% Blows per 6" or Pressure (psi)	Type of Sample	Sample Number	Depth (ft.)	Sample	Well Detail	Soil Group Symbol (USCS)	Description
								PAVEMENT SECTION - 4 INCHES
				1				SLAVE
								Drive - 12" [illegible]
								FILL - Clay (CL) Brown (10YR 4/3), moist, no chemical odor
				2				
				3				Change of Color to Black (10YR 2/1) at 3 feet
		Hand						
N/A		Drive	U-B-4.5	4				FILL - CLAY (CL) to Clayey Sand (SC) yellowish brown (10YR 5/4), Moist, med. dense to loose. Moderate to strong chemical odor.
				5				
				6				
				7				
						▽		
N/A		Hand		8				CLAY (CL) BLACK (10YR 2/1) Saturated, medium stiff, 10% - 20% peat, moderate chemical odor.
		Drive	U-8-8.5					at 10.0 feet
				9				
N/A		Hand		10				Color change to Dark Grey (5Y 4/1) Mod. chemical odor decreasing Organic Content.
		Drive	U-9-10.5					
				11				No Sample recovered at 11.5 feet
				12				No chemical odor in cuttings at 11.5 feet.
								Bottom of Boring at 11.5 feet.

Remarks:

BACKFILLED

GSI

Field location of boring:

Drilling method: HAND AUGER

Hole diameter: 4"

Project No: [redacted] Date: [redacted] Boring No: [redacted]

Client: [redacted]

Location: [redacted]

City: OAKLAND Sheet: [redacted]

Logged by: [redacted] Driller: [redacted]

Casing installation date: [redacted]

Top of Box Elevation: Datum:

Water Level

Time

Date

PID (ppb)	Blowcnt. or Pressure (psi)	Type of Sample	Sample Number	Depth (ft.)	Sample Recovery	Well Detail	Soil Group Symbol (USCS)	Description
				0				PAVEMENT SECTION — 0.5' FILL
				1				FILL - SAND (SP) Damp.
				2				FILL - CLAY (CL) Dark grey (10YR 3/1) Damp, No chem. odor
				3				
N/A		Hand Drive	UC-0.5	4			FILL	
				5				Dark greenish gray (5GY 4/1) FILL - Sand (SP) Moist, loose, strong chemical odor
				6				
N/A		Hand Drive	UC-7.5	7		▽		
				8				
				9			CL	
N/A		Hand Drive	UC-10.0	10				CLAY (CL) + BLACK (SATURATED), 10-20% peat Weak CHEM ODOR

Remarks:

GeoStrategies

Log of Boring U-D

PROJECT: *Unocal Station No. 5325*
LOCATION: *3220 Lakeshore Avenue, Oakland, CA*
GSI PROJECT NO.: *7814.21*
CASING ELEVATION:
DATE STARTED: *06/23/97*
WL (ft. bgs): *6* DATE: *06/23/97* TIME: *10:50 am*
DATE FINISHED: *06/23/97*
WL (ft. bgs): DATE: TIME:
DRILLING METHOD: *Hand auger*
TOTAL DEPTH: *6 Feet*
DRILLING COMPANY: *Gettler-Ryan*
GEOLOGIST: *Clyde Galantine*

DEPTH feet	PID (ppm)	BLOWS/FT. *	SAMPLE NUMBER	SAMPLE INT.	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION	REMARKS
							Asphalt and concrete.	
						GW	Gravel with clay and sand (GW); fill material.	
						SP	SAND (SP) – dark gray (5Y 4/1), moist, medium dense, 100% fine to medium sand, angular to rounded.	
	8		U-D-4.5			ML	SILT (ML) – dark gray (5Y 4/1), moist, stiff, 100% fines, non-plastic.	
5	112		U-D-5					
	103		U-D-5.5			SP	SAND (SP) – dark gray (5Y 4/1), saturated, loose, 95% fine to medium sand, 5% fines, silt stratum.	
			U-D-6				Bottom of boring = 6 feet.	
10								

JOB NUMBER: *7814.21*

GeoStrategies

Log of Boring U-E

PROJECT: *Unocal Station No. 5325*
LOCATION: *3220 Lakeshore Avenue, Oakland, CA*
GSI PROJECT NO.: *7814.21*
CASING ELEVATION:
DATE STARTED: *06/23/97*
WL (ft. bgs): *6.5* DATE: *06/23/97* TIME: *12:50 pm*
DATE FINISHED: *06/23/97*
WL (ft. bgs): DATE: TIME:
DRILLING METHOD: *Hand auger*
TOTAL DEPTH: *7 Feet*
DRILLING COMPANY: *Gettler-Ryan*
GEOLOGIST: *Clyde Galantine*

DEPTH feet	PID (ppm)	BLOWS/FT. *	SAMPLE NUMBER	SAMPLE INT.	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION	REMARKS
						ML	Silt (ML), backfill material for planter, brick fragments; fill.	
						SP	SAND (SP) – yellowish brown (10YR 5/4), moist, medium dense, 100% fine with medium sand, subangular to rounded.	
							Color change to dark gray (5Y 4/1), silt stratum, size increases to coarse with depth.	
5			U-E-5.5					
	8		U-E-6.5			GW	GRAVEL WITH SAND (GW) – very dark gray (2.5Y N3/), saturated, medium dense, 65% fine gravel, 35% fine to coarse sand, subangular to rounded.	
	11		U-E-7			ML	SILT (ML) – dark gray (5Y 4/1), wet, stiff, 100% fines, non-plastic.	
10							Bottom of boring = 7 feet.	

JOB NUMBER: *7814.21*