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TRANSMITTAL

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

From: Jed Douglas

DATE: May 19, 2000
PROJECT NO. 140070.03
SUBJECT: Tosco 3135
Site Conceptual Model

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IMPORTANT NOTE:

Appendix A of this report contains well location and construction details obtained from water well driller's reports filed with DWR. California Water Code Section 13753 states that these reports are confidential and not for public use or inspection. Therefore, this report or its attachments should not be placed in files accessible to the general public.

Signed: _____

COPIES TO: David De Witt – Tosco Marketing Company

GETTLER-RYAN INC.

May 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. 3135, located at 845 – 66th 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 October 27, 1999. The ACEHS letter requested the preparation of an SCM and verification that ongoing annual groundwater monitoring at the site is appropriate.

Site Description

The subject site is situated on the northwest corner of San Leandro Street and 66th Avenue in Oakland, California (Figure 1). Station facilities currently include two gasoline underground storage tanks (USTs), a 550-gallon waste oil UST, three dispenser islands under canopies, and a service station building. The product dispensers utilize a balanced vapor recovery system. Ten groundwater monitoring wells are present at the site. Locations of the pertinent site features are shown on Figure 2.

Geology and Hydrogeology

The site vicinity is underlain by relatively unconsolidated alluvial deposits that are described as fine-grained alluvium, and typically consist of clay and silt materials. Additionally, the site is in close proximity to a mapped geologic contact with the Bay Mud to the west (KEI, 1993). Based on previous subsurface investigation at the site, soils underlying the site are predominantly composed of clay with variable amounts of gravel, sand and silt. Geologic cross-sections describing the subsurface lithology are presented on Figures 3 and 4. Soil boring logs utilized to create the cross-sections are included in Appendix C.

Between 1993 and 2000, first groundwater was typically encountered at the site at depth of approximately 4 to 11 feet below ground surface (bgs) Depth to water measurements collected on March 14, 2000 ranged from approximately 4 to 7 feet bgs (GR, 2000).

Historical groundwater flow directions (Figure 5) have varied from northeast, northwest, southeast, and southwest, and currently flows toward the south at a gradient of 0.02 feet/feet.

The site is located at an elevation of approximately 5 feet above mean sea level (MSL). The nearest surface water is Lion Creek, located approximately 500 feet southeast of the subject site. Lion Creek discharges into San Leandro Bay, located approximately 0.65 miles southwest of the site (USGS, 1959).

Previous Environmental Investigations

Historical data indicate the site has been a service station for approximately 53 years. Renovation of the site first occurred in 1967, when the size of the site expanded to its current configuration.

Two 10,000-gallon gasoline USTs, one 280-gallon waste oil UST and product piping were removed from the site in 1989. Confirmation soil samples collected from the UST pit indicated residual concentrations of Total Petroleum Hydrocarbons as gasoline (TPHg) up to 32 parts per million (ppm), benzene up to 1.2 ppm, and Total Oil and Grease (TOG) at less than 50 ppm. Confirmation soil samples collected from the product piping trench indicated residual concentrations of TPHg up to 20 ppm and benzene up to 0.13 ppm. After confirmation soil sampling was complete, approximately 5,000 gallons of groundwater was removed from the UST pit and properly disposed of. A groundwater sample was collected and analyzed after recharge of the UST pit and contained TPHg at 7,900 parts per billion (ppb) and benzene at 850 ppb.

Three 2-inch groundwater monitoring wells (MW-1 through MW-3) and two shallow soil borings (EB-1 and EB-2) were installed at the site in April of 1990 (Figure 2). The three monitoring wells were installed to a depths of approximately 22 feet below ground surface (bgs). Soil samples indicated concentrations of TPHg ranging from 2.2 to 6.8 ppm in well boring MW-2. In soil boring EB-2, TPHg was detected at concentrations ranging from 2,400 to 12,000 ppm. TOG was detected at 7,000 ppm and Total Petroleum Hydrocarbons as diesel (TPHd) at 1,400 ppm. Benzene was detected in soil samples from the three well borings at concentrations ranging from 0.0075 to 0.012 ppm, and in the two soil borings at concentrations ranging from 5 to 84 ppm. The groundwater sample from well MW-3 was reported as nondetect (ND) for all analytes. Groundwater samples from wells MW-1 and MW-2 contained concentrations of TPHg at 22,000 ppb and 65,000 ppb, and benzene at 590 ppb and 3,300 ppb, respectively.

Three 2-inch groundwater monitoring wells (MW-4 through MW-6) were installed at the site in August of 1990. Soil samples indicated detectable concentrations in only one of the well borings, MW-6, at the following concentrations: TPHg ranging from 2.5 to 160 ppm, benzene ranging from 0.24 to 3.4 ppm, TPHd ranging from 5.1 to 93 ppm, and TOG at 200 ppm. Groundwater samples from well MW-5 were reported as ND. Groundwater samples from wells MW-4 and MW-6 contained concentrations of TPHg at 62,000 ppb and 12,000 ppb, and benzene at 810 ppb and 1,700 ppb, respectively. TPHd was detected in well MW-6 at a concentration of 1,000 ppm.

A Hydropunch groundwater study was performed at the site in January of 1991. Seven Hydropunch sampling points were installed and groundwater samples collected and analyzed. One sample contained TPHg at a concentration of 92 ppb, and benzene at 0.8 ppb.

In March of 1991, the pre-1967 UST pit was over-excavated, and two concrete slabs were removed from depths of approximately 8.5 and 10 feet bgs. Approximately 2,000 cubic yards of impacted soil was removed from the site and properly disposed of. Confirmation soil samples collected from the former UST pit indicated residual concentrations of TPHg at concentrations ranging from 53 to 1,400 ppm. Elevated residual concentrations of TPHg remained in the soil due to the over-excavation being limited by existing product piping. Prior to back-filling the pit, approximately 20,000 gallons of groundwater was pumped from the former UST pit and properly disposed of.

Three 2-inch groundwater monitoring wells (MW-8 through MW-10) were installed in the streets adjacent to the site in September of 1992 (Figure 2). Soil samples were collected and analyzed and indicated detectable concentrations in one of the well borings, MW-10, at the following concentrations: TPHg ranging from ND to 210 ppm, benzene ranging from ND to 0.58 ppm, and TPHd ranging from ND to 39 ppm. Groundwater samples from the three wells were analyzed and samples from MW-8 and MW-9 were reported as ND for all analytes. Groundwater samples from well MW-10 contained concentrations of TPHg at 740 ppb, benzene at 11 ppb, and TPHd at 1600 ppb.

One 2-inch groundwater monitoring well (MW-7) was installed at the site in April of 1993. Soil samples were collected and analyzed and indicated no detectable concentrations of petroleum hydrocarbons. Groundwater samples from the new well were analyzed and indicated no detectable concentrations of petroleum hydrocarbons.

Groundwater monitoring and sampling of the 10 wells has been ongoing at the site since 1990. Historical monitoring and sampling data is presented in Table 1. Historical groundwater flow directions have varied from northeast, northwest, southwest and southeast, and currently flows toward the south at a gradient of 0.02 feet/feet.

In August of 1998, Oxygen Releasing Compound (ORC) was installed in monitoring well MW-6 to assist with biological attenuation of hydrocarbon compounds. Starting in 1999, the following bio-attenuation parameters have been measured at the site: nitrate; sulfate; ferrous iron; dissolved oxygen; and, oxidation-reduction potential. The results of the measurements of these parameters are presented in GR's annual monitoring and sampling report for the site, dated March 14, 2000. Review of the parameters indicate bio-attenuation is occurring at the site.

Site Conceptual Model

The SCM is summarized on Figure 6. Information utilized to create the SCM include figures, tables and charts, which are presented in the appendices and include:

- 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 direction
- Groundwater concentration maps with iso-contours for TPHg and Methyl tert-Butyl Ether (MtBE).
- Geologic cross-sections with subsurface features.
- Graphs of TPHg, benzene and MtBE concentrations over the last 10 years in monitoring wells MW-1, MW-3, MW-6 and MW-10.
- Graphs of TPHg, benzene and MtBE concentrations versus distance from the UST pit (assumed source area).
- Historical groundwater data tables.
- Historical soil data tables.
- Boring logs and well construction details.
- One mile radius well search report

Discussion of Site Conceptual Model

The SCM and geologic cross-sections (Figures 2, 3, 4 and 6) show that the site is underlain primarily with fine-grained clay interspersed with coarser zones of clay mixed with silt, sand and gravel. Review of the graphs showing change in hydrocarbon concentrations in groundwater over time at the site (Appendix A) reveal the following trends. TPHg and MtBE in the source area (UST pit) do not change significantly with the fluctuations in groundwater levels. As distance from the source area increases, hydrocarbon concentrations tend to decrease. Hydrocarbon concentrations in the wells 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 MW-1 and MW-6 (Figure 7) and does not appear to be moving laterally. Historical occurrences of TPHg in well MW-10 appear to have naturally degraded and have not been detected since 1995. The MtBE groundwater plume at the site (Figure 8) may be influenced by the large range in 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. Historical groundwater data collected at the site is presented in Appendix B.

GR evaluated the bio-parameters collected during the February 2, 2000 sampling event. This evaluation was based on protocols outlined in Buscheck and others (1993)[1], Buscheck and O'Reilly (1995)[2], and Borden and others (1995)[3]. The evaluation consisted of comparing chemical indicators from the February 2000 sampling event across the dissolved hydrocarbon plume in a transect through MW-1, MW-6, MW-2, and MW-10. Bio-parameters and chemical concentrations in groundwater from the February 2000 sampling event are summarized in Appendix B.

The bio-parameter graph attached in Appendix A shows the relationship between TPHg concentrations in the wells during the most recent sampling event, and the bio-attenuation parameters oxidation-reduction potential (ORP), Dissolved Oxygen (DO), and ferrous iron. The expected indications of bio-attenuation across the plume would be a relative decrease in ORP, and DO as TPHg concentrations increase. Conversely, ferrous iron concentrations would be expected to increase as TPHg concentrations increase. As shown on the attached graph, ORP and DO concentrations decrease with an increase in TPHg concentrations, while iron concentrations increase with an increase in TPHg concentration. These trends suggest ongoing bio-attenuation of petroleum hydrocarbons at the site. Trends of MtBE bio-attenuation were not referenced in the literature reviewed.

The site is located in an industrial area of Oakland, and a one mile radius well search performed by the Alameda County Water Resources Department revealed no domestic, industrial or municipal wells in the search area. The only potential sensitive receptors identified are two historical former municipal well fields located approximately 1,200 feet southeast (Fitchburg Well Field) and 1,300 feet northeast (Damon Group) of the site. The approximate locations of the two well fields are presented on Figure 1. A location map (Figure 9) produced in 1912 (Norfleet Consultants, 1998) shows the orientation and design of the two well fields. The Damon Group well field, located in the area of a current City Park near Lion Creek, was shut down around 1912. The Fitchburg well field operated until approximately 1932, and was situated in the present location of the Oakland-Alameda Coliseum Complex.

The historical inoperative water wells may not have been abandoned properly, and therefore present a potential for vertical migration of contaminants to deeper aquifers (SFBRWQCB, 1999). However, the former wells are located at least 1,000 feet away from the site, and therefore are unlikely to be impacted. Additionally, a petroleum pipeline runs along the western side of the Southern Pacific Railroad tracks, between the site and Fitchburg Field. Wells from the Damon Group and Fitchburg Field were typically screened at intervals below 200 feet bgs.

? evidence?

[1] Buscheck, T. E., K. T. O'Reilly, and N. N. Sheldon, 1993, Evaluation of Intrinsic Bioremediation at Field Sites, in Proceedings of the Conference on Petroleum Hydrocarbons and Organic Chemicals in Groundwater: National Groundwater Association/API, Houston, Texas, November 10-12, 1993.

[2] Buscheck, Tim, and Kirk O'Reilly, 1995, Protocol for Monitoring Intrinsic Bioremediation in Groundwater: Chevron Research and Technology Company, Health, Environment and Safety Group, dated March 1995.

[3] Borden, R. C., C. A. Gomez, and M. T. Becker, 1995, Geochemical Indicators of Intrinsic Bioremediation: Groundwater, volume 33, No. 2, dated 1995.

Appendix A of this report contains well location and construction details obtained from water well driller's reports filed with DWR. California Water Code Section 13753 states that these reports are confidential and not for public use or inspection. Therefore, this report or its attachments should not be placed in files accessible to the general public.

Recommendations

Based on the latest Draft Guidelines for Investigation and Cleanup of MTBE (2/23/00), Tosco Service Station No. 3135 is classified as a Class C, prioritized at the lowest level for sites within a vulnerable groundwater basin, requiring determination of a cleanup priority classification within three years. A cleanup priority will be determined after the MtBE plume is defined in the downgradient direction, and geotechnical soil sample analysis has been performed to determine hydraulic conductivity of the soil in the site vicinity.

Based on the SCM, hydrocarbon impact to groundwater appears to fluctuate with the historical rise and fall of the groundwater surface beneath the site. Impact to groundwater has been defined except in the down-gradient direction, and the hydrocarbon plumes appear to be stable. 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.

The potential for an off-site source exists based on the presence of MtBE in off-site well MW-10, and on the variability of the historical groundwater flow directions. Due to the industrial nature of the site vicinity, and the varied types of industry which may have been operating, multiple potential sources may be present.

Due to the following items, GR recommends installation of one downgradient groundwater monitoring well and continuation of the ongoing quarterly monitoring events:

- groundwater impact is delineated in all directions except for due south of the site
- hydrocarbon plume is stable
- hydraulic conductivity of soil is predicted to be very low
- soil impact is delineated
- hydrocarbon source removed from the former UST pit during tank replacement activities
- site upgraded to California 1998 UST standards
- presence of a product dispenser balanced vapor recovery system
- presence of petroleum pipeline located between the site and the nearest sensitive receptor.

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

Sincerely
Gettler-Ryan Inc.,

Jed A. Douglas
Project Geologist

Stephen J. Carter
Senior Geologist
R.G. 5577

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

Attachments: Figure 1 – Vicinity Map
Figure 2 – Site Plan and Cross-Section Locations
Figure 3 – Cross-Section A – A'
Figure 4 – Cross-Section B – B'
Figure 5 – Historical Groundwater Flow Directions
Figure 6 – Site Conceptual Model
Figure 7 – TPHg Iso-concentration Map
Figure 8 – MtBE Iso-concentration Map
Figure 9 – Fitchburg Well Field - 1912
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.

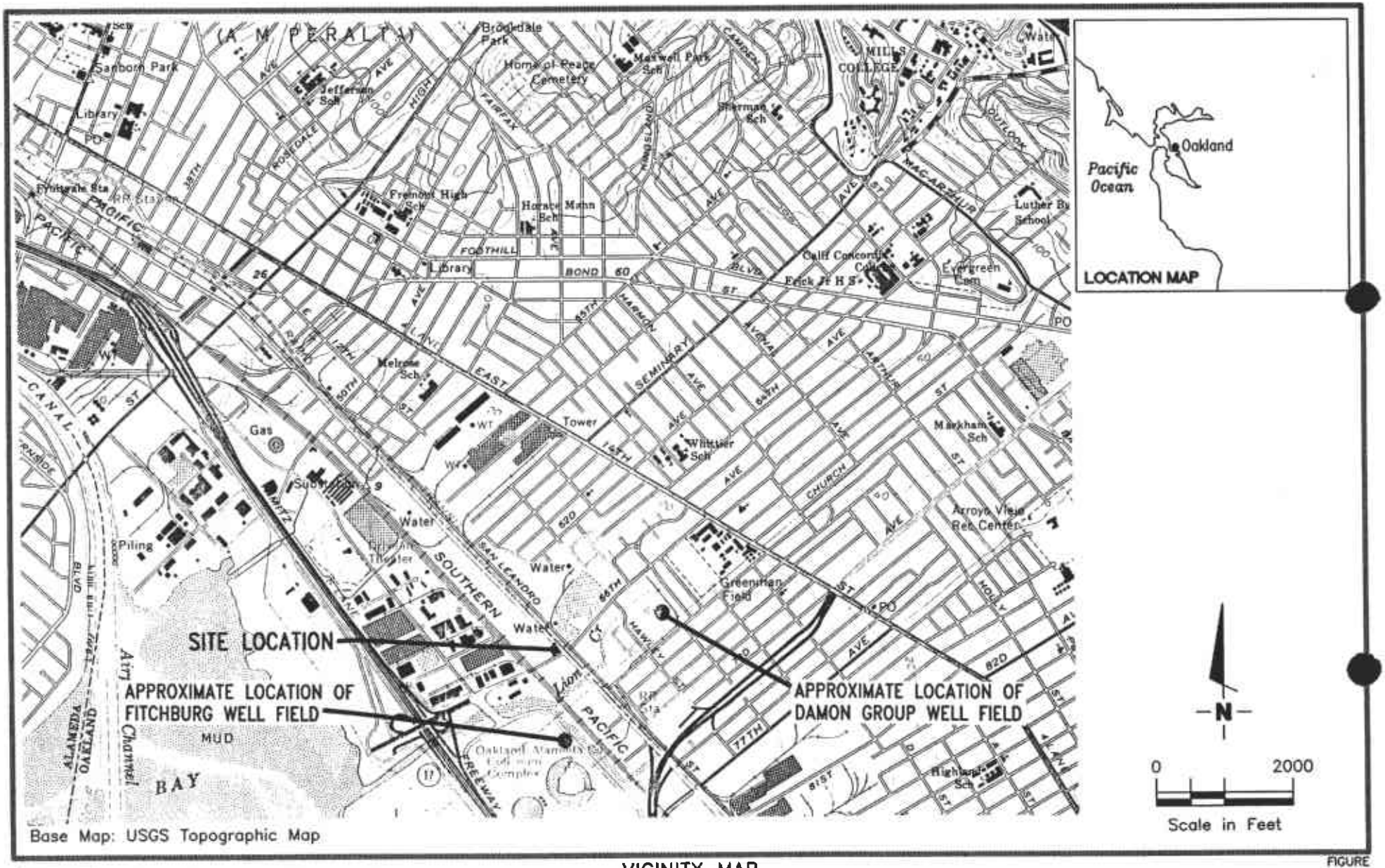
State Water Resources Control Board, 1999, Draft Guidelines for Investigation and Cleanup of MTBE and Other Ether-Based Oxygenates, dated February 23, 2000.

Kaprealian Engineering Incorporated, 1993, Continuing Groundwater Investigation and Quarterly Report, Unocal Service Station #3135, 845 – 66th Avenue, Oakland, California, Dated June 10, 1993.

Gettler-Ryan Inc., 1999, Groundwater Monitoring and Sampling Report, Annual 2000 – Event of February 2, 2000, dated March 14, 2000.

San Francisco Bay Regional Water Quality Control Board Groundwater Committee, 1999, East Bay Plain Groundwater Basin Beneficial Use Evaluation Report, Final Report dated December 1, 1999.

San Francisco Bay Regional Water Quality Control Board, Personal Communication, November 1999.



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VICINITY MAP
Tosco (76) Service Station No. 3135
845 66th Avenue
Oakland, California

FIGURE
1

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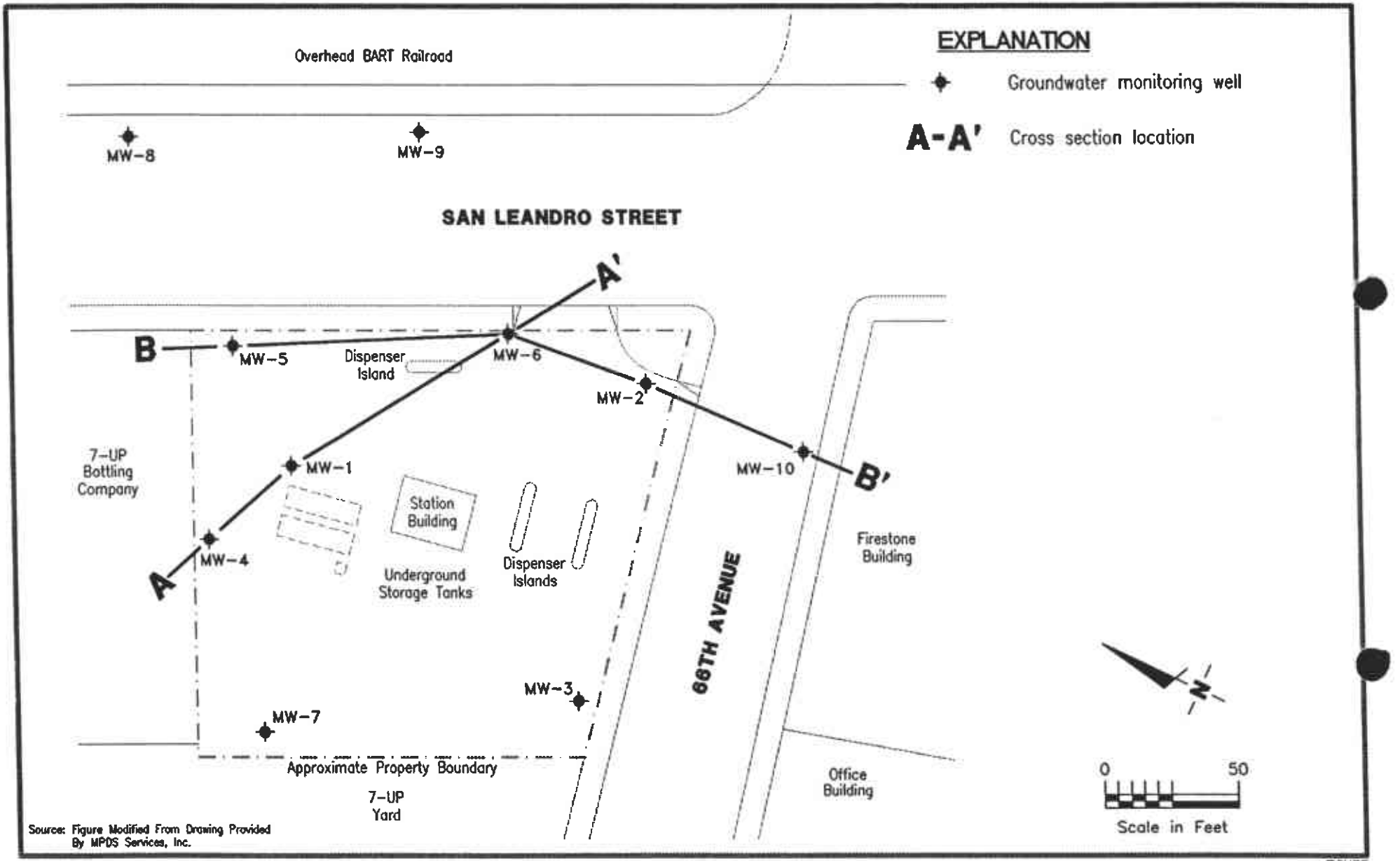
140070.03		02/00	



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SITE PLAN AND CROSS SECTION LOCATIONS
Tosco (76) Service Station No. 3135
845 66th Avenue
Oakland, California

FIGURE
2

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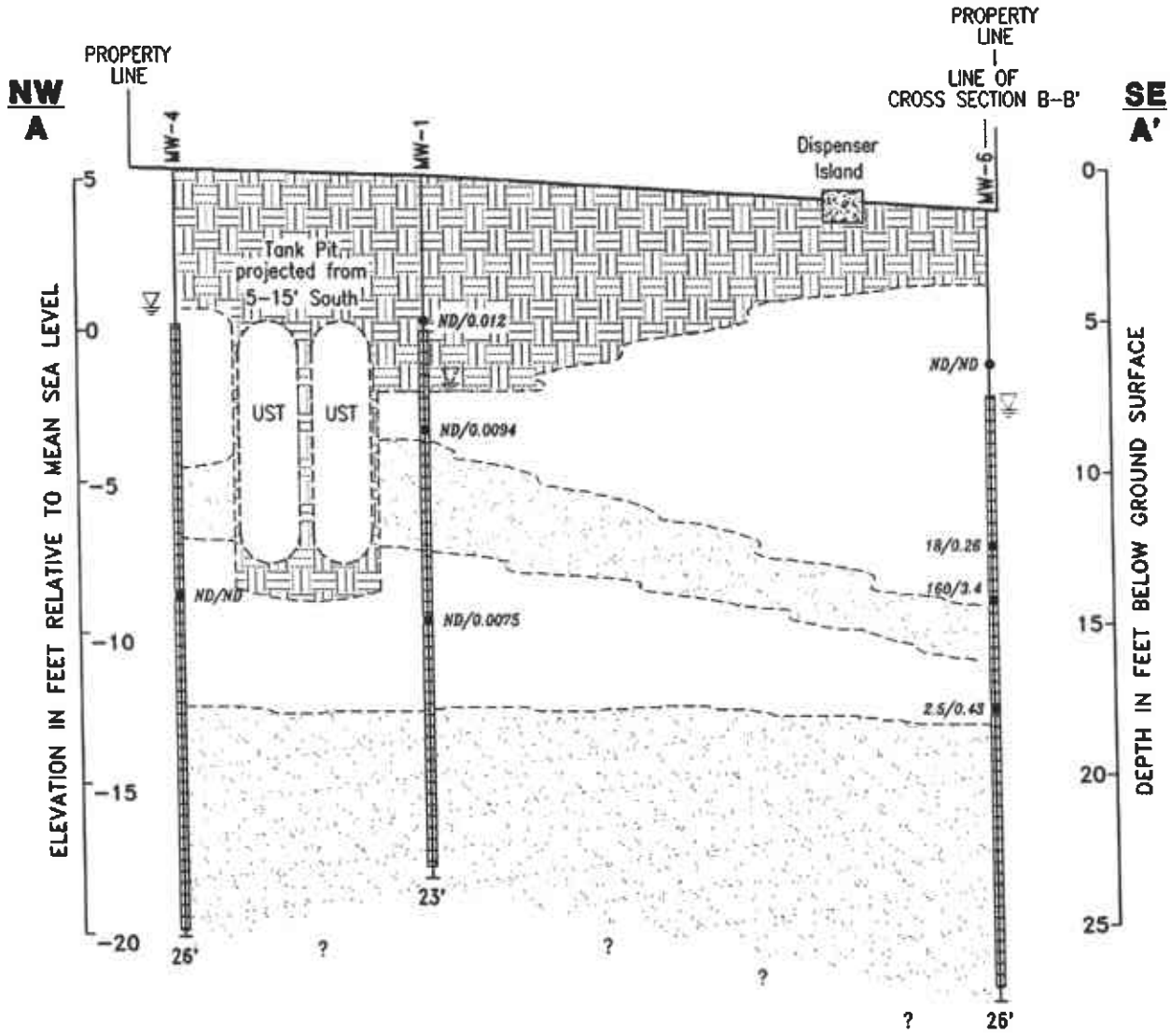
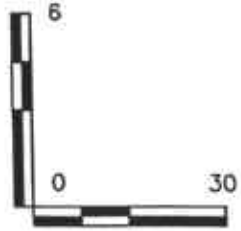


EXPLANATION

- • Soil sample from boring
- *ND/ND* TPHg/Benzene concentrations in soil in ppm (1990)
- *ND* Not Detected
- ▽ Water Level (2/2/00)
- Fill
- Clay with silt, sand or gravel
- Clay
- Well screen interval
- 23' Total Depth of Boring



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CROSS SECTION A-A'
Tosco (76) Service Station No. 3135
845 66th Avenue
Oakland, California

FIGURE
3

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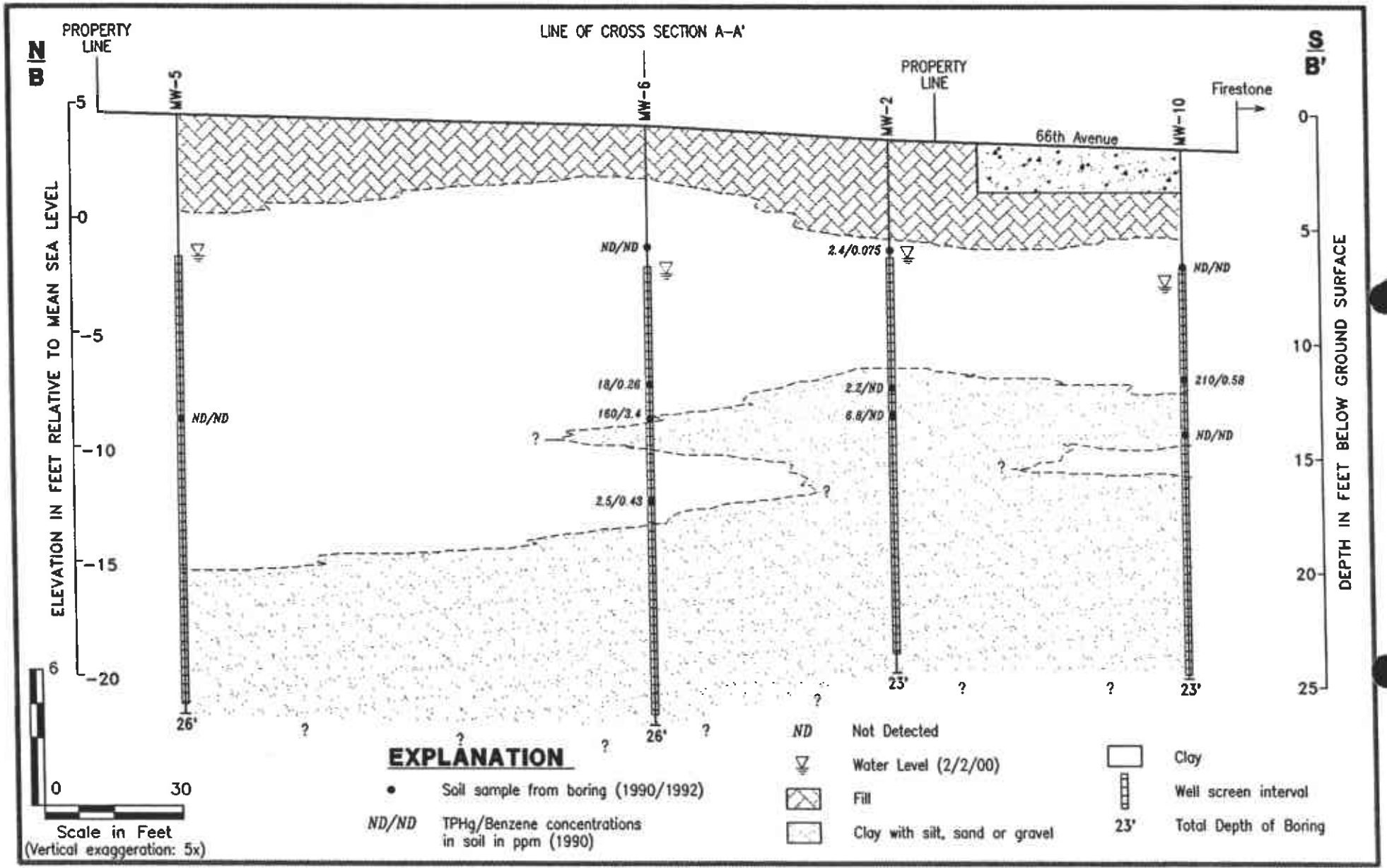

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CROSS SECTION B-B'
Tosco (76) Service Station No. 3135
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Oakland, California

FIGURE
4

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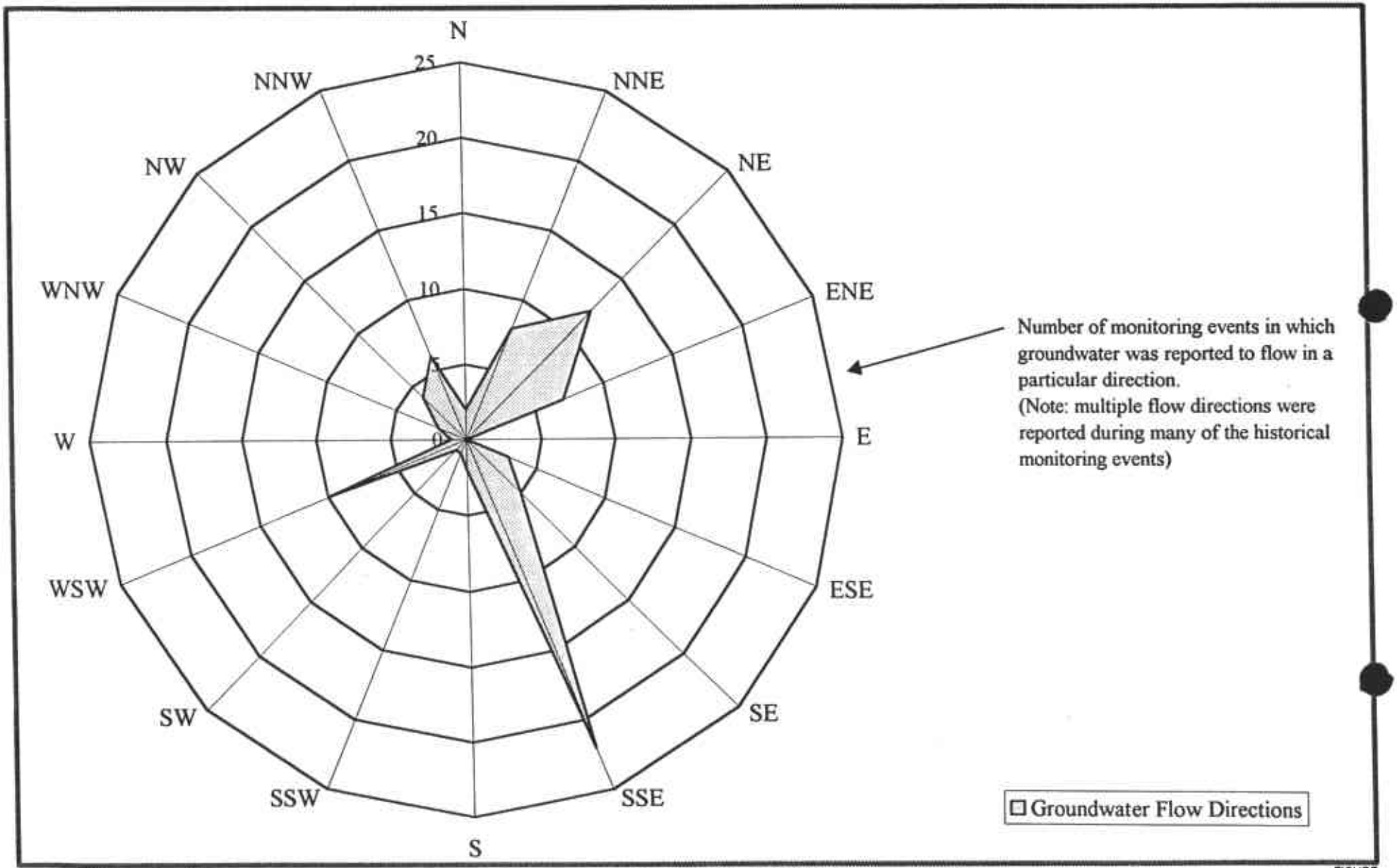

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HISTORICAL GROUNDWATER FLOW DIRECTIONS
Tosco (76) Service Station No. 3135
845 66th Avenue
Oakland, California

FIGURE
5

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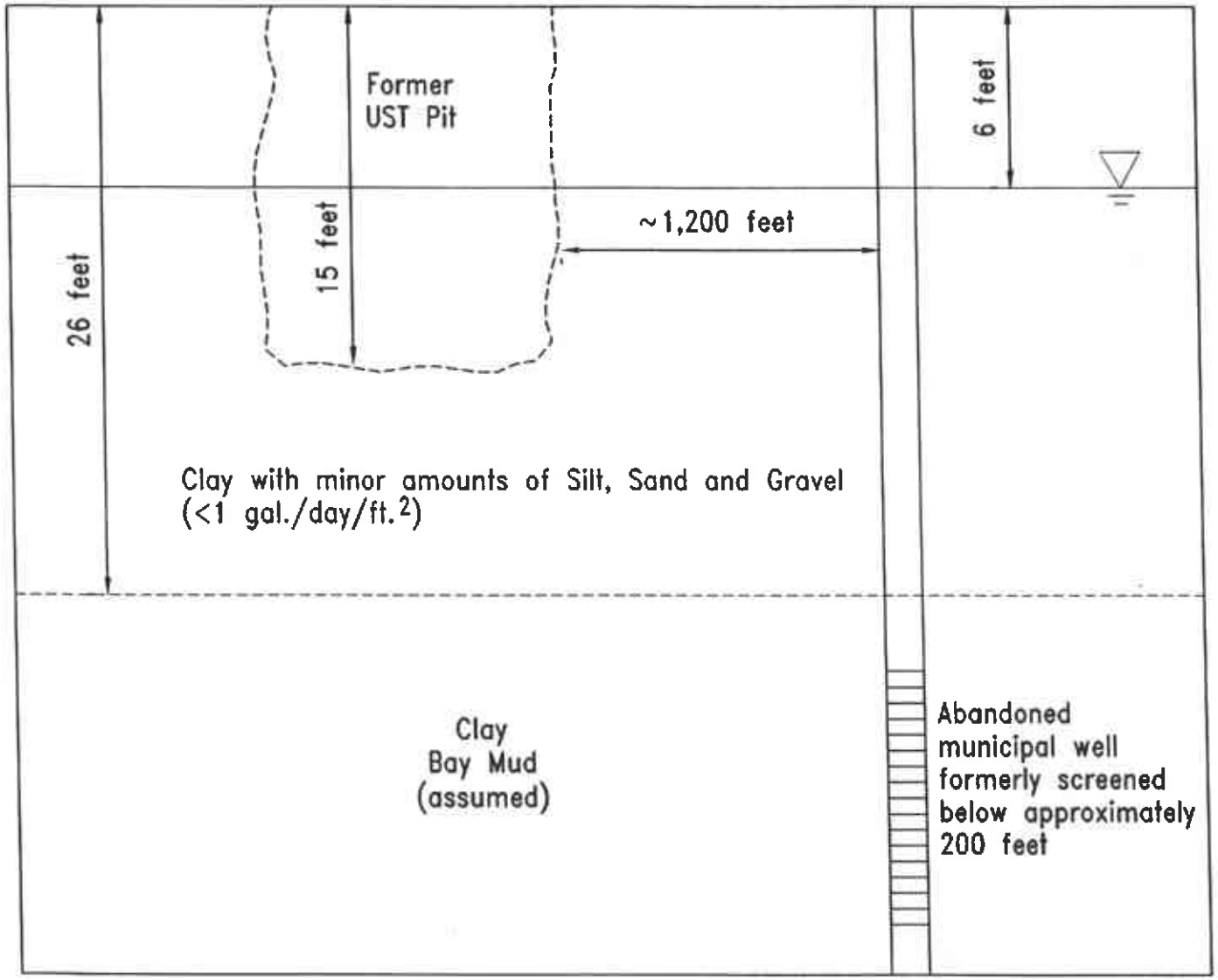

Type:
Shallow groundwater

Source:
MTBE = 680 ppb

Pathways:
Incomplete

Receptor:
Abandoned municipal well over 1000 feet away

Remediation:
Excavation
Natural attenuation
ORC

Priority:
Category C
Standard Response

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SITE CONCEPTUAL MODEL
Tosco (76) Service Station No. 3135
845 66th Avenue
Oakland, California

FIGURE
6

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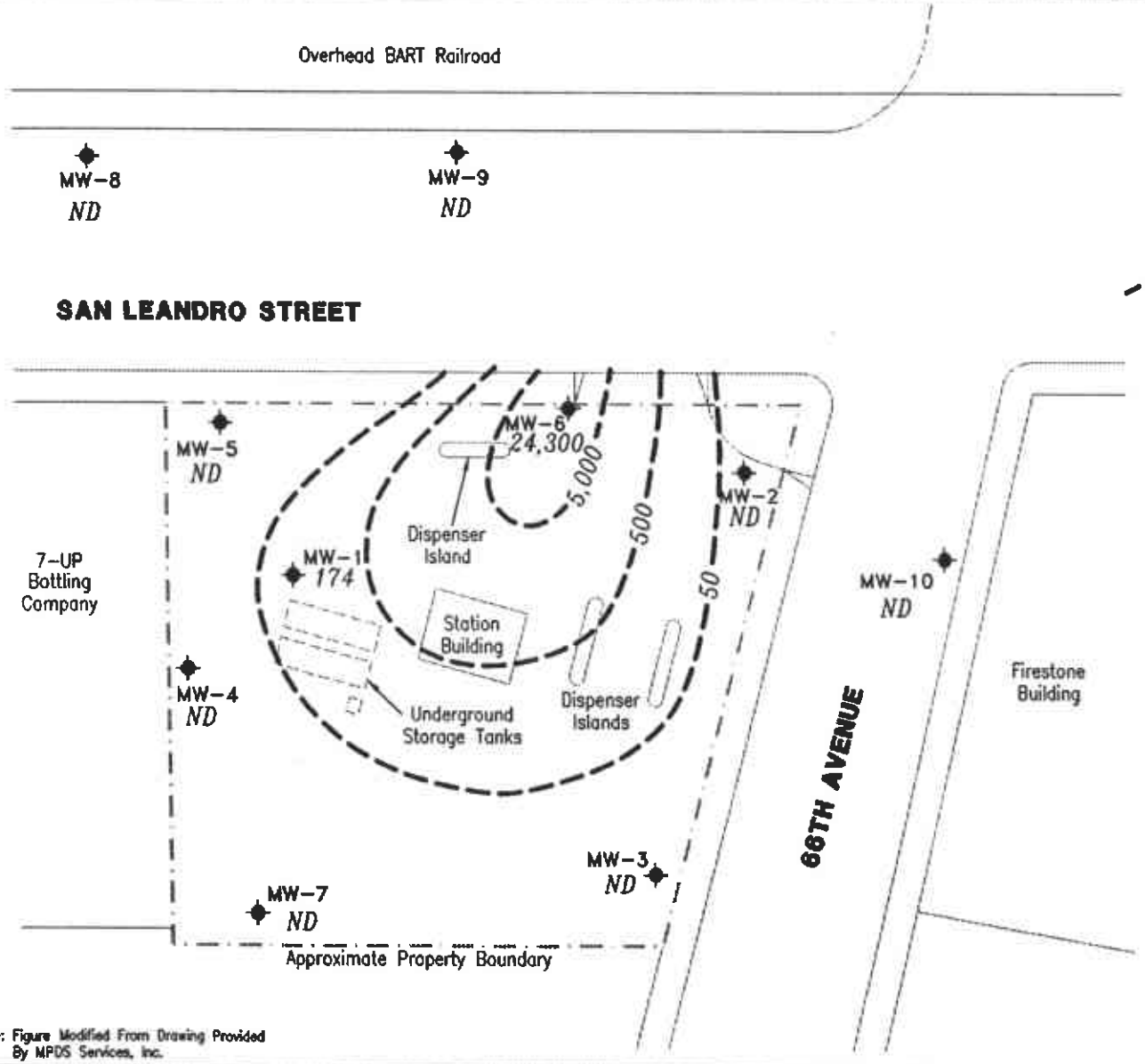

EXPLANATION

- ◆ Groundwater monitoring well
- *174* TPH-G (Total Petroleum Hydrocarbons as Gasoline) concentrations in ppb (2/2/00)
- 500 TPH-G isoconcentration contour dashed where inferred
- *ND* Not Detected

NOTE: Range of historical groundwater flow directions is shown on figure 3.

N

0 50

Scale in Feet

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TPH(G) ISOCONCENTRATION MAP
Tosco (76) Service Station No. 3135
845 66th Avenue
Oakland, California

FIGURE
7

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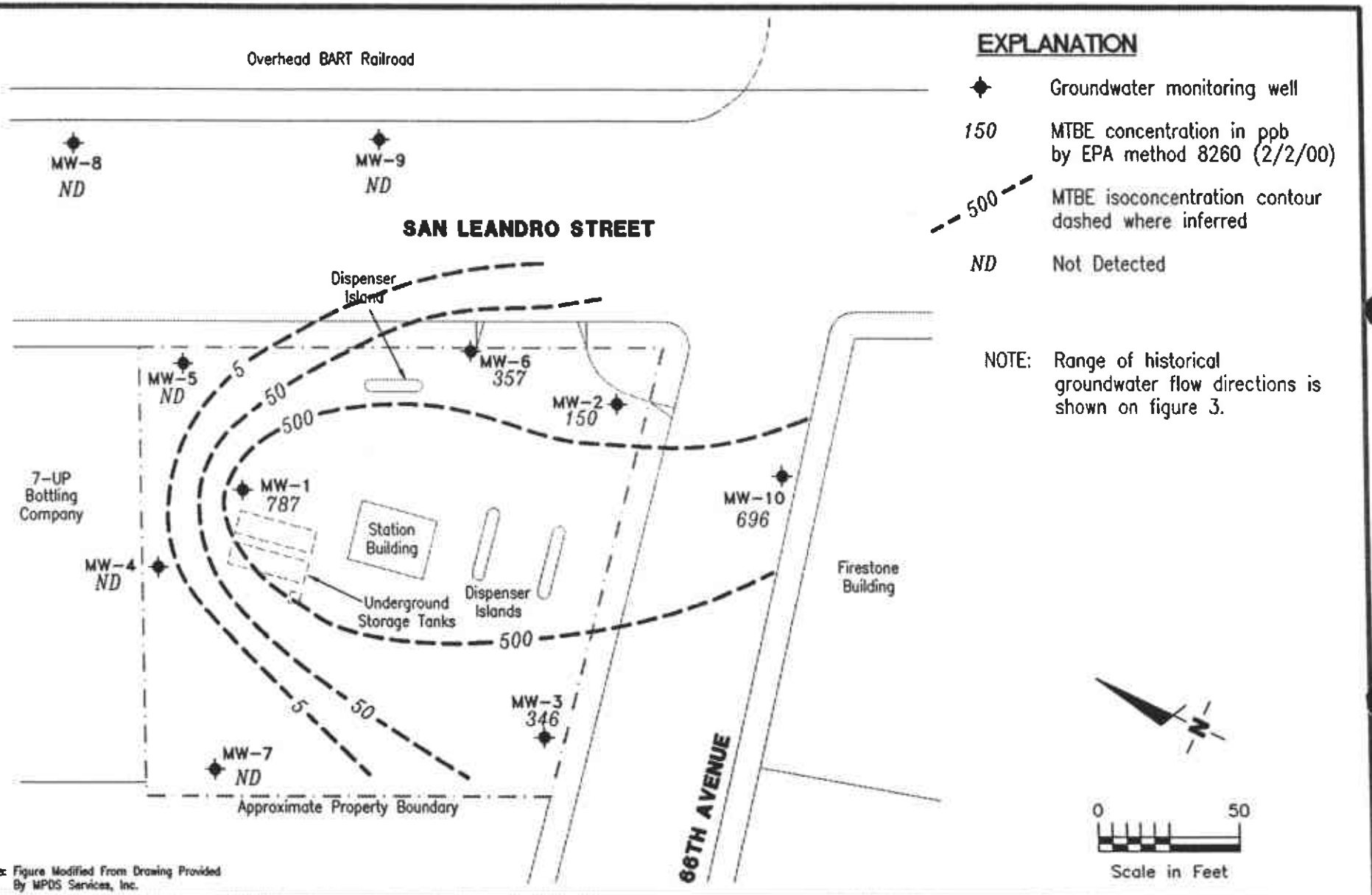

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MTBE ISOCONCENTRATION MAP
Tosco (76) Service Station No. 3135
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Oakland, California

FIGURE
8

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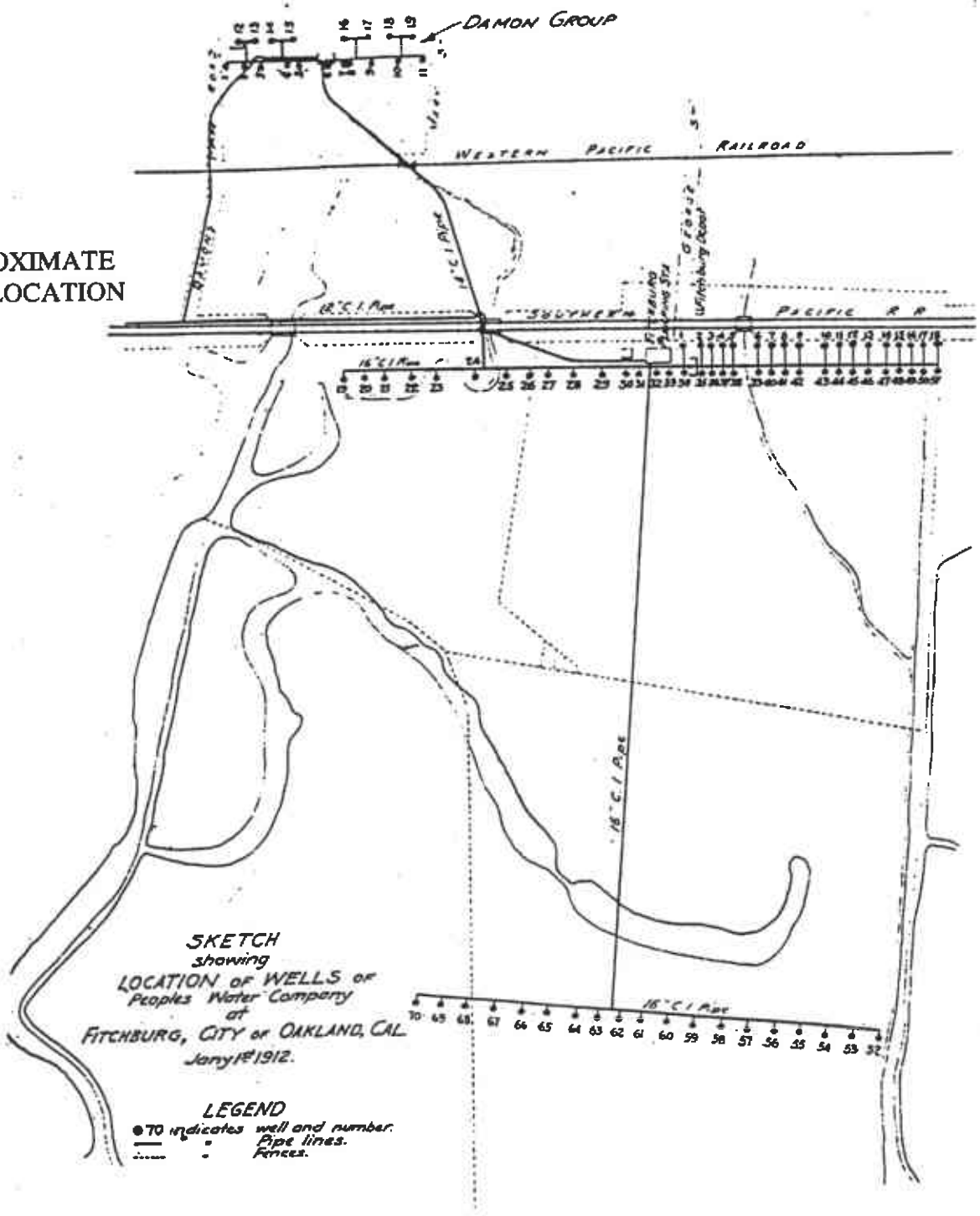
THE FITCHBURG WELL FIELD, OAKLAND - 1912

This map shows the approximate location of the wells in the Fitchburg and Damon Well Fields circa 1912. The Damon wells were shut down soon after this map was made, and is now a city park. The Fitchburg Field was active for another 20 years, and about another 30 wells were drilled. The Fitchburg Field is now the site of the Oakland Coliseum.

APPROXIMATE SITE LOCATION

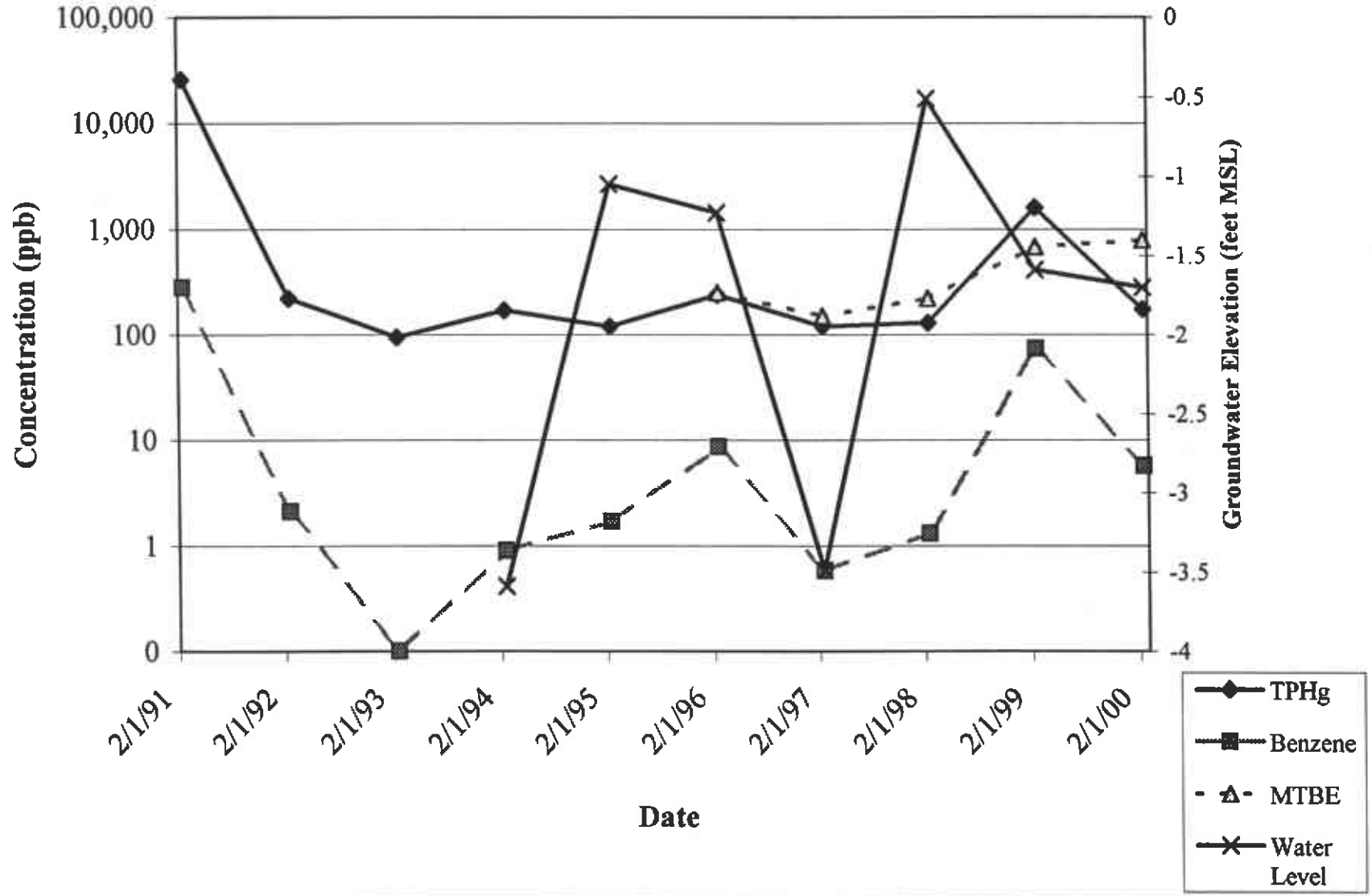


Norfleet Consultants	FITCHBURG WELL FIELD - 1912		
	EAST BAY PLAIN BENEFICIAL USE STUDY		
	PROJ NO: 981102	DATE: 6/15/98	FIGURE: 9

APPENDIX A

GRAPHS AND WELL SEARCH

Tosco (76) Service Station No. 3135
Groundwater Concentration vs. Time
MW-1



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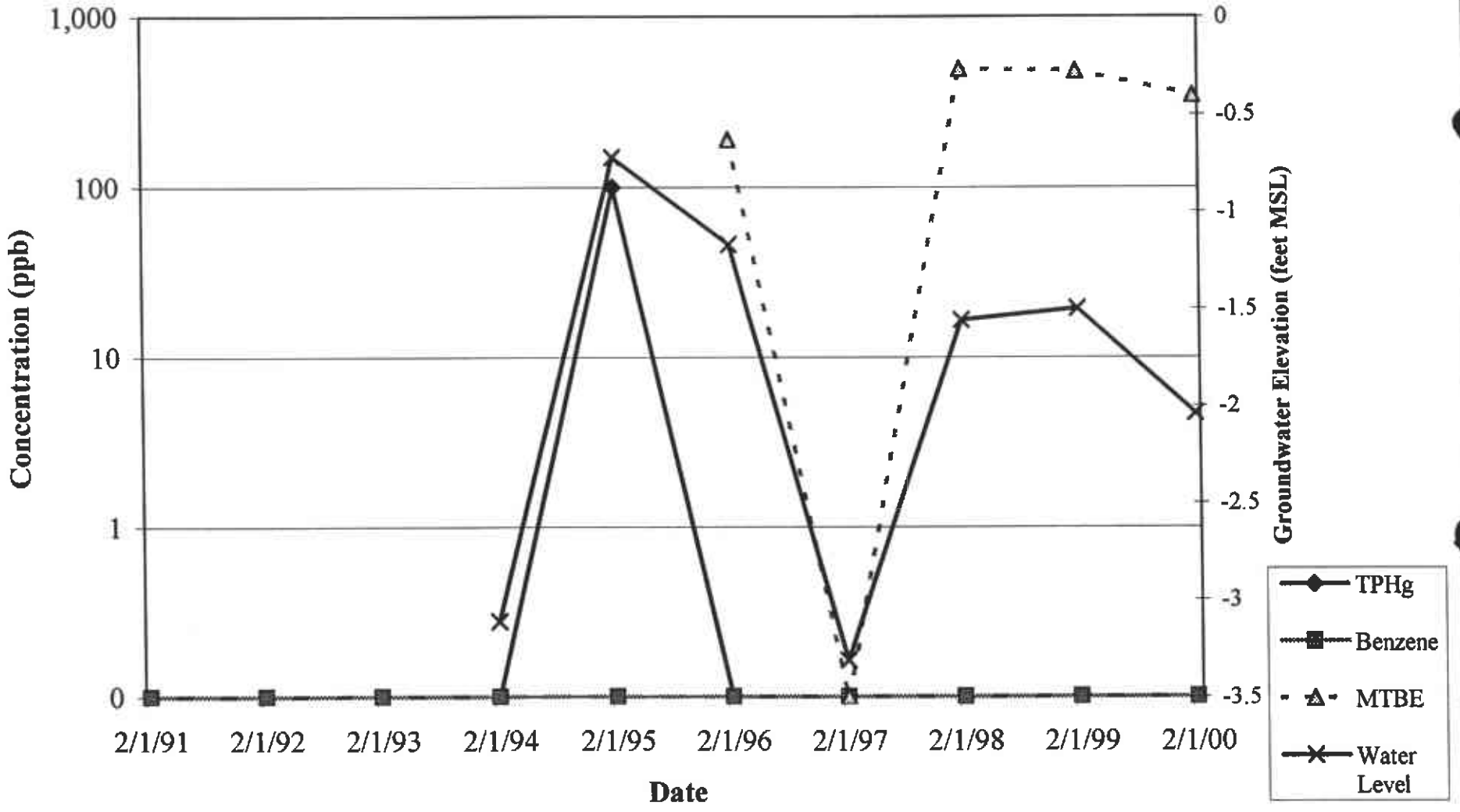
Tosco (76) Service Station No. 3135
Groundwater Concentration vs. Time
MW-3



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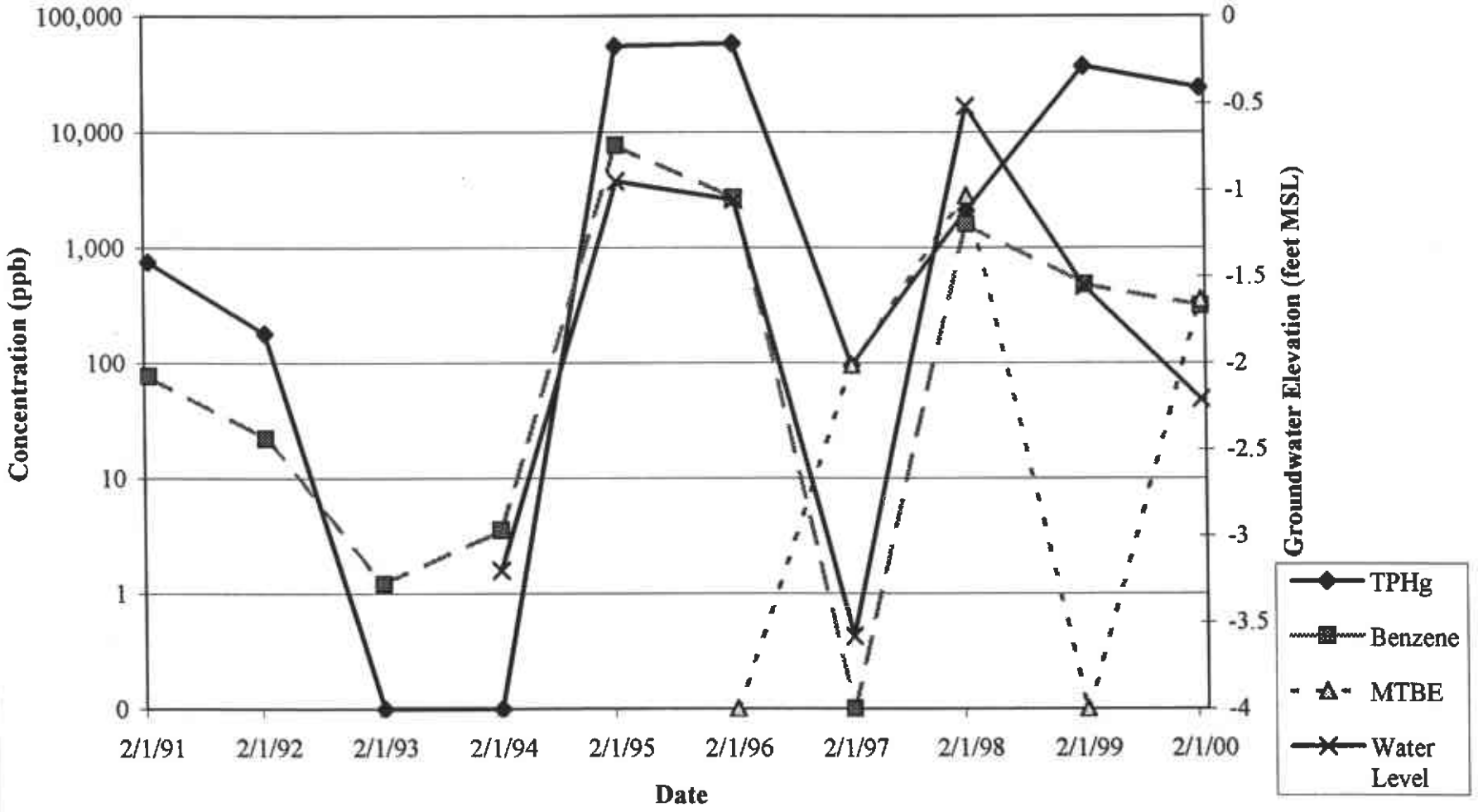
Tosco (76) Service Station No. 3135
Groundwater Concentration vs. Time
MW-6



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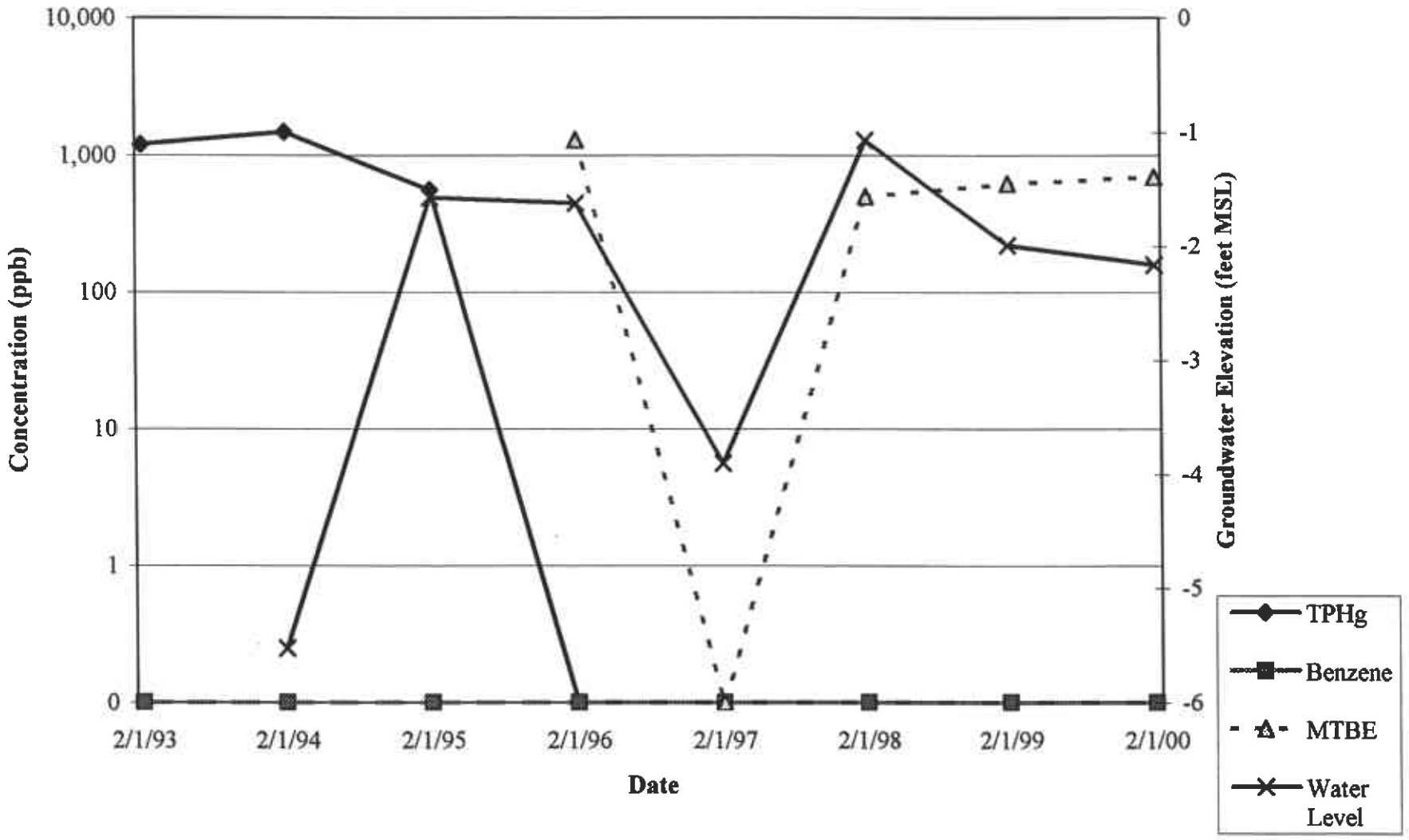
Tosco (76) Service Station No. 3135
Groundwater Concentration vs. Time
MW-10



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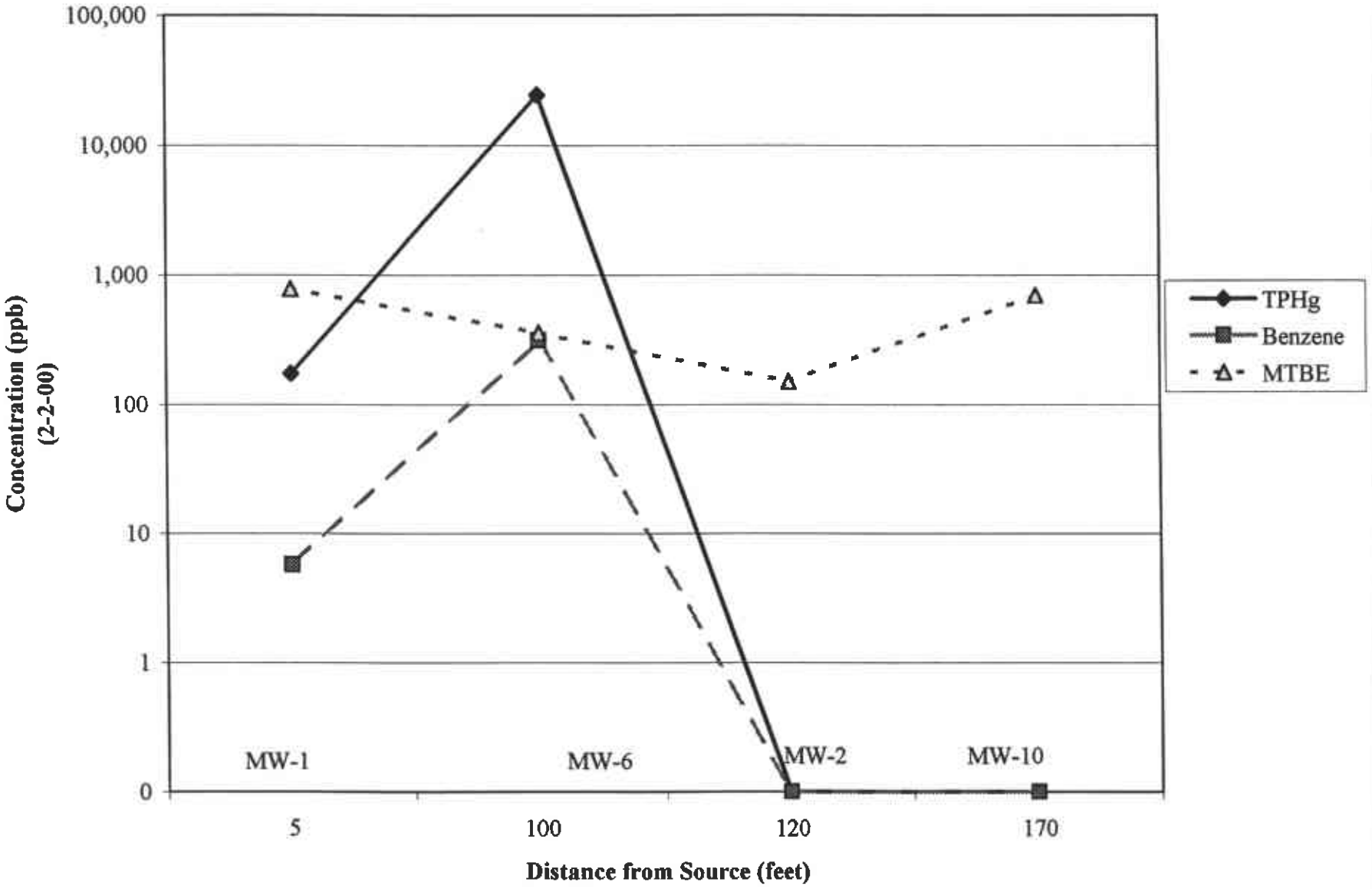
Tosco (76) Service Station No. 3135
Groundwater Concentrations vs. Distance from Tank Pit



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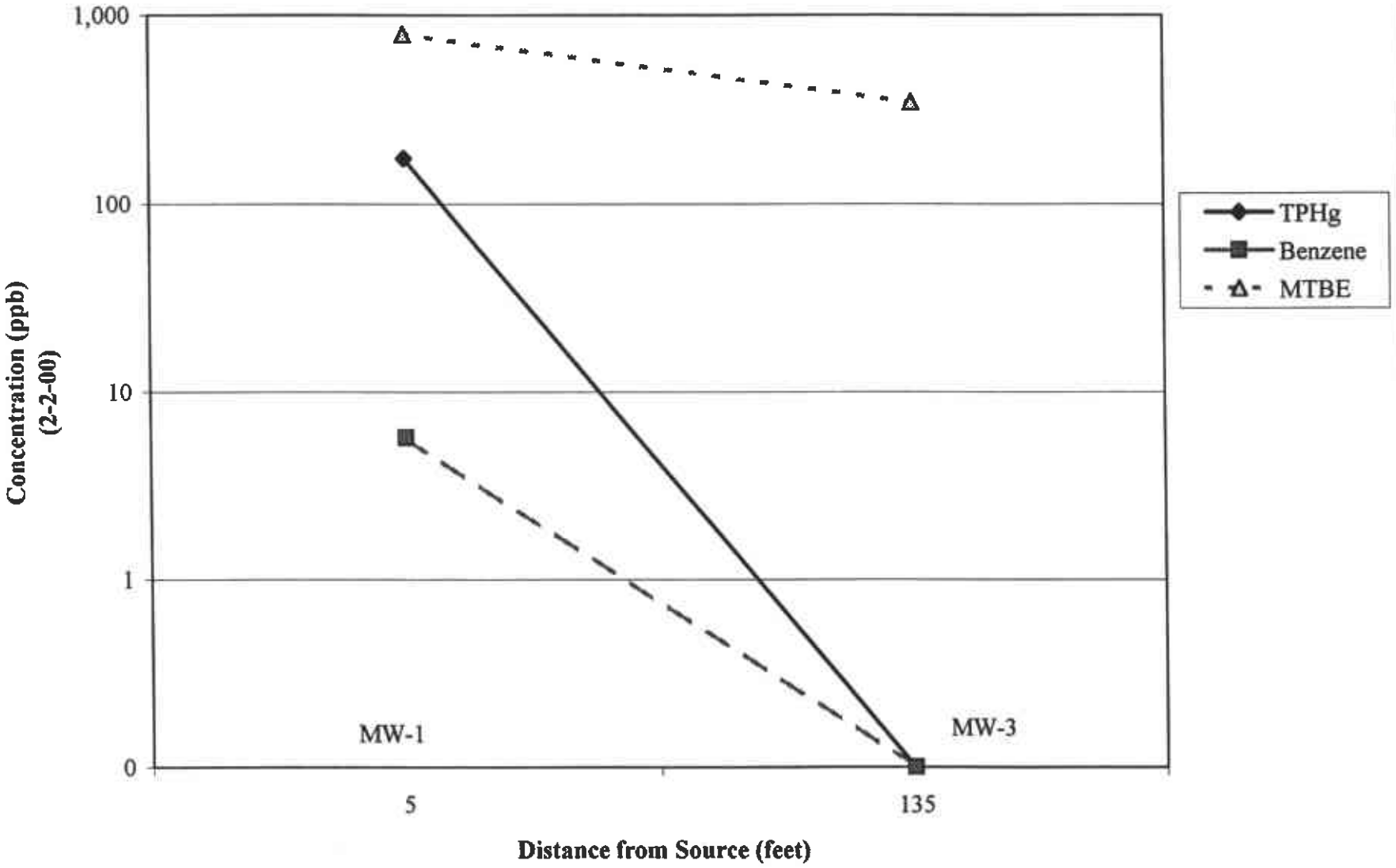
Tosco (76) Service Station No. 3135
Groundwater Concentrations vs. Distance from Tank Pit



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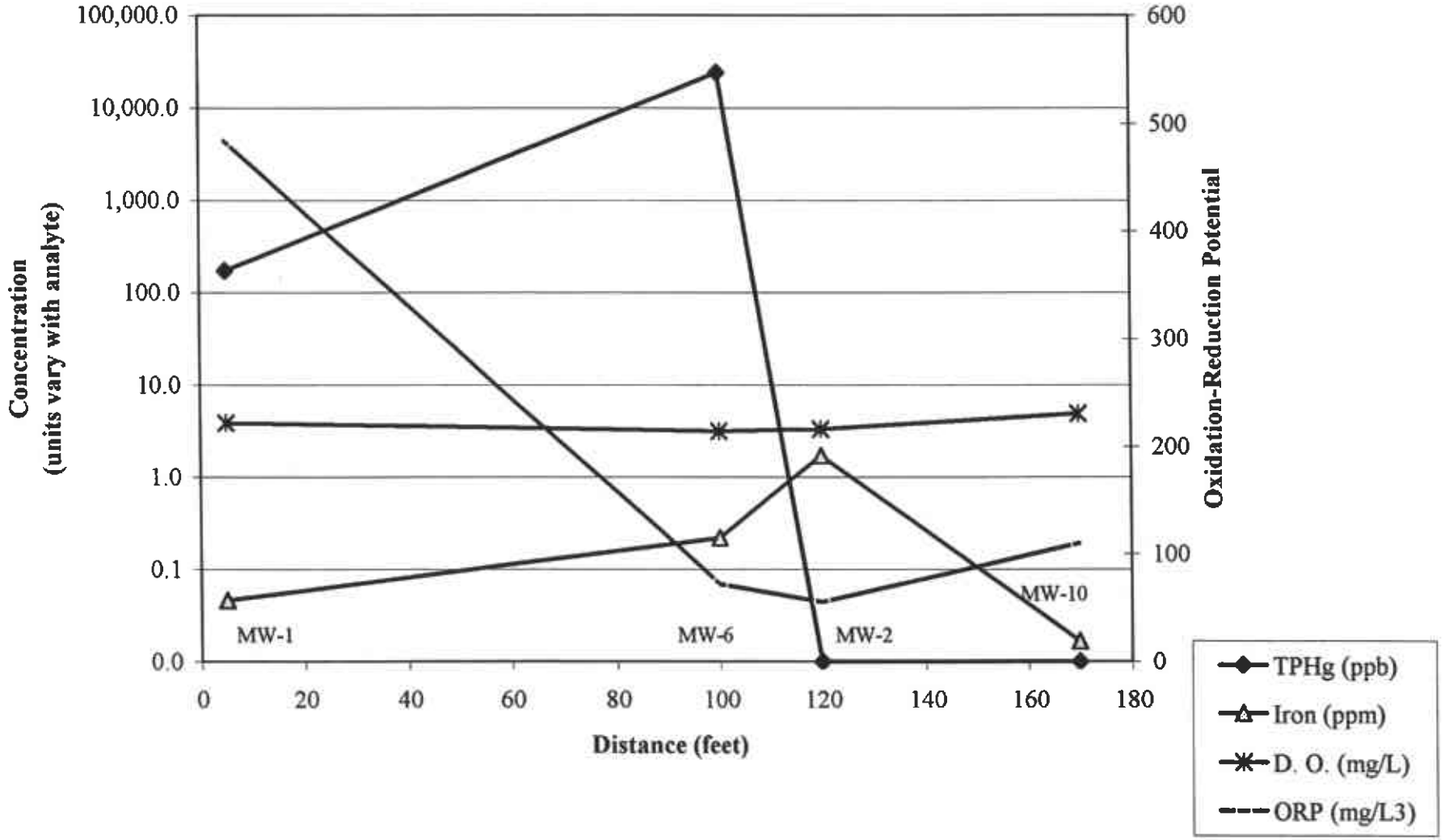
Tosco (76) Service Station No. 3135
Bio-Parameters



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APPENDIX B

HISTORICAL GROUNDWATER DATA

Table 1

Groundwater Monitoring Data and Analytical Results

Tosco (Unocal) Service Station #3135

845 66th Avenue

Oakland, California

Well ID/ TOC*	Date	DTW (ft.)	GWE (msl)	TPH(D) (ppb)	TPH(G) (ppb)	B (ppb)	T (ppb)	E (ppb)	X (ppb)	MTBE (ppb)
MW-1	05/11/90	--	--	--	22,000	590	42	1,200	3,600	--
	08/28/90	--	--	--	1,700	140	1.4	180	150	--
(D)	08/28/90	--	--	--	2,600	180	3	810	270	--
	11/26/90	--	--	--	2,900	160	2.3	330	320	--
	02/21/91	--	--	690	26,000	280	39	1,200	1,900	--
	08/05/91	--	--	200	1,200	95	6.2	230	80	--
	11/05/91	--	--	260	4,900	80	ND	150	160	--
	02/07/92	--	--	ND	220	2.1	ND	10	16	--
	05/05/92	--	--	120	310	5.7	ND	7.1	15	--
	08/03/92	--	--	220[4]	980	22	0.69	77	82	--
	11/03/92	--	--	400[4]	1,100	28	ND	80	78	--
	02/03/93	--	--	ND	94[7]	ND	ND	1.4	1.6	--
5.18	03/01/93	7.30	-2.12	--	--	--	--	--	--	--
	04/01/93	7.12	-1.94	--	--	--	--	--	--	--
	05/17/93	8.25	-3.07	490[5]	960[7]	39	ND	57	60	--
	06/15/93	INACCESSIBLE	--	--	--	--	--	--	--	--
	07/14/93	9.48	-4.30	--	--	--	--	--	--	--
	08/13/93	10.00	-4.82	170[5]	860	3.5	ND	17	20	--
	09/13/93	10.40	-5.22	--	--	--	--	--	--	--
	10/14/93	10.73	-5.55	--	--	--	--	--	--	--
4.99	11/11/93	10.80	-5.81	160[5]	930	7.3	ND	25	19	--
	12/14/93	9.50	-4.51	--	--	--	--	--	--	--
	01/10/94	9.80	-4.81	--	--	--	--	--	--	--
	02/10/94	8.58	-3.59	ND	170[6]	0.9	2.3	ND	ND	--
	03/14/94	7.73	-2.74	--	--	--	--	--	--	--
	04/23/94	8.28	-3.29	--	--	--	--	--	--	--
	05/05/94	8.11	-3.12	ND	96[6]	ND	ND	ND	ND	--
	06/07/94	8.09	-3.10	--	--	--	--	--	--	--
	07/05/94	8.43	-3.44	--	--	--	--	--	--	--
	08/02/94	8.76	-3.77	130[5]	700	13	0.62	2	3.6	--
	11/07/94	8.26	-3.27	270[4]	890	16	ND	31	21	--
	12/03/94	6.59	-1.60	--	--	--	--	--	--	--
	01/10/95	6.12	-1.13	--	--	--	--	--	--	--
	02/01/95	6.04	-1.05	ND	120	1.7	ND	ND	ND	--
	03/03/95	6.73	-1.74	--	--	--	--	--	--	--

Table 1

Groundwater Monitoring Data and Analytical Results

Tosco (Unocal) Service Station #3135

845 66th Avenue

Oakland, California

Well ID/ TOC*	Date	DTW (ft.)	GWE (msl)	TPH(D) (ppb)	TPH(G) (ppb)	B (ppb)	T (ppb)	E (ppb)	X (ppb)	MTBE (ppb)
MW-1 (cont)	05/02/95	6.57	-1.58	120[4]	460	14	ND	14	13	--
	08/01/95	7.70	-2.71	86[4]	190	4	ND	3.7	2	--
	11/01/95	9.08	-4.09	190[5]	160	2.5	ND	0.82	0.57	280
	02/01/96	6.22	-1.23	90[4]	240	8.7	2	ND	0.66	250
	02/04/97	8.48	-3.49	--	120[6]	0.58	ND	ND	ND	150
	02/05/98	5.50	-0.51	--	130	1.3	ND	2.7	11	220
	02/04/99	6.58	-1.59	--	1,600	74	16	ND[9]	ND[9]	680/850[10]
	02/02/00	**6.69**	**-1.70**	**--**	**174[12]**	**5.70**	**1.41**	**ND**	**ND**	**839/787[10]**
MW-2	05/11/90	--	--	--	65,000	3,300	3,300	4,100	12,000	--
	08/28/90[1]	--	--	3,100	27,000	2,600	1,300	1,900	3,000	--
	11/26/90[1]	--	--	3,800	15,000	1,600	450	1,100	2,100	--
	02/21/91[1]	--	--	7,000	3,400	160	61	200	490	--
	08/05/91[1]	--	--	4,200	33,000	2,900	190	3,400	7,900	--
	11/05/91[2]	--	--	3,900	110,000	4,200	200	3,400	8,600	--
	02/07/92[1]	--	--	2,300	11,000	1,400	30	1,900	1,400	--
	05/05/92[1]	--	--	4,600	26,000	2,300	110	2,700	6,900	--
	08/03/92[1]	--	--	3,300[5]	37,000	4,500	480	3,300	9,700	--
	11/03/92[1]	--	--	9,600[4]	40,000	5,600	130	3,000	6,100	--
	02/03/93[1]	--	--	3,900[4]	9,300	780	68	830	1,200	--
3.83	03/01/93	5.92	-2.09	--	--	--	--	--	--	--
	04/01/93	5.76	-1.93	--	--	--	--	--	--	--
	05/17/93	7.08	-3.25	5,500[5]	46,000	4,400	510	2,900	9,900	--
	06/15/93	7.02	-3.19	--	--	--	--	--	--	--
	07/14/93	8.13	-4.30	--	--	--	--	--	--	--
	08/13/93	8.64	-4.81	2,800[5]	44,000	5,100	600	2,900	8,500	--
	09/13/93	9.00	-5.17	--	--	--	--	--	--	--
	10/14/93	9.03	-5.20	--	--	--	--	--	--	--
3.57	11/11/93	9.22	-5.65	7,000[5]	36,000	4,800	970	3,000	8,100	--
	12/14/93	8.05	-4.48	--	--	--	--	--	--	--
	01/10/94	8.29	-4.72	--	--	--	--	--	--	--
	02/10/94	6.93	-3.36	2,000[5]	12,000	1,000	17	880	940	--
	03/14/94	6.41	-2.84	--	--	--	--	--	--	--
	04/23/94	6.66	-3.09	--	--	--	--	--	--	--

Table 1

Groundwater Monitoring Data and Analytical Results

Tosco (Unocal) Service Station #3135

845 66th Avenue

Oakland, California

Well ID/ TOC*	Date	DTW (ft.)	GWE (msl)	TPH(D) (ppb)	TPH(G) (ppb)	B (ppb)	T (ppb)	E (ppb)	X (ppb)	MTBE (ppb)
MW-2 (cont)	05/05/94	6.38	-2.81	3,100[5]	36,000	3,200	670	2,700	9,600	--
	06/07/94	6.33	-2.76	--	--	--	--	--	--	--
	07/05/94	6.52	-2.95	--	--	--	--	--	--	--
	08/02/94	6.75	-3.18	8,500[4]	32,000	2,400	2,200	2,900	12,000	--
	11/07/94	6.04	-2.47	3,100[5]	49,000	1,700	2,000	3,000	10,000	--
	12/03/94	4.95	-1.38	--	--	--	--	--	--	--
	01/10/95	4.59	-1.02	--	--	--	--	--	--	--
	02/01/95	4.54	-0.97	1,800[4]	9,300	300	210	630	2,600	--
	03/03/95	5.17	-1.60	--	--	--	--	--	--	--
	05/02/95	5.03	-1.46	2,300[5]	5,600	150	ND	150	180	--
	08/01/95	6.16	-2.59	2,900[4]	13,000	700	140	1,400	5,500	--
	11/01/95	7.30	-3.73	4,100[4]	18,000	490	110	1,300	4,600	190
	02/01/96	4.57	-1.00	5,500[4]	22,000	470	77	1,400	5,900	ND
	02/04/97	7.10	-3.53	--	100[6]	ND	0.89	ND	ND	81
	02/05/98	4.12	-0.55	--	330	2.6	2.6	17	58	5.5
	08/28/98	6.26	-2.69	--	--	--	--	--	--	--
	02/04/99	5.01	-1.44	--	ND	ND	0.54	0.60	1.5	19/16[10]
	02/02/00	**5.35**	**-1.78**	**--**	**ND**	**ND**	**ND**	**ND**	**ND**	**163/150[10]**
MW-3	5/11/90	--	--	--	ND	ND	ND	ND	ND	
	08/28/90	--	--	--	ND	ND	ND	ND	0.7	--
	11/26/90	--	--	--	ND	ND	ND	ND	ND	--
	02/21/91	--	--	--	ND	ND	ND	ND	0.64	--
	08/05/91	--	--	63	ND	ND	ND	ND	ND	--
	11/05/91	--	--	ND	31	ND	ND	ND	0.65	--
	02/07/92	--	--	ND	ND	ND	ND	ND	ND	--
	05/05/92	--	--	56	ND	ND	ND	0.43	1.8	--
	08/03/92	--	--	58	ND	ND	ND	ND	ND	--
	11/03/92	--	--	52[4]	ND	ND	ND	ND	ND	--
	02/03/93	--	--	ND	ND	ND	ND	ND	ND	--
3.30	03/01/93	4.84	-1.54	--	--	--	--	--	--	--
	04/01/93	4.60	-1.30	--	--	--	--	--	--	--
	05/17/93	5.47	-2.17	53	ND	ND	ND	ND	ND	--
	06/15/93	5.57	-2.27	--	--	--	--	--	--	--

Table 1

Groundwater Monitoring Data and Analytical Results

Tosco (Unocal) Service Station #3135

845 66th Avenue

Oakland, California

Well ID/ TOC*	Date	DTW (ft.)	GWE (msl)	TPH(D) (ppb)	TPH(G) (ppb)	B (ppb)	T (ppb)	E (ppb)	X (ppb)	MTBE (ppb)
MW-3	07/14/93	6.92	-3.62	--	--	--	--	--	--	--
(cont)	08/13/93	7.85	-4.55	ND	ND	ND	ND	ND	ND	--
	09/13/93	8.42	-5.12	--	--	--	--	--	--	--
	10/14/93	8.90	-5.60	--	--	--	--	--	--	--
3.12	11/11/93	8.92	-5.80	51	ND	ND	ND	ND	ND	--
	12/14/93	7.36	-4.24	--	--	--	--	--	--	--
	01/10/94	7.54	-4.42	--	--	--	--	--	--	--
	02/10/94	6.23	-3.11	50[5]	ND	ND	ND	ND	0.84	--
	03/14/94	5.56	-2.44	--	--	--	--	--	--	--
	04/23/94	7.72	-4.60	--	--	--	--	--	--	--
	05/05/94	5.50	-2.38	66	62[6]	ND	ND	ND	ND	--
	06/07/94	5.35	-2.23	--	--	--	--	--	--	--
	07/02/94	5.46	-2.34	--	--	--	--	--	--	--
	08/02/94	5.84	-2.72	76	150[6]	ND	ND	ND	ND	--
	11/07/94	6.05	-2.93	ND	94[6]	ND	ND	ND	ND	--
	12/03/94	4.51	-1.39	--	--	--	--	--	--	--
	01/10/95	3.82	-0.70	--	--	--	--	--	--	--
	02/01/95	3.84	-0.72	ND	100[6]	ND	ND	ND	ND	--
	03/03/95	4.27	-1.15	--	--	--	--	--	--	--
	05/02/95	4.11	-0.99	56	360[6]	ND	ND	ND	ND	--
	08/01/95	5.10	-1.98	ND	ND	ND	ND	ND	ND	--
	11/01/95	6.65	-3.53	200[4]	ND	ND	ND	ND	ND	200
	02/01/96	4.29	-1.17	160[4]	ND	ND	ND	ND	ND	190
	02/04/97	6.43	-3.31	--	ND	ND	ND	ND	ND	ND
	02/05/98	4.68	-1.56	--	ND	ND	ND	ND	ND	490
	02/04/99	4.62	-1.50	--	ND	ND	ND	ND	ND	480/530[10]
	02/02/00	**5.16**	**-2.04**	--	**ND**	**ND**	**ND**	**ND**	**ND**	**250/346[14]**
MW-4	08/28/90	--	--	--	62,000	810	72	4,400	4,600	--
	11/26/90	--	--	--	49,000	360	36	3,800	11,000	--
	02/21/91	--	--	4,100	33,000	210	21	3,800	12,000	--
	08/05/91	--	--	6,200	37,000	310	70	3,600	9,700	--
	11/05/91	--	--	7,700	140,000	320	ND	4,800	13,000	--
	02/07/92	--	--	2,300	8,100	24	4.9	1,800	3,200	--

Table 1

Groundwater Monitoring Data and Analytical Results

Tosco (Unocal) Service Station #3135

845 66th Avenue

Oakland, California

Well ID/ TOC*	Date	DTW (ft.)	GWE (msl)	TPH(D) (ppb)	TPH(G) (ppb)	B (ppb)	T (ppb)	E (ppb)	X (ppb)	MTBE (ppb)
MW-4	05/05/92	--	--	3,200	15,000	82	12	2,000	5,600	--
(cont)	08/03/92	--	--	2,400[4]	24,000	61	ND	2,100	5,400	--
	11/03/92	--	--	8,300[4]	36,000	69	ND	3,000	7,400	--
	02/03/93	--	--	720[5]	370	2.6	ND	1.2	53	--
5.27	03/01/93	7.63	-2.36	--	--	--	--	--	--	--
	04/01/93	7.25	-1.98	--	--	--	--	--	--	--
	05/17/93	8.46	-3.19	3,100[4]	2,500	ND	ND	170	410	--
	06/15/93	9.00	-3.73	--	--	--	--	--	--	--
	07/14/93	9.74	-4.47	--	--	--	--	--	--	--
	08/13/93	10.23	-4.96	2,000[5]	19,000	ND	ND	1,600	4,100	--
	09/13/93	10.62	-5.35	--	--	--	--	--	--	--
	10/14/93	10.84	-5.57	--	--	--	--	--	--	--
4.93	11/11/93	10.88	-5.95	4,000[4]	16,000	110	12	1,800	3,800	--
	12/14/93	9.60	-4.67	--	--	--	--	--	--	--
	01/10/94	9.92	-4.99	--	--	--	--	--	--	--
	02/10/94	8.79	-3.86	170[4]	830	3.5	1.4	36	80	--
	03/14/94	7.91	-2.98	--	--	--	--	--	--	--
	04/23/94	8.41	-3.48	--	--	--	--	--	--	--
	05/05/94	8.27	-3.34	2,000[5]	6,900	17	ND	480	1,300	--
	06/07/94	8.27	-3.34	--	--	--	--	--	--	--
	07/05/94	8.58	-3.65	--	--	--	--	--	--	--
	08/02/94	8.91	-3.98	2,500[5]	17,000	38	ND	1,800	4,300	--
	11/07/94	8.64	-3.71	2,200[4]	20,000	84	17	1,500	3,000	--
	12/03/94	6.78	-1.85	--	--	--	--	--	--	--
	01/10/95	6.35	-1.42	--	--	--	--	--	--	--
	02/01/95	5.73	-0.80	ND	ND	ND	ND	ND	ND	--
	03/03/95	6.82	-1.89	--	--	--	--	--	--	--
	05/02/95	5.74	-0.81	2,500[4]	5,400	36	ND	130	710	--
	08/01/95	7.78	-2.85	3,400[4]	7,900	21	ND	210	860	--
	11/01/95	9.16	-4.23	3,300[4]	4,900	12	ND	190	710	210
	02/01/96	4.64	0.29	ND	91	2.7	ND	1.2	6.8	7.8
	02/04/97	8.65	-3.72	--	130[6]	0.58	ND	ND	ND	150
	02/05/98	PAVED OVER	--	--	--	--	--	--	--	--
	02/04/99	4.04	0.89	--	ND	ND	ND	ND	ND	ND
	02/02/00	**4.07**	**0.86**	--	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**

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Groundwater Monitoring Data and Analytical Results

Tosco (Unocal) Service Station #3135

845 66th Avenue

Oakland, California

Well ID/ TOC*	Date	DTW (ft.)	GWE (msl)	TPH(D) (ppb)	TPH(G) (ppb)	B (ppb)	T (ppb)	E (ppb)	X (ppb)	MTBE (ppb)
MW-5	08/28/90	--	--	--	ND	ND	ND	ND	1.2	--
	11/26/90	--	--	--	ND	ND	ND	ND	ND	--
	02/21/91	--	--	--	56	ND	ND	ND	4.7	--
	08/05/91	--	--	ND	ND	ND	ND	ND	ND	--
	11/05/91	--	--	ND	ND	ND	ND	ND	ND	--
	02/07/92	--	--	ND	ND	ND	ND	0.36	0.94	--
	05/05/92	--	--	72	ND	ND	ND	0.42	1.4	--
	08/03/92	--	--	ND	ND	ND	ND	ND	ND	--
	11/03/92	--	--	ND	ND	ND	ND	ND	ND	--
	02/03/93	--	--	ND	ND	ND	ND	ND	ND	--
4.61	03/01/93	6.68	-2.07	--	--	--	--	--	--	--
	04/01/93	6.51	-1.90	--	--	--	--	--	--	--
	05/17/93	7.75	-3.14	ND	ND	ND	ND	ND	ND	--
	06/15/93	8.18	-3.57	--	--	--	--	--	--	--
	07/14/93	8.98	-4.37	--	--	--	--	--	--	--
	08/13/93	9.49	-4.88	ND	ND	ND	ND	ND	ND	--
	09/13/93	9.88	-5.27	--	--	--	--	--	--	--
	10/14/93	10.04	-5.43	--	--	--	--	--	--	--
4.27	11/11/93	10.13	-5.86	ND	ND	ND	ND	ND	ND	--
	12/14/93	8.85	-4.58	--	--	--	--	--	--	--
	01/10/94	9.10	-4.83	--	--	--	--	--	--	--
	02/10/94	7.71	-3.44	ND	ND	ND	ND	ND	0.59	--
	03/14/94	7.02	-2.75	--	--	--	--	--	--	--
	04/23/94	7.57	-3.30	--	--	--	--	--	--	--
	05/05/94	7.38	-3.11	SAMPLED SEMI-ANNUALLY		--	--	--	--	--
	06/07/94	7.39	-3.12	--	--	--	--	--	--	--
	07/05/94	7.72	-3.45	--	--	--	--	--	--	--
	08/02/94	8.05	-3.78	ND	ND	ND	ND	ND	ND	--
	11/07/94	7.56	-3.29	--	--	--	--	--	--	--
	12/03/94	5.80	-1.53	--	--	--	--	--	--	--
	01/10/95	5.37	-1.10	--	--	--	--	--	--	--
	02/01/95	5.24	-0.97	ND	ND	ND	ND	ND	ND	--
	03/03/95	5.99	-1.72	--	--	--	--	--	--	--
	05/02/95	5.85	-1.58	--	--	--	--	--	--	--
	08/01/95	7.00	-2.73	ND	ND	ND	ND	ND	ND	--

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Tosco (Unocal) Service Station #3135

845 66th Avenue

Oakland, California

Well ID/ TOC*	Date	DTW (ft.)	GWE (msl)	TPH(D) (ppb)	TPH(G) (ppb)	B (ppb)	T (ppb)	E (ppb)	X (ppb)	MTBE (ppb)
MW-5	11/01/95	8.40	-4.13	--	--	--	--	--	--	--
(cont)	02/01/96	5.45	-1.18	ND	ND	ND	ND	ND	ND	0.72
	02/04/97	7.82	-3.55	--	ND	ND	ND	ND	ND	ND
	02/05/98	3.85	0.42	--	ND	ND	ND	ND	ND	490
	02/04/99	5.85	-1.58	--	ND	ND	ND	ND	ND	23/26[10]
	02/02/00	**5.94**	**-1.67**	**--**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**
MW-6	08/28/90[3]	--	--	1,000	12,000	1,700	1,400	230	2,100	--
	11/26/90[1]	--	--	320	4,800	1,000	200	340	650	--
(D)	11/26/90	--	--	--	4,000	800	120	250	440	--
	02/21/91[1]	--	--	160	750	77	14	23	140	--
	08/05/91[1]	--	--	130	860	130	11	92	150	--
	11/05/91[1]	--	--	300	7,100	200	ND	190	580	--
	02/07/92[1]	--	--	ND	180	22	0.68	22	20	--
	05/05/92[1]	--	--	47	ND	ND	ND	ND	1.3	--
	08/03/92	--	--	170[4]	1,100	180	1.1	62	78	--
	11/03/92	--	--	220[4]	920	45	0.76	12	110	--
	02/03/93[1]	--	--	ND	ND	1.2	ND	ND	ND	--
4.31	03/01/93	6.20	-1.89	--	--	--	--	--	--	--
	04/01/93	6.04	-1.73	--	--	--	--	--	--	--
	05/17/93	7.50	-3.19	1,400[4]	4,900	890	46	210	530	--
	06/15/93	7.76	-3.45	--	--	--	--	--	--	--
	07/14/93	8.69	-4.38	--	--	--	--	--	--	--
	08/13/93	9.20	-4.89	440[5]	2,300	330	ND	95	40	--
	09/13/93	9.59	-5.28	--	--	--	--	--	--	--
	10/14/93	9.75	-5.44	--	--	--	--	--	--	--
4.03	11/11/93	9.87	-5.84	650[5]	3,000	470	ND	220	270	--
	12/14/93	8.60	-4.57	--	--	--	--	--	--	--
	01/10/94	8.81	-4.78	--	--	--	--	--	--	--
	02/10/94	7.23	-3.20	ND	ND	3.5	ND	1.5	ND	--
	03/14/94	6.68	-2.65	--	--	--	--	--	--	--
	04/23/94	7.24	-3.21	--	--	--	--	--	--	--
	05/05/94	7.01	-2.98	630[5]	2,600	430	99	24	420	--
	06/07/94	7.02	-2.99	--	--	--	--	--	--	--

Table 1

Groundwater Monitoring Data and Analytical Results

Tosco (Unocal) Service Station #3135

845 66th Avenue

Oakland, California

Well ID/ TOC*	Date	DTW (ft.)	GWE (msl)	TPH(D) (ppb)	TPH(G) (ppb)	B (ppb)	T (ppb)	E (ppb)	X (ppb)	MTBE (ppb)
MW-6	07/05/94	7.41	-3.38	--	--	--	--	--	--	--
(cont)	08/02/94	7.66	-3.63	2,400[5]	28,000	2,200	940	1,600	7,500	--
	11/07/94	6.78	-2.75	770[4]	23,000	3,800	970	1,400	4,700	--
	12/03/94	5.44	-1.41	--	--	--	--	--	--	--
	01/10/95	5.00	-0.97	--	--	--	--	--	--	--
	02/01/95	4.98	-0.95	2,700[5]	55,000	7,700	9,100	4,500	20,000	--
	03/03/95	5.71	-1.68	--	--	--	--	--	--	--
	05/02/95	5.58	-1.55	3,600[5]	59,000	4,700	4,400	4,000	18,000	--
	08/01/95	6.76	-2.73	2,800[4]	23,000	1,400	510	940	7,300	--
	11/01/95	8.10	-4.07	4,300[4]	24,000	1,100	200	1,900	6,000	170
	02/01/96	5.09	-1.06	3,700[4]	58,000	2,700	1,800	4,200	17,000	ND
	02/04/97	7.61	-3.58	--	95[6]	ND	1.0	ND	ND	96
	02/05/98	4.55	-0.52	--	44,000	2,100	1,600	5,200	20,000	2,800
	08/28/98[8]	6.95	-2.92	--	--	--	--	--	--	--
	02/04/99	5.59	-1.56	--	37,000	480	250	2,900	10,000	ND[9]
	02/02/00	**6.24**	**-2.21**	**--**	**24,300[13]**	**313**	**42.0**	**1,880**	**5,490**	**604/357[10]**
MW-7										
4.84	05/11/93	4.52	0.32	--	--	--	--	--	--	--
	05/17/93	7.00	-2.16	ND	ND	ND	ND	ND	ND	--
	06/15/93	7.47	-2.63							
	07/14/93	8.55	-3.71							
	08/13/93	9.23	-4.39	ND	ND	ND	ND	ND	ND	--
	09/13/93	10.08	-5.24							
	1014/93	10.25	-5.41							
4.42	11/11/93	10.27	-5.85	66	ND	ND	ND	ND	ND	--
	12/14/93	8.52	-4.10	--	--	--	--	--	--	--
	01/10/94	9.30	-4.88	--	--	--	--	--	--	--
	02/10/94	7.93	-3.51	ND	ND	ND	ND	ND	ND	--
	03/14/94	6.78	-2.36	--	--	--	--	--	--	--
	04/23/94	INACCESSIBLE	--	--	--	--	--	--	--	--
	05/05/94	7.13	-2.71	SAMPLED SEMI-ANNUALLY		--	--	--	--	--
	06/07/94	7.09	-2.67	--	--	--	--	--	--	--
	07/05/94	7.49	-3.07	--	--	--	--	--	--	--

Table 1

Groundwater Monitoring Data and Analytical Results

Tosco (Unocal) Service Station #3135

845 66th Avenue

Oakland, California

Well ID/ TOC*	Date	DTW (ft.)	GWE (msl)	TPH(D) (ppb)	TPH(G) (ppb)	B (ppb)	T (ppb)	E (ppb)	X (ppb)	MTBE (ppb)
MW-7	08/02/94	7.98	-3.56	ND	ND	ND	ND	ND	0.63	--
(cont)	11/07/94	7.86	-3.44	--	--	--	--	--	--	--
	12/03/94	5.95	-1.53	--	--	--	--	--	--	--
	01/10/95	5.50	-1.08	--	--	--	--	--	--	--
	02/01/95	5.43	-1.01	ND	ND	ND	ND	ND	ND	--
	03/03/95	5.97	-1.55	--	--	--	--	--	--	--
	05/02/95	5.73	-1.31	--	--	--	--	--	--	--
	08/01/95	7.62	-3.20	ND	ND	ND	ND	ND	ND	--
	11/01/95	8.58	-4.16	--	--	--	--	--	--	--
	02/01/96	5.77	-1.35	96[4]	ND	ND	ND	ND	ND	1.4
	02/04/97	7.64	-3.22	--	ND	ND	ND	ND	ND	ND
	02/05/98	PAVED OVER	--	--	--	--	--	--	--	--
	02/04/99	5.54	-1.12	--	ND	ND	ND	ND	ND	ND
	02/02/00	**5.75**	**-1.33**	**--**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**
MW-8	11/03/92	--	--	ND	ND	ND	ND	ND	ND	--
	02/03/93	--	--	ND	ND	ND	ND	ND	ND	--
5.12	03/01/93	6.64	-1.52	--	--	--	--	--	--	--
	04/01/93	6.55	-1.43	--	--	--	--	--	--	--
	05/17/93	8.25	-3.13	ND	ND	ND	ND	ND	ND	--
	06/15/93	8.67	-3.55	--	--	--	--	--	--	--
	07/14/93	9.47	-4.35	--	--	--	--	--	--	--
	08/13/93	10.00	-4.88	ND	ND	ND	ND	ND	ND	--
	09/13/93	10.40	-5.28	--	--	--	--	--	--	--
	10/14/93	10.23	-5.11	--	--	--	--	--	--	--
4.43	11/11/93	10.22	-5.79	ND	ND	ND	ND	ND	ND	--
	12/14/93	9.00	-4.57	--	--	--	--	--	--	--
	01/10/94	9.17	-4.74	--	--	--	--	--	--	--
	02/10/94	7.23	-2.80	ND	ND	ND	ND	ND	ND	--
	03/14/94	6.94	-2.51	--	--	--	--	--	--	--
	04/23/94	7.63	-3.20	--	--	--	--	--	--	--
	05/05/94	7.39	-2.96	SAMPLED SEMI-ANNUALLY		--	--	--	--	--
	06/07/94	7.44	-3.01	--	--	--	--	--	--	--
	07/05/94	7.86	-3.43	--	--	--	--	--	--	--

Table 1

Groundwater Monitoring Data and Analytical Results

Tosco (Unocal) Service Station #3135

845 66th Avenue

Oakland, California

Well ID/ TOC*	Date	DTW (ft.)	GWE (msl)	TPH(D) (ppb)	TPH(G) (ppb)	B (ppb)	T (ppb)	E (ppb)	X (ppb)	MTBE (ppb)
MW-8	08/02/94	8.23	-3.80	ND	ND	ND	ND	ND	ND	--
(cont)	11/07/94	6.56	-2.13	--	--	--	--	--	--	--
	12/03/94	5.60	-1.17	--	--	--	--	--	--	--
	01/10/95	4.90	-0.47	--	--	--	--	--	--	--
	02/01/95	5.02	-0.59	ND	ND	ND	ND	ND	ND	--
	03/03/95	5.81	-1.38	--	--	--	--	--	--	--
	05/02/95	5.73	-1.30	--	--	--	--	--	--	--
	08/01/95	7.11	-2.68	ND	ND	ND	ND	ND	ND	--
	11/01/95	8.98	-4.55	--	--	--	--	--	--	--
	02/01/96	5.52	-1.09	110[4]	ND	ND	ND	ND	ND	1.3
	02/04/97	8.07	-3.64	--	ND	ND	ND	ND	ND	ND
	02/05/98	4.97	-0.54	--	ND	ND	ND	ND	ND	ND
	02/04/99	6.12	-1.69	--	ND	ND	ND	ND	ND	ND
	02/02/00	**6.11**	**-1.68**	**--**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**
MW-9	11/03/92	--	--	ND	ND	ND	ND	ND	ND	--
	02/03/93	--	--	ND	ND	ND	ND	ND	ND	--
4.84	03/01/93	6.22	-1.38	--	--	--	--	--	--	--
	04/01/93	6.17	-1.33	--	--	--	--	--	--	--
	05/17/93	7.95	-3.11	ND	ND	ND	ND	ND	ND	--
	06/15/93	8.34	-3.50	--	--	--	--	--	--	--
	07/14/93	9.13	-4.29	--	--	--	--	--	--	--
	08/13/93	9.69	-4.85	ND	ND	ND	ND	ND	ND	--
	09/13/93	10.10	-5.26	--	--	--	--	--	--	--
	10/14/93	10.23	-5.39	--	--	--	--	--	--	--
4.60	11/11/93	10.39	-5.79	ND	ND	ND	ND	ND	ND	--
	12/14/93	9.14	-4.54	--	--	--	--	--	--	--
	01/10/94	9.27	-4.67	--	--	--	--	--	--	--
	02/10/94	7.20	-2.60	ND	ND	ND	ND	ND	ND	--
	03/14/94	7.06	-2.46	--	--	--	--	--	--	--
	04/23/94	7.79	-3.19	--	--	--	--	--	--	--
	05/05/94	7.52	-2.92	SAMPLED SEMI-ANNUALLY		--	--	--	--	--
	06/07/94	7.54	-2.94	--	--	--	--	--	--	--
	07/05/94	7.98	-3.38	--	--	--	--	--	--	--

Table 1

Groundwater Monitoring Data and Analytical Results

Tosco (Unocal) Service Station #3135

845 66th Avenue

Oakland, California

Well ID/ TOC*	Date	DTW (ft.)	GWE (msl)	TPH(D) *(ppb)*	TPH(G) *(ppb)*	B *(ppb)*	T *(ppb)*	E *(ppb)*	X *(ppb)*	MTBE *(ppb)*
MW-9	08/02/94	8.34	-3.74	ND	ND	ND	ND	ND	ND	--
(cont)	11/07/94	6.44	-1.84	--	--	--	--	--	--	--
	12/03/94	5.68	-1.08	--	--	--	--	--	--	--
	01/10/95	4.98	-0.38	--	--	--	--	--	--	--
	02/01/95	5.18	-0.58	65[4]	ND	ND	ND	ND	ND	--
	03/03/95	5.90	-1.30	--	--	--	--	--	--	--
	05/02/95	5.86	-1.26	--	--	--	--	--	--	--
	08/01/95	7.30	-2.70	ND	ND	ND	ND	ND	ND	--
	11/01/95	8.66	-4.06	--	--	--	--	--	--	--
	02/01/96	5.14	-0.54	76[4]	ND	ND	ND	ND	ND	ND
	02/04/97	8.12	-3.52	--	ND	ND	ND	ND	ND	ND
	02/05/98	4.95	-0.35	--	ND	ND	ND	ND	ND	ND
	02/04/99	5.81	-1.21	--	ND	ND	ND	ND	ND	ND
	02/02/00	**5.71**	**-1.11**	**--**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**
MW-10	11/03/92	--	--	160[4]	740	11	2.1	32	56	--
	02/03/93	--	--	ND	1,200[6]	ND	ND	ND	ND	--
3.34	03/01/93	5.82	-2.48	--	--	--	--	--	--	--
	04/01/93	5.69	-2.35	--	--	--	--	--	--	--
	05/17/93	7.04	-3.70	ND	1,200[6]	ND	ND	ND	ND	--
	06/15/93	7.22	-3.88	--	--	--	--	--	--	--
	07/14/93	8.01	-4.67	--	--	--	--	--	--	--
	08/13/93	8.42	-5.08	97[5]	1,500[7]	ND	ND	41	21	--
	09/13/93	8.74	-5.40	--	--	--	--	--	--	--
	10/14/93	8.57	-5.23	--	--	--	--	--	--	--
2.69	11/11/93	8.59	-5.90	88[5]	1,600[6]	ND	ND	ND	ND	--
	12/14/93	7.50	-4.81	--	--	--	--	--	--	--
	01/10/94	7.69	-5.00	--	--	--	--	--	--	--
	02/10/94	8.21	-5.52	71	1,480[6]	ND	ND	ND	ND	--
	03/14/94	5.56	-2.87	--	--	--	--	--	--	--
	04/23/94	6.22	-3.53	--	--	--	--	--	--	--
	05/05/94	6.03	-3.34	55	1,000[6]	ND	ND	ND	ND	--
	06/07/94	6.10	-3.41	--	--	--	--	--	--	--
	07/05/94	6.38	-3.69	--	--	--	--	--	--	--

Table 1

Groundwater Monitoring Data and Analytical Results

Tosco (Unocal) Service Station #3135

845 66th Avenue

Oakland, California

Well ID/ TOC*	Date	DTW (ft.)	GWE (msl)	TPH(D) (ppb)	TPH(G) (ppb)	B (ppb)	T (ppb)	E (ppb)	X (ppb)	MTBE (ppb)
MW-10	08/02/94	6.67	-3.98	110	95[6]	ND	ND	ND	ND	--
(cont)	11/07/94	6.08	-3.39	120[5]	1,100[6]	ND	ND	ND	ND	--
	12/03/94	4.68	-1.99	--	--	--	--	--	--	--
	01/10/95	4.21	-1.52	--	--	--	--	--	--	--
	02/01/95	4.26	-1.57	72[4]	560[6]	ND	ND	ND	ND	--
	03/03/95	4.94	-2.25	--	--	--	--	--	--	--
	05/02/95	4.80	-2.11	99	840[6]	ND	ND	ND	9.5	--
	08/01/95	5.79	-3.10	260	ND	ND	ND	ND	ND	--
	11/01/95	6.95	-4.26	280	ND	ND	ND	ND	ND	830
	02/01/96	4.31	-1.62	320[4]	ND	ND	ND	ND	ND	1,300
	02/04/97	6.59	-3.90	--	ND	ND	ND	ND	ND	ND
	02/05/98	3.76	-1.07	--	ND	ND	ND	ND	ND	500
	02/04/99	4.68	-1.99	--	ND[9]	ND[9]	ND[9]	ND[9]	ND[9]	620/850[10,11]
	02/02/00	**4.85**	**-2.16**	**--**	**ND**	**ND**	**ND**	**ND**	**ND**	**737/696[10]**
MWD										
(D)(MW6)	02/22/91	--	--	--	740	74	12	33	140	--
Trip Blank										
TB-LB	02/05/98	--	--	--	ND	ND	ND	ND	ND	ND
	02/04/99	--	--	--	ND	ND	ND	ND	ND	ND
	02/12/99	--	--	--	ND	ND	ND	ND	ND	ND
	02/02/00	**--**	**--**	**--**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**

Table 1

Groundwater Monitoring Data and Analytical Results

Tosco (Unocal) Service Station #3135
845 66th Avenue
Oakland, California

EXPLANATIONS:

Groundwater monitoring data and laboratory analytical results prior to February 5, 1998, were compiled from reports prepared by MPDS Services, Inc.

TOC = Top of Casing elevation
DTW = Depth to Water
(ft.) = Feet
GWE = Groundwater Elevation
msl = Relative to mean sea level
TPH(D) = Total Petroleum Hydrocarbons as Diesel
TPH(G) = Total Petroleum Hydrocarbons as Gasoline

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

(D) = Duplicate
ppb = Parts per billion
ppm = Parts per million
ND = Not Detected
-- = Not Measured/Not Analyzed
TOG = Total Oil and Grease

* TOC elevations are relative to Mean Sea Level (msl), per the City of Oakland Benchmark No. 3881 (Elevation = 4.72 feet msl). Prior to November 11, ~~1999,~~ 1993 DTW measurements were taken from the top of well covers.

1 TOG was ND.
2 TOG was detected at a concentration of 78 ppb.
3 TOG was detected at a concentration of 16 ppb.
4 Laboratory report indicates the hydrocarbons detected did not appear to be diesel.
5 Laboratory report indicates the hydrocarbons detected appeared to be a diesel and non-diesel mixture.
6 Laboratory report indicates the hydrocarbons detected did not appear to be gasoline.
7 Laboratory report indicates the hydrocarbons detected appeared to be a gasoline and non-gasoline mixture.
8 ORC installed in well.
9 Detection limit raised. Refer to analytical reports.
10 MTBE by EPA Method 8260.
11 Laboratory analyzed sample 9 minutes past holding time.
12 Laboratory report indicates weathered gasoline C6-C12.
13 Laboratory report indicates gasoline C6-C12.
14 Laboratory report indicates MTBE by EPA Method 8260 was analyzed past EPA recommended holding time.

Table 2

Dissloved Oxygen Compounds

Tosco (Unocal) Service Station #3135

845 66th Avenue

Oakland, California

Well ID	Date	Before Purging *(mg/L)*	After Purging *(mg/L)*
MW-1	02/04/99	3.56	--
	02/02/00	**3.83**	--
MW-2	08/28/98	0.70	--
	02/04/99	3.64	--
	02/02/00	**3.28**	--
MW-3	02/04/99	5.34	--
	02/02/00	**6.06**	--
MW-4	02/04/99	6.46	--
	02/02/00	**5.93**	--
MW-5	02/04/99	6.65	--
	02/02/00	**6.35**	--
MW-6[1]	08/29/98	0.32	--
	02/05/99	2.78	--
	02/02/00	**3.12**	--
MW-7	02/04/99	5.05	--
	02/02/00	**4.58**	--
MW-8	08/28/98	0.32	--
	02/04/99	4.95	--
	02/02/00	**5.24**	--
MW-9	02/04/99	4.77	--
	02/02/00	**5.12**	--
MW-10	02/04/99	4.02	--
	02/02/00	**4.84**	--

EXPLANATIONS:

mg/L = milligrams per liter

-- = Not Measured

NOTES:

[1] ORC installed in well.

Table 3

Groundwater Analytical Results

Tosco (Unocal) Service Station #3135

845 66th Avenue

Oakland, California

Well ID		Date	Nitrate as NO_3 *(ppm)*	Sulfate *((ppm)*	Redox Potential *(mV)*	Ferrous Iron *(ppm)*
MW-1		02/04/99	7.0	4.4	-054[1]	--
	NP	02/12/99	--	--	470	3.3
		02/02/00	**ND**	**13.7**	**484**	**0.0456**
MW-2		02/04/99	ND	12	-104[1]	--
	NP	02/12/99	--	--	380	4.3
		02/02/00	**ND**	**15.2**	**55.3[2]**	**1.70**
MW-3		02/04/99	ND	47	-064[1]	--
	NP	02/12/99	--	--	460	1.4
		02/02/00	**ND**	**26.0**	**45.0**	**0.123**
MW-4		02/04/99	5.4	15	007[1]	--
	NP	02/12/99	--	--	610	6.0
		02/02/00	**10.3**	**38.4**	**61.0**	**3.00**
MW-5		02/04/99	10	79	102[1]	--
	NP	02/12/99	--	--	480	0.16
		02/02/00	**12.1**	**98.4**	**83.7**	**0.0208**
MW-6		02/04/99	ND	4.8	-034[1]	--
	NP	02/12/99	--	--	400	3.2
		02/02/00	**ND**	**8.91**	**71.5**	**0.217**
MW-7		02/04/99	ND	4.6	-071[1]	--
	NP	02/12/99	--	--	450	1.8
		02/02/00	**ND**	**6.43**	**84.0**	**0.812**
MW-8		02/04/99	ND	41	90[1]	--
	NP	02/12/99	--	--	470	0.15
		02/02/00	**ND**	**47.5**	**111**	**ND**
MW-9		02/04/99	22	30	78[1]	--
	NP	02/12/99	--	--	470	0.26
		02/02/00	**20.6**	**36.5**	**172**	**ND**

Table 3

Groundwater Analytical Results

Tosco (Unocal) Service Station #3135
845 66th Avenue
Oakland, California

Well ID		Date	Nitrate as NO_3 (ppm)	Sulfate ((ppm)	Redox Potential (mV)	Ferrous Iron (ppm)
MW-10		02/04/99	ND	36	94[1]	--
	NP	02/12/99	--	--	470	0.24
		02/02/00	**ND**	**40.1**	**110**	**0.0165**

EXPLANATIONS:

ppm = Parts per million
mV = millivolts
-- = Not Analyzed

1 Redox Potential was measured in the field.
2 Laboratory report indicates this value is actually negative.

APPENDIX C

HISTORICAL SOIL DATA AND BORING LOGS

KEI-P88-1203.R14
June 10, 1993

TABLE 4

SUMMARY OF LABORATORY ANALYSES
SOIL

Date	Sample Number	TPH as Diesel	TPH as Gasoline	Benzene	Toluene	Xylenes	Ethyl-benzene	TOG
4/26/90	MW1(5)	--	ND	0.012	0.16	ND	ND	--
&	MW1(10)	--	ND	0.0094	0.024	ND	ND	--
4/27/90	MW1(14)	--	ND	0.0075	0.031	ND	ND	--
	MW2(5)	--	2.4	0.075	0.0071	ND	ND	--
	MW2(10)	--	2.2	ND	0.017	0.018	0.0088	--
	MW2(12)	--	6.8	ND	0.028	0.015	0.10	--
	MW3(5)	--	ND	0.0094	0.048	ND	ND	--
	MW3(10)	--	ND	0.0088	0.015	ND	ND	--
	EB2(7)	--	2,400	5.0	16	230	62	--
	EB2(9)	1,400	12,000	84	12	860	360	7,000
8/14/90	MW4(14.5)	--	ND	ND	ND	ND	ND	--
	MW5(13)	--	ND	ND	0.010	ND	ND	--
	MW6(5)	ND	ND	ND	0.042	ND	ND	ND
	MW6(10)	5.1	18	0.26	0.22	1.2	0.34	ND
	MW6(12.5)	93	160	3.4	12	3.6	20	200
	MW6(15.5)	ND	2.5	0.43	0.41	0.12	0.50	ND
4/28/93	MW7(5)	ND	ND	ND	ND	ND	ND	--
9/28/92	MW8(5)	ND	ND	ND	ND	ND	ND	--
&	MW8(10)	ND	ND	ND	ND	ND	ND	--
9/29/92	MW8(13)	ND	ND	ND	ND	ND	ND	--
	MW9(5.5)	ND	ND	ND	ND	ND	ND	--
	MW9(10)	ND	ND	ND	ND	ND	ND	--
	MW9(13)	ND	ND	ND	ND	ND	ND	--
	MW10(5)	ND	ND	ND	ND	ND	ND	--
	MW10(10.5)	39*	210	0.58	0.38	10	4.4	--
	MW10(13)	ND	ND	ND	ND	0.0063	0.0090	--

TABLE 4 (Continued)

SUMMARY OF LABORATORY ANALYSES
SOIL

NOTE: The soil samples were collected at the depths below grade indicated in the ( ) of the respective sample number.

* Sequoia Analytical Laboratory reported that the hydrocarbons detected did not appear to be diesel.

-- Indicates analysis was not performed.

ND = Non-detectable.

Results in parts per million (ppm), unless otherwise indicated.

KEI-P88-1203.R14
June 10, 1993

TABLE 5

SUMMARY OF LABORATORY ANALYSES
SOIL

(Collected on November 29, and
December 5 & 29, 1989)

Sample	Depth (feet)	TPH as Diesel	TPH as Gasoline	Benzene	Toluene	Xylenes	Ethyl-benzene
SW1	9.0	--	1.6	ND	ND	ND	ND
SW2	9.0	--	3.8	ND	ND	ND	ND
SW3	9.0	--	5.6	ND	ND	2.3	0.42
SW4	9.0	--	32	1.2	ND	1.0	2.1
SW5	9.0	--	4.8	0.20	ND	0.11	ND
SW6	8.0	--	ND	ND	ND	ND	ND
D1	3.5	--	ND	ND	ND	ND	ND
D2	3.5	--	1.5	0.08	ND	ND	ND
D3	3.5	--	6.6	0.14	ND	0.31	ND
D4	3.5	--	7.4	0.11	ND	0.1	ND
D5	3.5	--	1.9	ND	ND	ND	ND
D6	3.5	--	2.0	ND	0.17	0.25	ND
P1	6.0	--	15	0.086	ND	8.5	0.18
P2	5.5	--	3,800	6.1	290	750	140
P2(12)	12.0	--	ND	ND	ND	ND	ND
P3	5.0	--	11	0.13	ND	1.3	0.18
P4	4.5	--	1.4	ND	ND	0.23	ND
P5	4.5	--	ND	ND	ND	ND	ND
P6	3.0	--	ND	ND	ND	ND	ND
P7	4.0	--	ND	ND	ND	ND	ND
SWP2E	11.0	--	20	ND	0.16	3.1	0.50
SWP2W	11.0	--	ND	ND	ND	ND	ND
WO1*	8.5	ND	1.6	ND	ND	ND	ND

KEI-P88-1203.R14
June 10, 1993

TABLE 5 (Continued)

SUMMARY OF LABORATORY ANALYSES
SOIL

(Collected on November 29, and
December 5 & 29, 1989)

Sample	Depth (feet)	TPH as Diesel	TPH as Gasoline	Benzene	Toluene	Xylenes	Ethyl-benzene
SWA**	9.5	ND	2.1	ND	ND	ND	ND
SWB***	9.5	ND	3.9	ND	ND	ND	ND

* TOG was <50 ppm, and all EPA method 8010 constituents were non-detectable. Metal concentrations were as follows: cadmium was non-detectable, chromium was 20 ppm, lead was 75 ppm, and zinc was 65 ppm.

** TOG was <50 ppm, and all EPA method 8010 constituents were non-detectable. Metals concentrations were as follows: cadmium was non-detectable, chromium was 20 ppm, lead was 5.9 ppm, and zinc was 44 ppm.

*** TOG was <50 ppm, and all EPA method 8010 constituents were non-detectable. Metals concentrations were as follows: cadmium was non-detectable, chromium was 15 ppm, lead was 5.0 ppm, an zinc was 39 ppm.

-- Indicates analysis was not performed.

ND = Non-detectable.

Results in parts per million (ppm), unless otherwise indicated.

BORING LOG

Project No. KEI-P88-1203	Boring & Casing Diameter 9" 2"	Logged By D.L.
Project Name Unocal Oakland - 66th Ave.	Well-Head Elevation N/A	Date Drilled 4/26/90
Boring No. MW1	Drilling Method Hollow-stem Auger	Drilling Company EGI

Penetration blows/6"	G. W. level	Depth (feet) Samples	Strati-graphy USCS	Description
		0		A. C. Pavement Clay, sand and gravel: fill.
			GC Fill	Fill: Clayey gravel with sand, gravel to 1 1/2" diameter, dense, moist, black. Gravel to 4" diameter, minor debris.
50-5 3/4"		5		Clayey gravel with sand, gravel to 1/2" diameter, medium dense, moist, dark olive.
				BASE OF FILL
5/7/7			MH	Clayey silt, 5-10% coarse sand, stiff, moist, black.
				Clayey gravel with sand, gravel to 5/8" diameter, 15-20% clay, dense, moist, dark greenish gray, occasionally grading to clayey sand, with gravel, dark yellowish brown below 10.5 feet.
11/15/19		10	GC/ SC	
13/16/20			SC	Clayey sand, with silt, predominantly fine-grained, very dense, moist, olive gray and dark gray, mottled. mottled.
7/10/14	▼	15	SM	Silty sand, trace clay, sand is fine-grained, medium dense, wet, dark olive gray.
				Poorly graded gravel with clay and sand, very dense, wet, olive brown.
15/30/21		20	GP-GC	
			GP-GC	Poorly graded gravel with clay and sand, very dense, wet, olive brown.

BORING LOG

Project No. KEI-P88-1203	Boring & Casing Diameter 9" 2"	Logged By D.L.
Project Name Unocal Oakland - 66th Ave.	Well Head Elevation N/A	Date Drilled 4/27/90
Boring No. MW2	Drilling Method Hollow-stem Auger	Drilling Company EGI

Penetration blows/6"	G. W. level	Depth (feet) Samples	Strati-graphy USCS	Description
		0		A. C. Pavement Sand and gravel: fill.
			GC	Fill: Clayey gravel with sand, medium dense, moist, black, with bricks.
6/7/8		5	CH	Clay, 5-10% sand and gravel to 1/4" diameter, trace silt, stiff, moist, black.
				Base of Fill?
			CL/ CH	Clay with silt, 5-10% fine-grained sand, stiff, moist, dark greenish gray, and olive, mottled.
4/7/10		10		
7/14/20			GC	Clayey gravel with sand, gravel to 1/2" diameter, dense, moist, olive and olive brown, mottled.
9/20/18	▼		SP-SM	Poorly graded sand with silt, sand is medium grained, dense, wet, olive brown.
7/14/21		15	GC/ SC	Clayey gravel with sand, gravel to 1" diameter, 15-20% clay, occasionally grading to clayey sand with gravel, dense, wet, olive brown.
			GW	Well graded gravel with sand, trace-10% fines, gravel to 1-1/2" diameter, dense, wet, olive brown.
		20	GW	Well graded gravel with sand, dense, wet, olive brown.

Project No. KEI-P88-1203	Boring & Casing Diameter 9" 2"	Logged By D.L. DLB
Project Name Unocal Oakland - 66th Ave.	Well Head Elevation N/A	Date Drilled 4/26/90
Boring No. MW3	Drilling Method Hollow-stem Auger	Drilling Company EGI

Penetration blows/6"	G. W. level	Depth (feet) Samples	Strati-graphy USCS	Description
		0		A. C. Pavement Clay, sand and gravel, black, with bricks: fill.
4/4/7		5	GC	Fill: Clayey gravel with sand, firm to stiff, moist to very moist, black. Base of Fill?
			SC	Clayey sand, trace gravel, sand is coarse-to fine-grained, 30-35% clay, gravel to 1/8" diameter, medium dense, moist, dark yellowish brown.
9/12/12	▼	10	SM	Silty sand, 5-10% clay, sand is medium to fine-grained, medium dense, very moist to wet, dark grayish brown and yellowish brown, streaked.
7/30/31		15	GP-GC	Poorly graded gravel with clay and sand, gravel to 3/4" diameter, very dense, wet, dark yellowish brown.
50-5 1/2"		20	GW	Well graded gravel with sand, 5% fines, gravel to 1-3/4" diameter, very dense, wet, dark yellowish brown
			GW	Well graded gravel with sand, very dense, wet, dark yellowish brown.

Project Name Unocal Oakland - 66th Ave.	~~Well Head~~ Elevation N/A 5.27	Date Drilled 8/14/90
Boring No. MW4	Drilling Method Hollow-stem Auger	Drilling Company EGI

Penetration blows/6"	G. W. level	Depth (feet) Samples	Strati-graphy USCS	Description
		0		A.C. Pavement over clay, sand and gravel fill, trace cobbles to 5" dia. moist, dense, orangish brown.
2/3/6		5	CL	Silty clay, trace to 10% gravel to 1/2" dia., 5% sand, moist to very moist, stiff, gray with slight mottling of greenish gray, trace organic matter.
9/15/24		10	GC	Clayey gravel, trace sand, olive green grading to orange, subangular gravel to 1/2" dia., moist, dense.
9/15/18			SC	Clayey sand, sand is fine-grained, moist, olive green, dense, grading to orangish brown with trace organic matter.
			ML	Clayey silt, trace organic matter, orangish brown mottled with olive gray, very moist, very stiff.
8/11/14	▼	15	SM	Silty sand trace clay, sand is fine-grained, medium dense, wet, dark olive gray.
			GW	Well graded gravel with sand, trace to 10% fines, gravel to 1-1/4" dia., medium dense, wet, dark yellowish brown.
6/14/15		20	GC	Clayey gravel with sand, subangular
			GC	gravel to 1-1/2" dia., sand wet, medium dense to dense, dark yellowish brown.
			SW	Sand, well stratified, fining upward from very coarse-grained to very fine grained, saturated, dense, gray.
15/32/32		25	GC	Clayey gravel with sand, gravel to 1-1/2" dia., wet, very dense, orangish brown.

KEI-P88-1203	9" 2"	W.W. JKJ
Project Name Unocal Oakland - 66th Ave.	**Well Head Elevation** N/A 41.61	**Date Drilled** 8/14/90
Boring No. MW5	**Drilling Method** Hollow-stem Auger	**Drilling Company** EGI

Penetration blows/6"	G. W. level	Depth (feet) Samples	Strati-graphy USCS	Description
		0		A.C. Pavement underlain by clay, sand and gravel fill, orangish brown.
			GC	Clayey gravel with sand, gravel to 3/4" dia., trace organic matter, trace debris, dense, moist, black.
				Base of Fill Materials
4/5/6		5	CL	Clay, trace to 10% fine gravel to 1/4" dia., trace to 5% fine-grained sand, moist, stiff, olive gray grading to olive brown.
7/9/11		10	SC	Clayey sand with gravel, trace organic matter, fine gravel to 1/4" dia., sand is predominantly coarse-grained with 5% fine-grained, trace caliche, moist, medium dense, orangish brown, trace olive gray.
12/15/18	▼		ML	Clayey silt, trace organic matter, moist, very stiff, dark yellowish brown, grading to silt with fine-grained sand, orangish brown with bluish green mottling.
13/15/13		15	SC	Clayey sand, fine-to medium-grained, trace gravel to 3/4" dia., saturated, medium dense, olive brown.
			ML	Clayey silt, trace to 5% fine-grained sand, very moist, medium dense, orangish brown and olive gray.
		20	GC	Clayey gravel with sand.
7/14/17			GC	Clayey gravel with sand, subangular to rounded gravel to 1-1/4" dia., saturated, dense, gray and olive brown.
		25	CL	Clay, trace to 5% fine-grained sand, moist, very stiff, dark yellowish brown.

Project Name Unocal Oakland - 66th Ave.	Well Head Elevation N/A 4.31	Date Drilled 8/14/90
Boring No. MW6	Drilling Method Hollow-stem Auger	Drilling Company EGI

Penetration blows/6"	G. W. level	Depth (feet) Samples	Strati-graphy USCS	Description
		0		A.C. Pavement underlain by clay, sand and gravel: fill.
4/4/7		5	CL	Silty clay, trace gravel to 1/2" dia., trace organic matter, trace caliche, moist, stiff, olive gray, traces of bluish green clay lenses.
3/4/6		10		Silty clay, trace caliche, moist, stiff, trace fine-grained sand, bluish gray with slight dark yellowish brown mottling.
				Silty clay, as above, dark yellowish brown with slight blue gray mottling, very moist, very stiff.
8/11/11			GC	Clayey gravel with sand, subrounded gravel to 1/2" dia., very moist, medium dense, orangish brown.
8/14/21	▼	15	ML	Clayey silt, trace organic matter, moist, hard, orangish brown mottled with olive brown grading to bluish gray.
12/17/13			GC	Clayey gravel with sand, gravel to 3/4" dia., saturated, dense, bluish gray with orangish brown below 18 feet.
		20		
			GC	Clayey gravel, as above.
			SW	Sand, well stratified, fining upward sequence, from very-coarse-grained to very fine-grained, saturated, medium dense, gray.
8/15/48		25	GC	Clayey gravel with sand, gravel to 3/4" dia., saturated, very dense, orangish brown.

Project No. KEI-P88-1203	**Boring Diameter** 9"	**Logged By** W.W. JGG CEG 1633
	Casing Diameter 2"	
Project Name Unocal S/S #3135 845 - 66th Ave., Oakland	**Well Cover Elevation**	**Date Drilled** 9/29/92
Boring No. MW8	**Drilling Method** Hollow-stem Auger	**Drilling Company** Woodward Drilling

Penetration blows/6"	G. W. level	Depth (feet) Samples	Strati-graphy USCS	Description
		0		10 inches of concrete over sand and gravel base.
5/10/11		5		Silty gravel with sand and clay, estimated at 15-20% silt, 10-15% clay, and 10-15% sand, subangular gravel to 1 inch in diameter, medium dense, moist, yellowish brown (10 YR 5/4), (fill).
			ML	Clayey silt, estimated at 20% clay and 10-15% sand, stiff to very stiff, moist, black (10YR 2/1).
4/6/9		10	CL	Silty clay, estimated at 10-15% silt and 5% sand, stiff, moist, brown (10YR 5/3) with greenish gray (5G 5/1) mottling around common pores.
7/11/21	▼			Sandy silt, estimated at 20% fine-grained sand and 5% clay, very stiff, very moist to saturated, greenish gray (5GY 5/1).
6/14/27		15	ML	Sandy silt as above, estimated at 15-20% sand, 5-10% gravel, and 5% clay, gravel to 3/4 inch in diameter, hard, saturated, greenish gray (5GY 5/1).
9/17/27		20	GM	Sandy gravel with silt, estimated at 20% sand and 15% silt, trace clay, subangular gravel to 1-3/4 inches in diameter, dense, saturated, yellowish brown (10YR 5/4) with greenish gray (5GY 5/1) mottling.
12/			GW	
16/26			GW	Sandy gravel, trace silt, subangular gravel to 2 inches in diameter, dense, saturated, yellowish brown (10YR 5/4) with greenish gray (5GY 5/1) mottling.
		25		TOTAL DEPTH: 23'

Project No. KEI-P88-1203	Boring Diameter 7" Casing Diameter 2"	Logged By JGG W.W. CEG 1633
Project Name Unocal S/S #3135 845 - 66th Ave., Oakland	Well Cover Elevation	Date Drilled 9/28/92
Boring No. MW9	Drilling Method Hollow-stem Auger	Drilling Company Woodward Drilling

Penetration blows/6"	G. W. level	Depth (feet) Samples	Strati-graphy USCS	Description
		0		10 inches of concrete pavement over sand and gravel base.
			GW-GC	Sandy gravel with clay, estimated at 15% clay and 10% silt, well graded gravel to 1-1/2 inches in diameter, medium dense, moist, yellowish brown (10YR 5/6), (fill).
7/8/3		5		
			ML	Clayey silt, estimated at 15% clay and 5-10% sand, silt is fine-grained, stiff, moist, black (5Y 2.5/1).
4/6/7		10		Clayey silt, estimated at 20% clay and trace fine-grained sand, stiff, moist to very moist, yellowish brown (10YR 5/4), trace pores.
				Clayey silt as above, estimated at 5-10% sand, very moist to saturated below 13 feet.
4/6/9	▼			Clayey silt as above, estimated at 10% sand, trace gravel, saturated, yellowish brown (10YR)
		15		
5/8/11			SM	Silty sand, estimated at 15% silt, trace clay, trace gravel to 1/2 inch in diameter, sand is predominantly fine-grained, medium dense, saturated, light yellowish brown (10YR 6/4).
12/17/24			GW	Well graded gravel with sand, estimated at 5% silt, subrounded gravel to 2-1/2 inches in diameter, dense, saturated, light yellowish brown (10YR 6/4)).
		20		
14			GW	
			GW-GC	Well graded sand and gravel with clay, estimated at 15-20% sand, 10-15% clay, and 5% silt, dense, saturated, light yellowish brown (10YR 6/4).
15/15				
		25		TOTAL DEPTH: 23'

Project No. KEI-P88-1203	**Boring Diameter** 9" / **Casing Diameter** 2"	**Logged By** JGG / **W.W.** CEG 1633
Project Name Unocal S/S #3135 845 - 66th Ave., Oakland	**Well Cover Elevation** 3.34	**Date Drilled** 9/28/92
Boring No. MW10	**Drilling Method** Hollow-stem Auger	**Drilling Company** Woodward Drilling

Penetration blows/6"	G. W. level	Depth (feet) Samples	Strati-graphy USCS	Description
		0		8 inches of asphalt pavement over sand and gravel base.
			GM	Silty gravel, traces of brick and concrete, moist, yellowish brown (10YR 5/4), (fill).
			CL-ML	Silty clay, estimated at 30% silt and 5-10% sand, stiff, moist, black (5Y 2.5/1).
4/4/5		5	CL	Clay, estimated at 5% silt and 5% sand, stiff, moist, olive gray (5Y 5/2), trace root pores and caliche.
			ML	Clayey silt, estimated at 30% clay, very stiff, moist, greenish gray (5GY 5/1), trace pores.
7/10/15		10	SM	Silty sand, estimated at 30% silt, sand is fine-grained, medium dense, very moist, greenish gray (5GY 5/1), trace pores.
			GW	Sandy gravel, estimated at 5% silt, trace clay, gravel is subangular to 1 inch in diameter, dense, very moist, greenish gray (5GY 5/1).
12/19/21	▼		ML	Silt, estimated at 10-15% fine-grained sand, trace clay, hard, very moist to saturated, greenish gray (5GY 5/1).
4/7/11		15	SM	Silty sand, estimated at 15% silt, sand is fine grained, medium dense, saturated, yellowish brown (10YR 5/4).
8/15/21		20	GW	Sandy gravel, estimated at 5% silt, sand and gravel well graded to 1-3/4 inches in diameter, dense, saturated, yellowish brown (10YR 5/4).
			GW	Well graded sandy gravel, estimated at 5-10% clay and 5% silt, dense, saturated, yellowish brown (10YR 5/4).
		25		TOTAL DEPTH: 23'

BORING LOG

Project No. KEI-P88-1203	Boring & Casing Diameter 9" 2"	Logged By D.L.
Project Name Unocal Oakland - 66th Ave.	Well Head Elevation N/A	Date Drilled 4/26/90
Boring No. EB1	Drilling Method Hollow-stem Auger	Drilling Company EGI

Penetration blows/6"	G. W. level	Depth (feet) Samples	Strati-graphy USCS	Description
		0		A. C. Pavement Sand and gravel: fill.
			SP	
4/6/6		5		Fill: sand and gravel, very dark grayish brown, very moist, gravel to >6" diameter.
				AUGER REFUSAL - Concrete Obstruction?
		10		
		15		
		20		TOTAL DEPTH: 8.5'

BORING LOG

Project No.	Boring & Casing Diameter	Logged By
KEI-P88-1203	9" 2"	D.L.
Project Name Unocal Oakland - 66th Ave.	**Well Head Elevation** N/A	**Date Drilled** 4/26/90
Boring No. EB2	**Drilling Method** Hollow-stem Auger	**Drilling Company** EGI

Penetration blows/6"	G. W. level	Depth (feet) Samples	Strati-graphy USCS	Description
		0		A. C. Pavement Clay, sand and gravel: fill.
5/3/4		5	SP	Fill consisting of sand and gravel, gap graded, sand is medium-grained, dark greenish gray, gravel to >6" diameter, sand is locally free of gravel, loose to dense.
4/16/15				
7/20/21	▼	10		Color change at 9.5 feet to very dark gray, wet.
		15		
		20		TOTAL DEPTH DRILLED: 9' TOTAL DEPTH SAMPLED: 10.5'

BORING LOG

Project No. KEI-P98-1203	**Boring Diameter** 8.5" / **Casing Diameter** 2"	**Logged By** D.L.
Project Name UNOCAL #3135 / OAKLAND	**Well Cover Elevation**	**Date Drilled** 4-23-93
Boring No. MW7	**Drilling Method** Hollow-stem Auger	**Drilling Company** WOODWARD DRILLING

Penetration blows/6"	G. W. level	Depth (feet) Samples	Strati-graphy USCS	Description
		0		
				A.C. PAVEMENT OVER SILT, SAND AND GRAVEL BASE
			CL	SANDY CLAY, ABOUT 10-15% GRAVEL, STIFF, MOIST, LIGHT OLIVE BROWN: FILL
				GRAVELLY SILT WITH SAND, TRACE CLAY, STIFF MOIST TO WET, VERY DARK GRAYISH BROWN GRADES TO BLACK (FILL?)
3/5/7/11	▽	5	GM	SILTY GRAVEL WITH SAND, TRACE CLAY, VERY STIFF, MOIST TO WET, BLACK (FILL?)
3/4/5/4		10	CL	SILTY CLAY, ABOUT 5-10% FINE GRAINED SAND, FIRM TO STIFF, MOIST, OLIVE BROWN AND DARK GREENISH GRAY, MOTTLED
			SM	SILTY SAND, ABOUT 30-40% SILT, SAND IS FINE GRAINED, DENSE, VERY MOIST, DARK OLIVE BROWN AND DARK GREENISH GRAY, MOTTLED, COHESIVE
7/16/28/45		15	GM	SILTY GRAVEL WITH SAND, ABOUT 15-20% SILT, TRACE CLAY, DENSE TO VERY DENSE, WET, DARK OLIVE GRAY
22/30/30				SILTY GRAVEL WITH SAND, ABOUT 15% SILT, ANGULAR TO SUB ROUNDED GRAVEL, VERY DENSE, SATURATED, DARK YELLOWISH BROWN
		20		
				TOTAL DEPTH: 20'

8:15
9:30
10:35
11:10

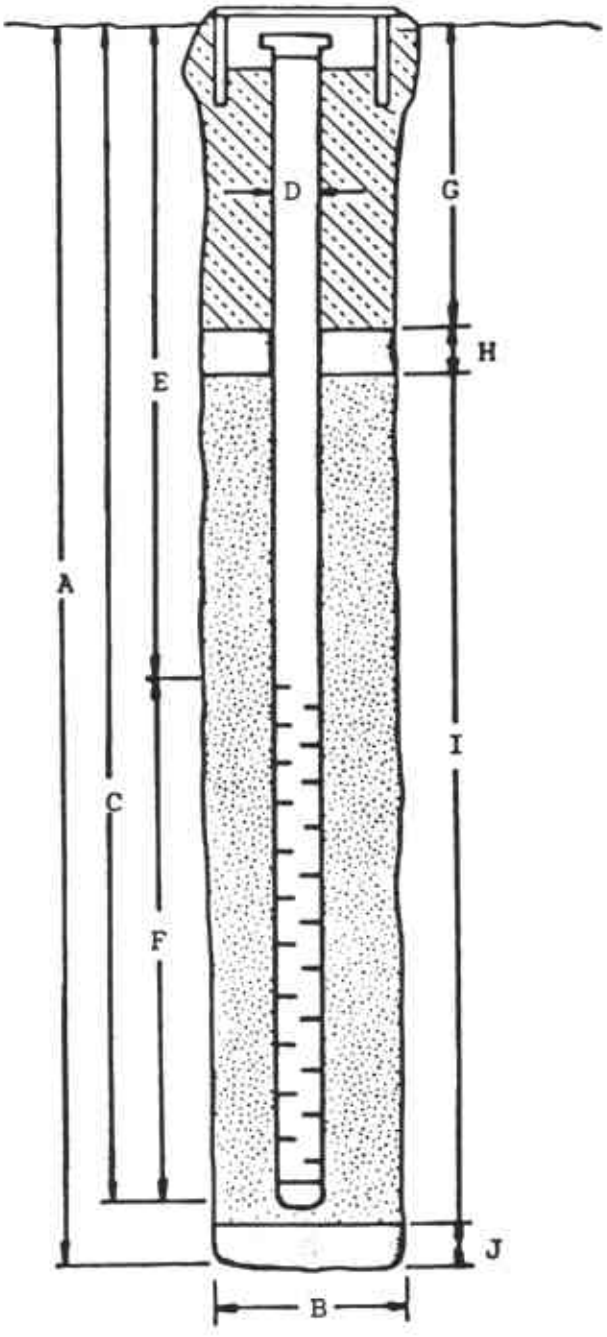
WELL COMPLETION DIAGRAM

PROJECT NAME: Unocal - Oakland - 66th Avenue BORING/WELL NO. MW1

PROJECT NUMBER: KEI-P88-1203

WELL PERMIT NO.: 90096

Flush-mounted Well Cover



A. Total Depth: 23'

B. Boring Diameter*: 9"

Drilling Method: Hollow Stem Auger

C. Casing Length: 23'

Material: Schedule 40 PVC

D. Casing Diameter: OD = 2.375" ID = 2.067"

E. Depth to Perforations: 5'

F. Perforated Length: 18'

Perforation Type: Machined Slot

Perforation Size: 0.020"

G. Surface Seal: 2'

Seal Material: Concrete

H. Seal: 2'

Seal Material: Bentonite

I. Gravel Pack: 19'

Pack Material: RMC Lonestar Sand

Size: #3

J. Bottom Seal: None

Seal Material: N/A

*Boring diameter can vary from 8-1/4" to 9" depending on bit wear.

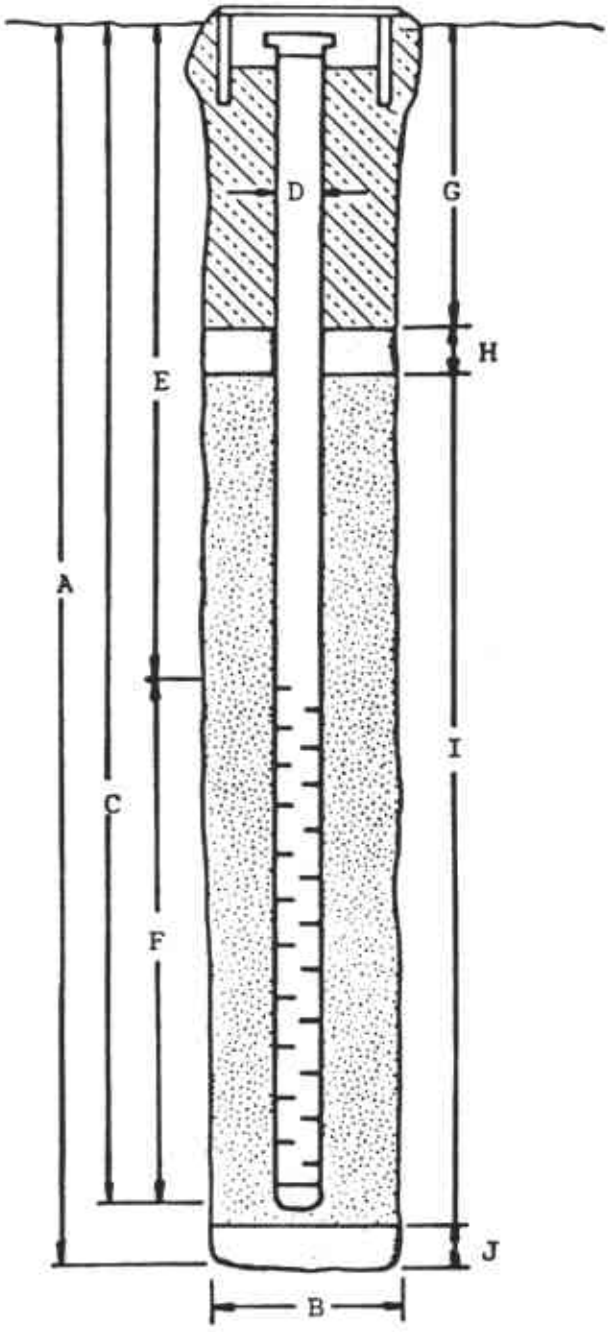
WELL COMPLETION DIAGRAM

PROJECT NAME: Unocal - Oakland - 66th Avenue BORING/WELL NO. MW2

PROJECT NUMBER: KEI-P88-1203

WELL PERMIT NO.: 90096

Flush-mounted Well Cover



A. Total Depth: 23'

B. Boring Diameter*: 9"

Drilling Method: Hollow Stem Auger

C. Casing Length: 23'

Material: Schedule 40 PVC

D. Casing Diameter: OD = 2.375" ID = 2.067"

E. Depth to Perforations: 5'

F. Perforated Length: 18'

Perforation Type: Machined Slot

Perforation Size: 0.020"

G. Surface Seal: 2'

Seal Material: Concrete

H. Seal: 2'

Seal Material: Bentonite

I. Gravel Pack: 21'

Pack Material: CISCO White Silica Sand

Size: 8/20

J. Bottom Seal: None

Seal Material: N/A

*Boring diameter can vary from 8-1/4" to 9" depending on bit wear.

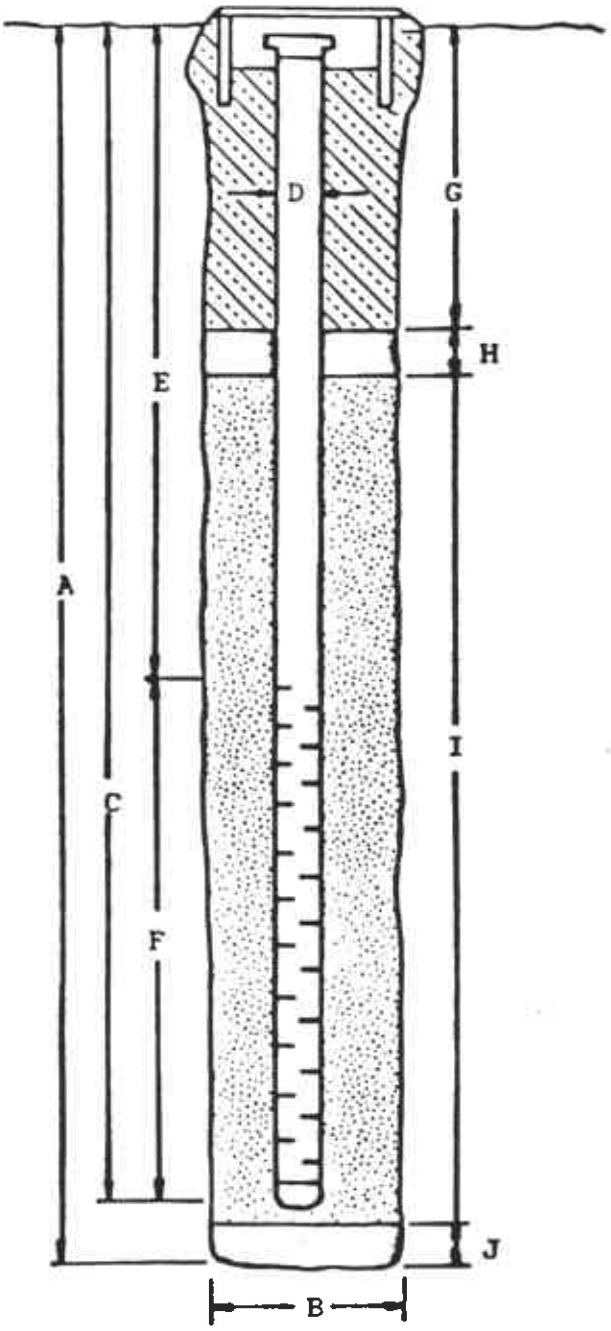
WELL COMPLETION DIAGRAM

PROJECT NAME: Unocal - Oakland - 845 66th Ave. BORING/WELL NO. MW4

PROJECT NUMBER: KEI-P88-1203

WELL PERMIT NO.:

Flush-mounted Well Cover



A. Total Depth: 26'

B. Boring Diameter*: 9"

Drilling Method: Hollow Stem Auger

C. Casing Length: 25'

Material: Schedule 40 PVC

D. Casing Diameter: OD = 2.375"

ID = 2.067"

E. Depth to Perforations: 5'

F. Perforated Length: 20'

Perforation Type: Machined Slot

Perforation Size: 0.020"

G. Surface Seal: 3'

Seal Material: Concrete

H. Seal: 1'

Seal Material: Bentonite

I. Gravel Pack: 22'

Pack Material: RMC Lonestar Sand

Size: #3

J. Bottom Seal: None

Seal Material: N/A

*Boring diameter can vary from 8-1/4" to 9" depending on bit wear.

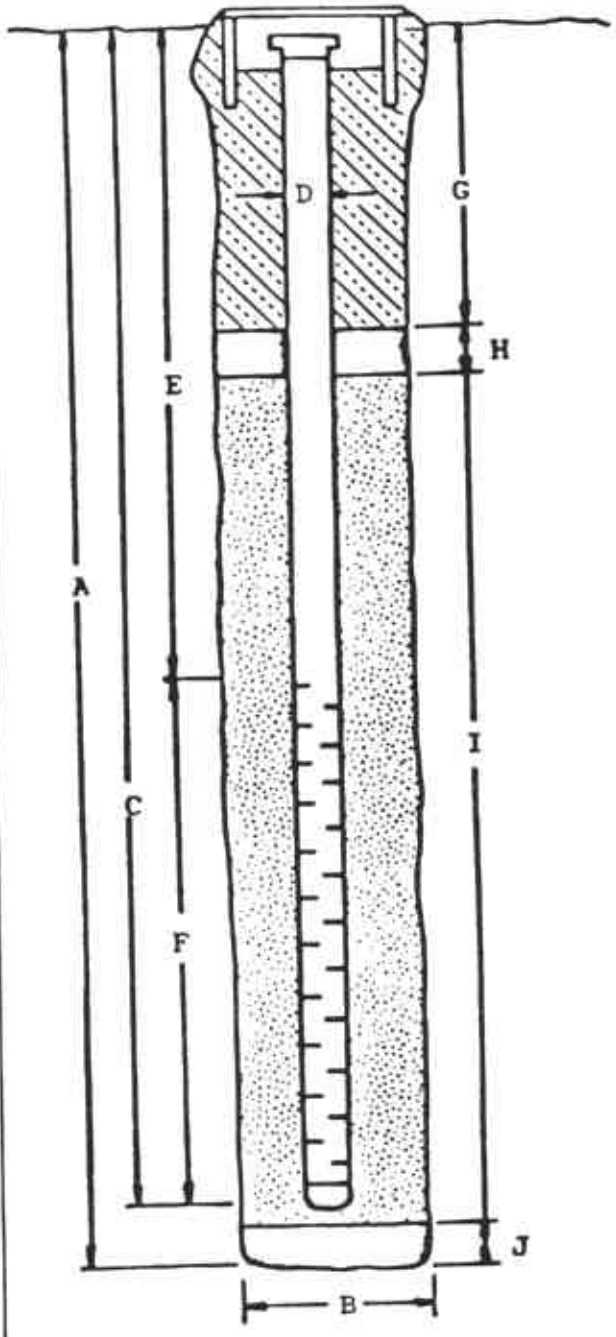
WELL COMPLETION DIAGRAM

PROJECT NAME: Unocal - Oakland - 845 66th Ave. BORING/WELL NO. MW5

PROJECT NUMBER: KEI-P88-1203

WELL PERMIT NO.:

Flush-mounted Well Cover



A. Total Depth: 26'

B. Boring Diameter*: 9"

Drilling Method: Hollow Stem Auger

C. Casing Length: 26'

Material: Schedule 40 PVC

D. Casing Diameter: OD = 2.375" ID = 2.067"

E. Depth to Perforations: 6'

F. Perforated Length: 20'

Perforation Type: Machined Slot

Perforation Size: 0.020"

G. Surface Seal: 4'

Seal Material: Concrete

H. Seal: 1'

Seal Material: Bentonite

I. Gravel Pack: 21'

Pack Material: RMC Lonestar Sand

Size: #3

J. Bottom Seal: None

Seal Material: N/A

*Boring diameter can vary from 8-1/4" to 9" depending on bit wear.

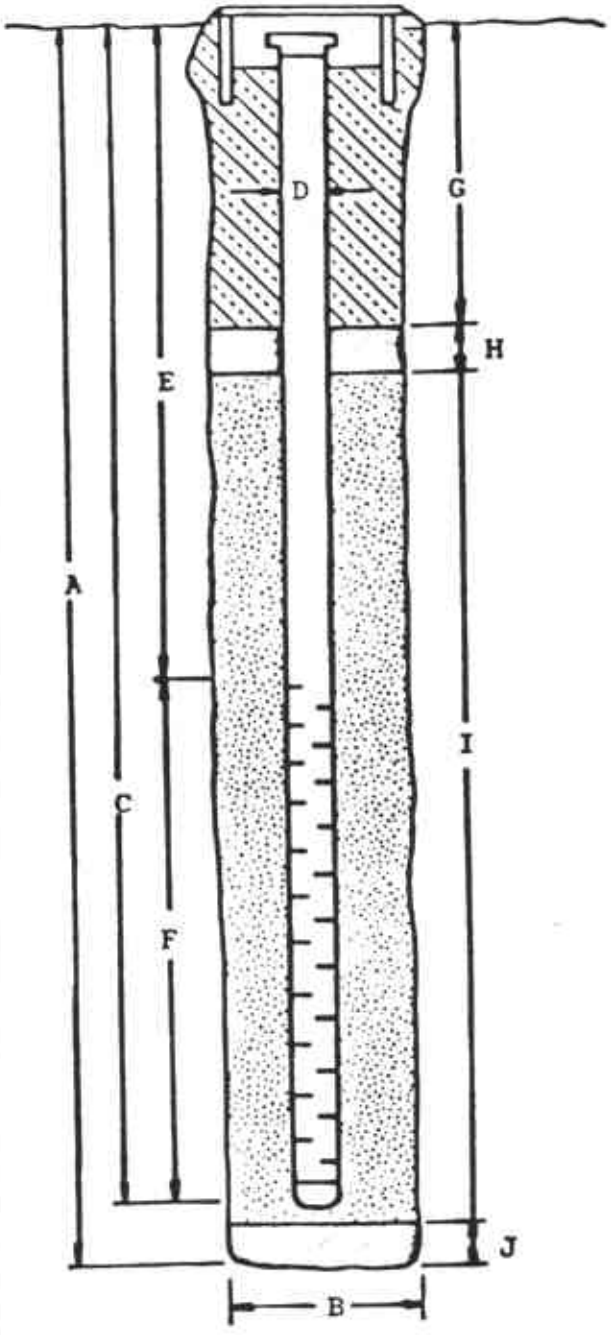
WELL COMPLETION DIAGRAM

PROJECT NAME: Unocal - Oakland - 845 66th Ave. BORING/WELL NO. MW6

PROJECT NUMBER: KEI-P88-1203

WELL PERMIT NO.:

Flush-mounted Well Cover



A. Total Depth: 26'

B. Boring Diameter*: 9"

Drilling Method: Hollow Stem Auger

C. Casing Length: 26'

Material: Schedule 40 PVC

D. Casing Diameter: OD = 2.375" ID = 2.067"

E. Depth to Perforations: 6'

F. Perforated Length: 20'

Perforation Type: Machined Slot

Perforation Size: 0.020"

G. Surface Seal: 4'

Seal Material: Concrete

H. Seal: 1'

Seal Material: Bentonite

I. Gravel Pack: 21'

Pack Material: RMC Lonestar Sand

Size: #3

J. Bottom Seal: None

Seal Material: N/A

*Boring diameter can vary from 8-1/4" to 9" depending on bit wear.

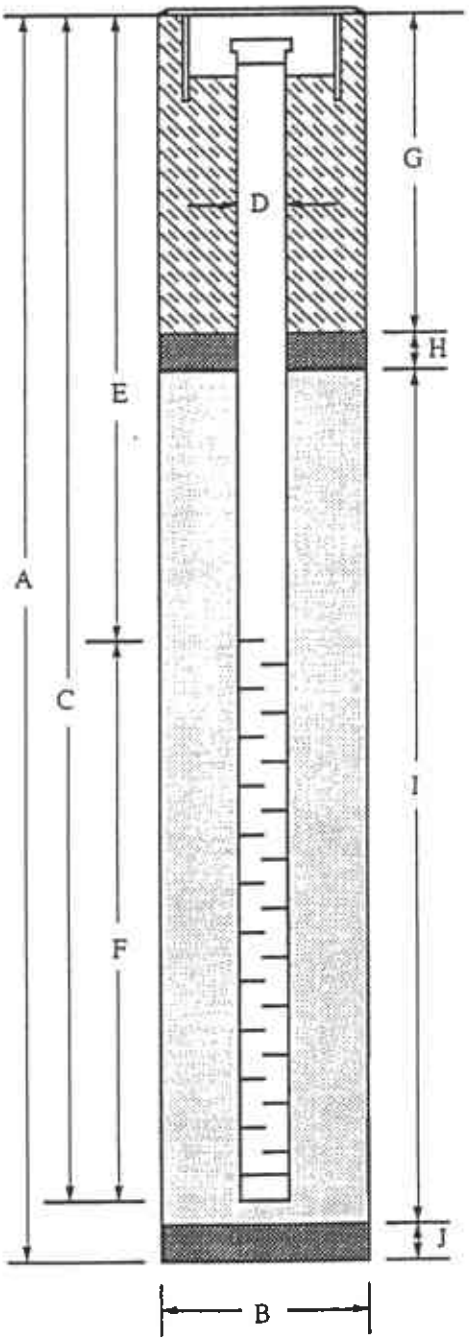
WELL COMPLETION DIAGRAM

PROJECT NAME: UNOCAL #3135/[illegible] WELL NO. MW7

PROJECT NUMBER: KEI-P88-1203

WELL PERMIT NO.: ACFC & WCD #93158

Flush-mounted Well Cover



A. Total Depth: 20'

B. Boring Diameter: 8.5"

Drilling Method: Hollow Stem Auger

C. Casing Length: 20'

Material: Schedule 40 PVC

D. Casing Diameter: OD = 2.375"

ID = 2.067"

E. Depth to Perforations: 3.5'

F. Perforated Length: 16.5'

Perforation Type: Machined Slot

Perforation Size: 0.010"

G. Surface Seal: 2'

Seal Material: NEAT CEMENT

H. Seal: 1'

Seal Material: Bentonite

I. Filter Pack: 14'

Pack Material: RMC LONESTAR SAND

Size: #2/12

J. Bottom Seal: None

Seal Material: N/A

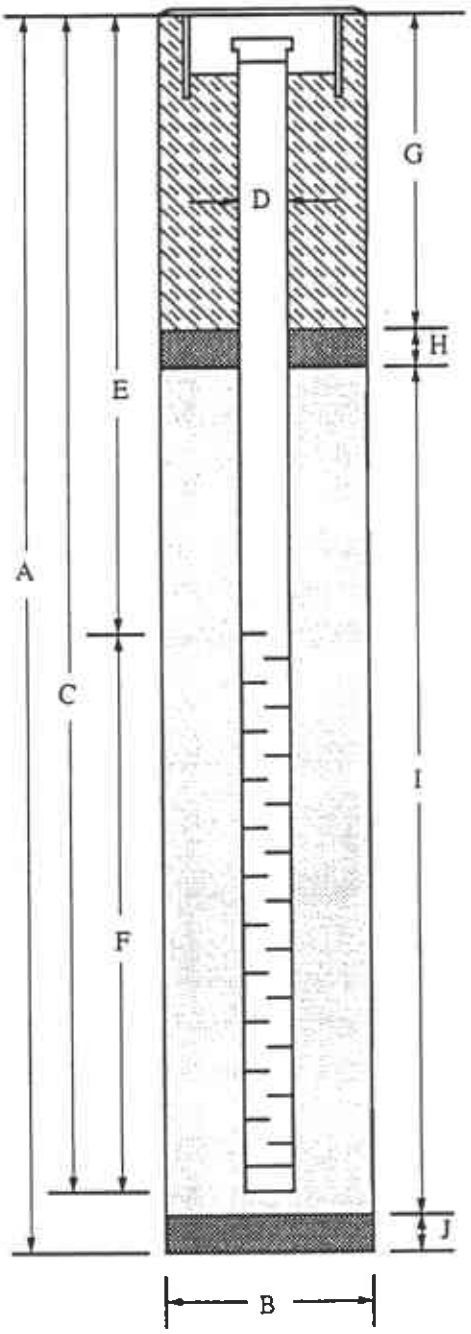
WELL COMPLETION DIAGRAM

PROJECT NAME: Unocal #3135, 845 - 66th Ave., Oakland WELL NO. MW10

PROJECT NUMBER: KEI-P88-1203

WELL PERMIT NO.: 92354

Flush-mounted Well Cover



A. Total Depth : 23'

B. Boring Diameter*: 9"

Drilling Method: Hollow Stem Auger

C. Casing Length: 23'

Material: Schedule 40 PVC

D. Casing Diameter: OD = 2.375"

ID = 2.067"

E. Depth to Perforations: 5'

F. Perforated Length: 18'

Perforation Type: Machined Slot

Perforation Size: 0.010"

G. Surface Seal: 3'

Seal Material: Neat Cement

H. Seal: 1'

Seal Material: Bentonite

I. Filter Pack: 19'

Pack Material: RMC Lonestar Sand

Size: 2/12

J. Bottom Seal: None

Seal Material: N/A

* Boring diameter can vary from 8-1/4" to 9" depending on bit wear.