

3.0 BACKGROUND

3.1 Site History

The following is a summary of previous soil and groundwater assessment. Historic groundwater analytical results for the site are summarized in Table 2.

In October 1986 Jirsa Environmental Services conducted a soil investigation by drilling three soil borings west of the underground storage tank and pump island locations. Groundwater was encountered in all three borings at a depth of five feet below ground surface (bgs). Low level hydrocarbons were detected in the boring west of the underground storage tank (1.5 mg/Kg benzene @ 5 feet bgs) and in the boring in the northeast corner of the property (0.4 total xylenes @ 5 feet bgs). No evidence of hydrocarbons was reported in the boring west of the pump island (Jirsa Environmental, Soil Boring Report, October 20, 1986).

On February 26, 1988, Geonomics Inc., drilled four boreholes at the perimeter of the tank area. Analysis of soil samples collected from approximately 6 feet bgs reported TPH as gasoline concentrations ranging from 5 mg/Kg (DPSL-288-2) to 1,500 mg/Kg (DPSL-288-3). The highest hydrocarbon concentrations were reported in the boreholes north and south of the underground storage tank location (Geonomics Inc. Soil Sampling Report, March 10, 1988).

In August 1988, Geonomics conducted a soil vapor survey to delineate the extent of hydrocarbons in the soil and/or groundwater. Twenty soil vapor samples were collected on a 20 to a 30-foot lateral grid from 4 feet bgs and analyzed with a Photovac 10S50 photoionization gas chromatograph. Total hydrocarbon vapors were detected at concentrations ranging between 89 and 374,500 μ g/L. The highest soil vapor concentrations were reported in the area surrounding the underground storage tank locations and northwest of the tanks in the downgradient groundwater flow direction (Geonomics Inc. Soil Vapor Survey Report, August 29, 1988).

On September 6, 1988, On-Site Technologies Inc. conducted further subsurface investigation by drilling and sampling seven soil borings and completing three groundwater monitoring wells (GX-135A, GX-135B & GX-135C). The initial depth to groundwater was reported between 5.97 and 6.56 feet bgs. Analytical results of soil collected from 6.5 feet, bgs in the seven borings reported no detectable TPH concentrations in the boreholes around the pump island or south of the underground storage tank location, and only low TPH concentrations (8 mg/Kg) in boreholes GX-135A and GX-135B. Groundwater was analyzed for TPH as gasoline and BTEX; no hydrocarbon compounds were initially detected in the groundwater from wells GX-135A and GX-135B. A low TPH concentration of 0.09 mg/L was detected in well GX-135C. (On-site Technologies, Inc. Report of Hydrogeologic Site Investigation, September 30, 1988).

On February 22, 1991, the groundwater was sampled for TPH as gasoline and BTEX. Analytical results reported low TPH concentrations of 0.84 mg/L and 1.7 mg/L in wells GX-135B and GX-135C, respectively (Table 2). A low concentration of 0.5 ug/L total xylene was detected in well GX-135A (On-Site Technologies, Inc. Report of Groundwater Sampling and Analyses, March 26, 1991).

Additional site characterization in 1995 evaluated the lateral and vertical extents of the hydrocarbons in both soil and groundwater. Based upon the results of the assessment the extent of the plume appeared to be centralized in the tank farm and dispenser area, with diminishing concentrations varying radially from this area.

Three additional groundwater monitoring wells were installed in October 1996 at locations shown on Figure 2. Table 2 summarizes historic groundwater analytical results at the site. Chlorinated hydrocarbons have been encountered at the site during various stages of corrective action. The San Leandro area is considered to be regionally impacted and the California Environmental Protection Agency has issued various warnings about the poor groundwater quality.

In November 1995 one 280 gallon waste oil tank was removed under the direction of the City of San Leandro Fire Department. Trace levels of chlorinated hydrocarbons were present in soil samples from beneath the tank. The impacted soil was excavated and disposed of at a licensed facility (Waste Oil UST Removal and Sampling Report, WEGE, December 1, 1995).

4.0 GEOLOGY AND HYDROGEOLOGY

4.1 Geologic Setting

The site is located in the San Leandro Valley at an elevation of approximately 20 feet above mean sea level with a slight topographic gradient towards the northwest. The subject property is approximately one-quarter mile north of San Leandro Creek and two miles northeast of San Francisco Bay (Figure 1).

The site is within the San Francisco Bay-Santa Clara Valley depression, a northwest-southeast trending basin bounded on the east and west by mountains. The basin is characterized by thick (generally several hundred feet thickness) Quaternary alluvium, chiefly fan and terrace deposits, which are relatively flat-lying. The Bay itself including the Roberts Landing area immediately west of the site is underlain by Bay Mud, intertidal deposits which are generally silty and peaty and thicken bay-ward.

The San Leandro Valley is floored by recent alluvium of unconsolidated stream and basin deposits ranging from clay to boulder-sized material. Older dissected alluvial deposits are present near the foothills to the east and intertidal deposits of peaty clay are to the west. To the east of the site is the northwest-trending Hayward Fault Zone, the San Leandro Hills and an assemblage of ultramafic metamorphic and volcanic rocks (California Division of Mines & Geology, Map 5A, San Francisco-San Jose Quadrangle, 1990).

The soil beneath the site consists of predominantly alluvial clay and clayey silt with some lenses of sand and gravel.

4.2 Hydrogeologic Setting

The site is located in the East Bay Groundwater Basin of the San Francisco Bay hydrologic study area (California Dept. of water resources, Bulletin 118).

A drawdown aquifer pump test performed on August 25, 1994 indicated an unconfined aquifer beneath the site with an estimated transmissivity of 710 gpd/ft and an estimated storativity of the aquifer of 0.012. Substantial hydraulic influence experienced in the wells at a distance of 35 to 75 feet from the wells suggests a radius of influence of 100 feet but an extraction rate of less than 5 gallons per minute. Data from both on- and off-site revealed predominantly low permeability soils with aquifer conditions limited to the gravel/sand lenses.

Depth to groundwater on April 24, 1997 ranged from 4.46 to 6.52 feet below the top of the well casings. Groundwater elevations measured to 0.01 feet are contained in Table 1.

Figure 2 is a site map indicating a generalized groundwater flow path to the northeast from contoured elevations. Previous groundwater flow directions ranged from northeast to northwest.

5.0 GROUNDWATER MONITORING

5.1 Groundwater Monitoring Procedures

On October 31, 1997, under the direct onsite supervision of the ACDEH and the City of San Leandro Fire Department, all groundwater monitoring wells were measured for potentiometric groundwater elevation and checked for the presence of free product (Table 1). The distance from the top of the casing on the north side to the surface of the groundwater was measured to an accuracy of 0.01 feet. One set of groundwater samples was collected from the wells prior to purging. The wells were then purged with a truck mounted vacuum extraction unit utilizing dedicated stingers. Any purging or sampling equipment with the potential for cross contamination was triple rinsed between wells with TSP and a

standard three stage decontamination method. Purging continued until temperature, electrical conductivity and pH stabilized or three well volumes had been purged, or the well went dry. All measurements and sampling data, were recorded on Water Sample Logs (Appendix A). The purged water was placed in 55 gallon DOT drums which were sealed, labeled as pending laboratory analysis and stored on-site pending removal to an approved facility.

When the water levels had recharged to 80 percent, or the ACDEH representative onsite requested that samples be taken, the wells were once again sampled with disposable polyethylene bailers. All samples were sealed, labeled and placed on blue ice for transportation to the state certified laboratory listed in Appendix B. All samples were analyzed for TPH as gasoline, MTBE and for BTEX using approved methods. The laboratory report and chain-of-custody form are contained in Appendix B.

5.2 FHC/MTBE Results

Free phase hydrocarbons were observed by Agency and sampling personnel in the pre-purge sample collected from Well B (GX135 B) and a strong gasoline odor was noted. FHCs or MTBE were present in all wells. The analytical report confirmed that PCE was present in Well A (GX-135 A). Historic water quality analytical results are summarized in Table 2.

Groundwater Confirmation
Sampling Report
December 1997

15201 Washington Avenue
San Leandro, CA

6.0 CONCLUSIONS

The high concentrations of gasoline / BTEX and MTBE in the samples collected under Agency direction confirm that the recent release from the underground tanks has impacted the groundwater in the monitoring wells onsite.

Groundwater Confirmation
Sampling Report
December 1997

15201 Washington Avenue
San Leandro, CA

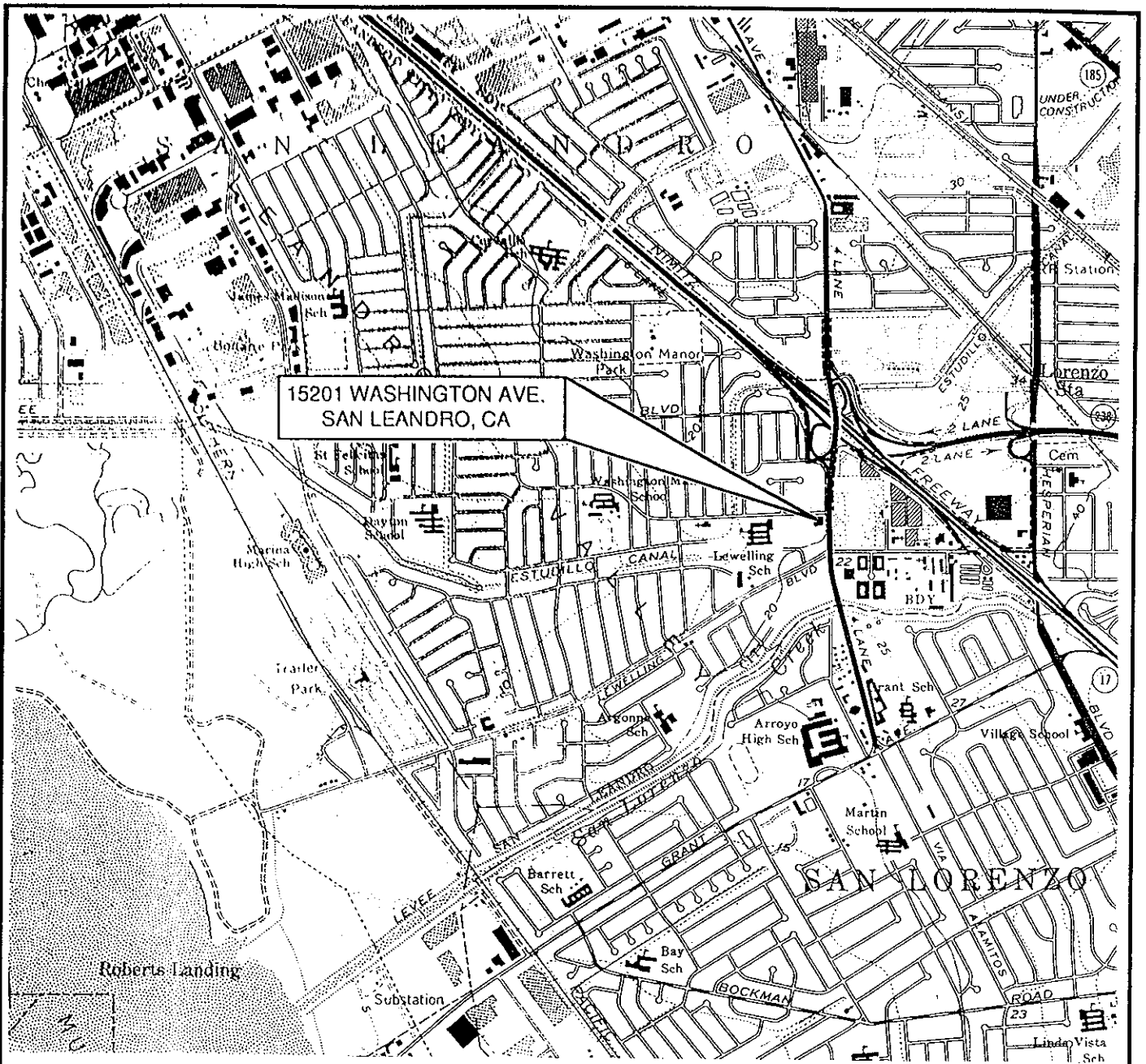
7.0 LIMITATIONS

The discussion, conclusion and any recommendations presented in this report are based on the professional performance of the personnel who conducted the investigations, the observations of the field personnel, the results of laboratory analyses performed by a state certified laboratory, any referenced documents and our understanding of the regulations of the State of California and any other applicable local regulations.

Variations in the soil and groundwater conditions may exist beyond the points explored in this investigation.

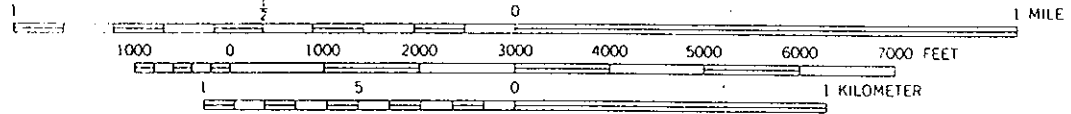
The services performed by Remediation Service, Int'l have been conducted in a manner consistent with the level of care and skill ordinarily exercised by members of our profession currently practicing under similar conditions in the State of California.

Please note that contamination of soil and/or groundwater must be reported to the appropriate agencies in a timely manner. No other warranty, expressed or implied, is made.



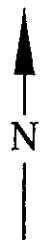
15201 WASHINGTON AVE.
SAN LEANDRO, CA

SCALE 1:24 000



CONTOUR INTERVAL 20 FEET
 DOTTED LINES REPRESENT 5-FOOT CONTOURS
 NATIONAL GEODETIC VERTICAL DATUM OF 1929

FROM U.S.G.S. 7.5' TOPOGRAPHIC
 QUADRANGLE "SAN LEANDRO,
 CALIFORNIA," 1959, PHOTOREVISED
 1980



15201 WASHINGTON AVE.
 SAN LEANDRO, CA
 FIGURE 1: LOCATION MAP
 RSI - REMEDIATION SERVICE, INT'L

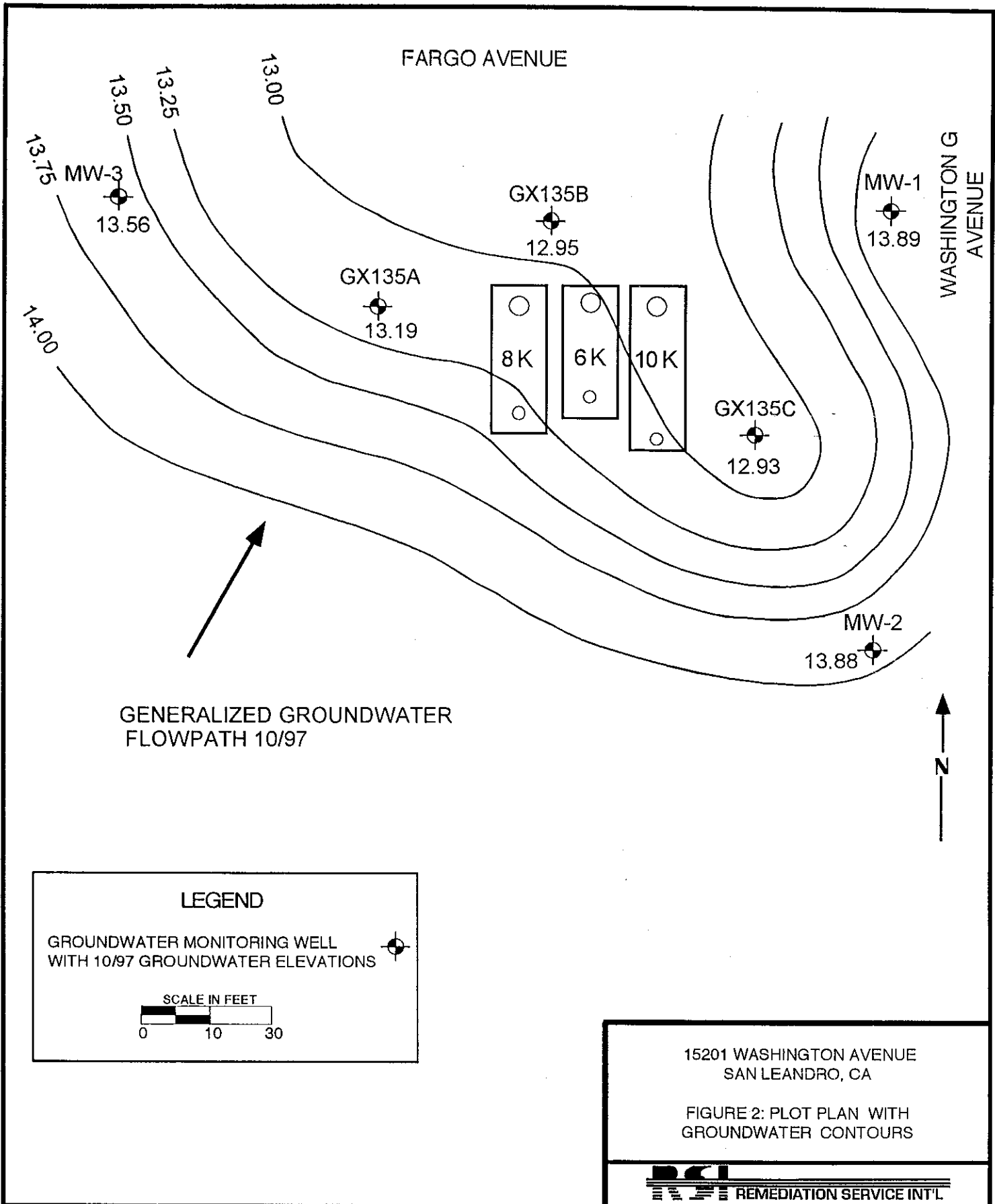


Table 1**Summary of Groundwater Elevations****15201 Washington Bl. San Leandro CA**

Well #	Date Measured	Depth to Water	Casing Elevation*	Water Table Elevation*	Change in Elevation
GX135A	Feb-91	6.50	20.82	14.32	
	Feb-93	4.67		16.15	1.83
	May-93	6.04		14.78	1.37
	Sep-93	6.60		14.22	0.56
	Nov-93	6.59		14.23	0.01
	Feb-94	6.12		14.70	0.47
	May-94	6.11	19.72	13.61	
	Aug-94	6.60		13.12	0.49
	Nov-94	5.70		14.02	0.90
	Feb-95	5.54		14.18	0.16
	Jun-95	5.91		13.81	0.37
	Nov-95	6.26		13.46	0.35
	Mar-96	6.26		13.46	0.00
	Jul-96	6.03		13.69	0.23
	Feb-97	4.96		14.76	1.07
	Apr-97	5.97		13.75	1.01
	Oct-97	6.53		13.19	0.56
GX135B	Feb-91	5.87	20.13	14.26	
	Feb-93	3.97		16.16	1.90
	May-93	5.58		14.55	1.61
	Sep-93	6.25		13.88	0.67
	Nov-93	6.23		13.90	0.02
	Feb-94	5.55		14.58	0.68
	May-94	5.61	19.04	13.43	
	Aug-94	6.30		12.74	0.69
	Nov-94	5.32		13.72	0.98
	Feb-95	4.92		14.12	0.40
	Jun-95	5.45		13.59	0.53
	Nov-95	5.82		13.22	0.37
	Mar-96	6.26		13.46	0.24
	Jul-96	5.50		13.54	0.08
	Feb-97	4.32		14.72	1.18
	Apr-97	5.43		13.61	1.11
	Oct-97	6.09		12.95	0.66

CONTINUED

Table 1 (cont)

Summary of Groundwater Elevations

15201 Washington Bl. San Leandro CA

Well #	Date Measured	Depth to Water	Casing Elevation*	Water Table Elevation*	Change in Elevation
GX135C	Feb-91	5.62	19.97	14.35	
	Feb-93	3.45		16.52	2.17
	May-93	5.28		14.69	1.83
	Sep-93	6.04		13.93	0.76
	Nov-93	6.09		13.88	0.05
	Feb-94	5.28		14.69	0.81
	May-94	5.23	18.81	13.58	1.11
	Aug-94	6.02		12.79	0.79
	Nov-94	5.21		13.60	0.81
	Feb-95	4.56		14.25	0.65
	Jun-95	5.47		13.34	0.91
	Nov-95	5.59		13.22	0.12
	Mar-96	6.26		13.46	0.24
	Jul-96	5.29		13.52	0.06
	Feb-97	4.02		14.79	1.27
	Apr-97	5.13		13.68	1.11
	Oct-97	5.88		12.93	0.75
MW-1	Nov-95	6.97			
	Mar-96	6.23	20.65	12.75	
	Jul-96	6.30		14.35	1.60
	Feb-97	6.39		14.26	0.09
	Apr-97	6.40		14.25	0.01
	Oct-97	6.76		13.89	0.36
MW-2	Nov-95	11.42			
	Mar-96	5.60	21.00	15.40	
	Jul-96	6.51		14.49	0.91
	Feb-97	5.23		15.77	1.28
	Apr-97	6.52		14.48	1.29
	Oct-97	7.12		13.88	0.60
MW-3	Nov-95	5.70		5.70	
	Mar-96	4.55	18.74	14.19	
	Jul-96	4.72		14.02	0.17
	Feb-97	3.26		15.48	1.46
	Apr-97	4.40		14.34	1.14
	Oct-97	5.18		13.56	0.78

* Measurements are in feet above Mean Sea Level.

Table 2 (Cont.)

Summary of Groundwater Analytical Results

15201 Washington Boulevard San Leandro CA

WELL #	DATE SAMPLED	TPHg	BENZENE	TOLUENE	ETHYL-BENZENE	TOTAL XYLENES	MTBE	
CONCENTRATIONS ARE IN ug/L								
GX 135C	Feb-91	1700	1000	35	34	35		
	Feb-93	2100	5.5	8.3	10	49		
	May-93	890	79	7	23	27		
	Sep-93	900	100	1.1	7.1	5.6		
	Nov-93	1200	6.6	ND	ND	15		
	Feb-94	1500	300	26	34	58		
	May-94	2500	180	22	17	34		
	Aug-94	1200	160	110	27	120		
	Nov-94	3100	210	85	50	140		
	Feb-95	1200	186	16	19	32		
	Jun-95	750	30	1.1	3	6	530	
	Nov-95	ND	24	ND	2.7	ND	972	
	Mar-96	2000	310	45	29	95	730	
	Aug-96	530	26	0.5	1.9	1.9	415	
	Feb-97	960	77	5.7	21	48	480	
	Apr-97	760	97	1.9	17	10	590	
	Pre Purge	Oct-97	750	84	46	4.3	19	530
	After Purge	Oct-97	860	67	6.2	20	45	650
MW-1	Nov-95	ND	43	ND	ND	ND	1500	
	Mar-96	1900	40	72	1.9	19	900	
	Aug-96	880	6.6	1.6	8.3	4.2	910	
	Feb-97	1000	18	1.5	21	3.9	850	
	Apr-97	820	ND	ND	ND	ND	1500	
	Oct-97	320	0.8	ND	ND	ND	1000	
MW-2	Nov-95	ND	ND	ND	ND	ND	ND	
	Mar-96	ND	ND	ND	ND	ND	ND	
	Aug-96	ND	ND	ND	ND	ND	ND	
	Feb-97	ND	ND	ND	ND	ND	1.1	
	Apr-97	ND	ND	ND	ND	ND	ND	
	Oct-97	ND	ND	1.0	ND	0.7	22	
MW-3	Nov-95	ND	ND	ND	ND	ND	3	
	Mar-96	41	ND	ND	ND	ND	34	
	Aug-96	ND	ND	ND	ND	ND	12	
	Feb-97	ND	ND	ND	ND	ND	27	
	Apr-97	ND	ND	ND	ND	ND	14	
	Oct-97	ND	ND	ND	ND	ND	7	

TPHg - Total Petroleum Hydrocarbons (Gasoline)

MTBE - Methyl Tertiary Butyl Ether

ND = Not Detected at Reporting Limit

Table 2

Summary of Groundwater Analytical Results

15201 Washington Boulevard San Leandro CA

WELL #	DATE SAMPLED	TPHg	BENZENE	TOLUENE	ETHYL-BENZENE	TOTAL XYLENES	MTBE
CONCENTRATIONS ARE IN ug/L							
GX 135A	Feb-91	ND	ND	ND	ND	0.5	
	Feb-93	ND	ND	ND	ND	ND	
	May-93	ND	ND	ND	ND	ND	
	Sep-93	ND	0.5	ND	ND	ND	
	Nov-93	ND	ND	ND	ND	ND	
	Feb-94	ND	ND	ND	ND	ND	
	May-94	220	4.4	5.8	2.1	12	
	Aug-94	ND	ND	ND	ND	ND	
	Nov-94	55	3.4	0.8	1.4	1.7	
	Feb-95	ND	0.9	0.7	0.8	1.1	
	Jun-95	ND	ND	ND	ND	ND	12
	Nov-95	ND	ND	ND	ND	ND	27
	Mar-96	1700	ND	1.8	ND	5.4	39
	Aug-96	1300	ND	ND	ND	ND	29
	Feb-97	ND	ND	ND	ND	ND	12
	Apr-97	ND	ND	ND	ND	ND	31
	Pre Purge	Oct-97	*890	0.9	0.6	ND	1.1
After Purge	Oct-97	ND	1.3	ND	ND	1.4	14
GX 135B	Feb-91	840	270	4	11	29	
	Feb-93	300	ND	1.5	2.5	6.3	
	May-93	170	34	0.7	3.2	4.4	
	Sep-93	500	31.3	0.6	1.5	0.4	
	Nov-93	740	42	ND	3.3	3.5	
	Feb-94	530	56	16	5.9	13	
	May-94	2500	100	13	5.5	15	
	Aug-94	6200	370	200	67	310	
	Nov-94	1500	150	29	14	49	
	Feb-95	1700	67	8	5	16	
	Jun-95	ND	580	ND	ND	ND	220000
	Nov-95	ND	58	ND	ND	ND	210000
	Mar-96	4800	180	18	26	42	8100
	Aug-96	860	14.9	ND	ND	ND	6500
	Feb-97	ND	12	0.7	1.1	1.8	2000
	Apr-97	820	46	2.4	5.3	9.4	1500
	Pre Purge	Oct-97	27000	950	790	69	1300
After Purge	Oct-97	6200	390	990	98	770	24000

TPHg - Total Petroleum Hydrocarbons (Gasoline)

MTBE - Methyl Tertiary Butyl Ether

ND = Not Detected at Reporting Limit

** See Analytical Results (Note 3)