performed to evaluate the extent of TCE and it's by-products in the perched groundwater.

Analytical results for VOCs are presented in Table 5-1. Figure 5-2 shows TCE concentrations detected in wells across the Site. Results indicate that the maximum TCE concentration was detected in GTE well 39, the northwestern-most monitoring well. This well is located in an area of asphalt paving used for parking. It is upgradient (north or north-northwest) of all GTE buildings.

Eckland Consultants. 1996. Letter from E. Cannata to M. Shuminsky re: File Review and Limited Phase II Subsurface Investigation. GTE Warehouse. 3303 Exposition Boulevard.

Based on the results of IT's 1994 EA, Eckland Consultants collected soil and groundwater samples from two borings in the area of the suspected solvent tanks. Samples were also collected from two upgradient borings. VOCs were not detected in soil samples. Several contaminants were detected in the four groundwater samples, consisting of acetone, TCE, and chloroform. Analytical results are presented in Table 5-2. The upgradient groundwater sample from boring P4 had the highest concentration of TCE of the four samples collected, indicating that TCE contamination in shallow groundwater may be originating from an upgradient off-Site source (URS, 1996).

Bechtel Environmental, Inc. 1996. Letter to EPA re: Santa Monica Site Discovery Effort. Prepared for EPA.

EPA tasked Bechtel to perform a Site Discovery effort to identify potential contributors to groundwater contamination in Santa Monica's industrial area. During the investigation, Bechtel identified a number of potential sites that may have contributed collectively to the VOC groundwater contamination in the area. Figure 3-5, presented in Section 3 to identify the location of City of Santa Monica water supply wells, was prepared by Bechtel to identify potential contributors to groundwater contamination. It is unclear whether these areas underwent additional investigation. EPA performed further investigation of the McDonnell Douglas Aircraft Facility in a subsequent study, as discussed below, and determined that it was not a source of TCE contamination to groundwater.

URS Consultants. 1996. CERCLA Site Inspection. Site: McDonnell Douglas Aircraft Facility. 2902 - 3303 Exposition Boulevard. Prepared for EPA.

Based on the results of a PA, EPA determined that additional investigation was warranted at the Site. EPA identified four potential TCE sources on-site based on historical facility maps. These areas consisted of 1) the two suspected waste solvent USTs in the southeastern portion of the Site; 2) a former degreasing operation located in the north-central portion of the Site (sample location in the general vicinity of GTE well 39); 3) a former maintenance shop located at the southern border of the Site between Stewart Street and Yorkshire Avenue; and 4) a drum storage area along the northern rail spur, historically used to store flammable liquids and solvents. In addition, samples were collected of background soil and upgradient groundwater.

A total of twelve soil borings were drilled in the suspect areas to target depths of 25 feet. Laboratory analysis was performed on 37 soil samples. No TCE or other chlorinated VOCs were detected in any of the Site or background soil samples. These results indicated that a TCE source was not present in areas previously suspected.

Groundwater samples were collected from five GTE monitoring wells and analyzed for VOCs. Comparison of results to 1995 data indicated that the fewer analytes were detected in 1996. In general, TCE concentrations were lower in 1996; however, GTE well 37 had an increased level of TCE. Analytical results are presented in Table 5-3.

Based on the results of their investigation, EPA determined that there were no sources of uncontrolled hazardous substances at the Site. EPA indicated that the shallow groundwater TCE contamination appeared to be a regional problem with no identifiable source. In addition, EPA concluded that the source of TCE contamination in the City of Santa Monica water supply wells and the GTE monitoring wells is attributed to an upgradient off-Site source. This is evidenced by the trend of high TCE concentrations at the northern edge of the Site, decreasing to lower concentrations to the south. EPA recommended additional investigation work in the upgradient off-Site area of Santa Monica to determine the source of contamination and identify potentially responsible parties (PRPs). The report concluded that no further remedial assessment was required.

Kennedy/Jenks Consultants. 2000a. Groundwater Monitoring Report. Third Quarter 2000. Former Douglas Aircraft Plant A7. 2801 Exposition Boulevard. September.

The Boeing Company tasked Kennedy/Jenks to perform quarterly groundwater monitoring at the Douglas site in response to a request by the RWQCB. Groundwater was monitoring over the course of three quarters; results from all monitoring are summarized in the subject report.

Groundwater samples were collected from five GTE monitoring wells still remaining at the Site. The majority of GTE monitoring wells were previously abandoned (i.e., destroyed) at the request of the RWQCB following closure of the UST case. The wells remaining on-Site are used to monitor natural attenuation of gasoline components.

Monitoring well 39, located on the northern edge of the Site, historically had the highest concentrations of TCE. This well was not included in the quarterly sampling. The monitoring well locations were intended for purposes other than evaluation of TCE on-Site. Therefore, results of the quarterly monitoring are useful only in terms of describing the compounds present at the Site at specific locations and concentration changes at those locations over the course of seven months. Results are not pertinent in terms of evaluating whether TCE in groundwater is from an on- or off-Site source.

Results of the quarterly monitoring are presented in Table 5-4. Previously conducted investigations have shown that TCE concentrations are variable over time. For

example, the study performed by Pacific Soils Engineering in 1981 showed high variation in TCE groundwater concentrations over the course of two months. Results of the quarterly monitoring corroborate observations of previous studies regarding TCE concentration changes over time.

Kennedy/Jenks Consultants. 2000b. Soil Gas Survey Report. Former Douglas Aircraft Plant A7. Exposition Boulevard. October.
The Boeing Company tasked Kennedy/Jenks to perform a soil gas survey at the Douglas site in response to a request by the RWQCB. Soil gas sampling locations were selected in consultation with the RWQCB based on results of a facility audit that indicated areas of potential TCE release.

Seventy soil gas samples were collected at the Douglas site. Of these, thirty-eight were located on the Site. Four compounds were detected in soil gas samples, consisting of TCE (detected in four samples), ethylbenzene (detected in five samples), m,p-xylenes (detected in 13 samples), and o-xylene (detected in seven samples). In general, TCE was detected exclusive of the other compounds. TCE concentrations ranged from 1 to 7 µg/L. The results of the soil gas survey strongly suggest the absence of a source of VOC contamination observed in groundwater at the Site. Soil gas sampling results are shown on Figure 5-3, excerpted from Kennedy/Jenks (2000b).

5.2 Extent of TCE Contamination

Recent (i.e., post-1981) groundwater data are not available for areas immediately north of the Site. The horizontal extent of TCE in groundwater beneath the Site and in some areas south of the Site has been well characterized. Groundwater samples collected in 1995 and 1996 from GTE monitoring wells showed the highest TCE concentrations in the northwestern most monitoring well (well 39) (IT, 1996 and URS, 1996). Verizon uses this area of the Site for parking; it is covered with asphalt. TCE concentrations tend to decrease across the Site to the south. Verizon's operation buildings (i.e., administrative and warehouse buildings) are located to the south of the Site. Figure 5-2 summarizes results of the most comprehensive groundwater sampling for TCE at the Site.

Monitoring wells at the Site are screened within a shallow perched groundwater zone. The perched groundwater generally begins at a depth of about 31 feet and ends at about 40 feet bgs. Vertical characterization is unnecessary given the thin nature of the perched groundwater zone.

As discussed above, Site and regional geological and hydrogeological characteristics indicate that the perched groundwater is hydrologically separated from the beneficially used deeper aquifer. TCE has been detected in City of Santa Monica water supply wells; these wells are screened in the deeper aquifer and are located upgradient and cross-gradient from the Site. TCE concentrations observed on-Site in the shallow perched groundwater are not sufficiently high to produce the contamination noted in water supply wells given the hydrological separation between

perched groundwater and deeper aquifer, the upgradient and cross-gradient locations of the water supply wells, the distance of the water supply wells from the Site, and the size of the deeper aquifer versus the irregular, thin nature of the shallow perched groundwater.

Results of soil gas sampling indicated minimal TCE concentrations in soil gas across the Site. TCE was detected in four out of 70 soil gas samples at low concentrations (1 to 7 µg/L). Some soil gas sampling locations coincided with areas of high TCE groundwater concentrations. Analytical results indicate that no on-Site source was located in areas of high TCE groundwater concentrations. Likewise, VOCs were not detected in soil samples collected from areas of suspected solvent tanks (Kennedy/Jenks, 2000; IT, 1995a; and Eckland Consultants, 1996).

5.3 Potential TCE Source Areas

GTE has proven that they did not historically use TCE in Site operations (RWQCB, 2001 and URS, 1996). IT (1995a), Eckland and Consultants (1996), EPA (URS, 1996), and Boeing (Kennedy/Jenks, 2000) investigated potential TCE source areas associated with historical activities at the Douglas site. TCE was not detected in soil investigations performed by IT, Eckland and Consultants, or EPA. Boeing conducted a thorough soil gas investigation of potential TCE source areas; results yielded very minimal detections of TCE. Results of these investigations indicate that there are no apparent TCE sources on-Site.

Several of the soil and soil gas samples collected in previous investigations were located in the areas where TCE groundwater detections were highest. These results indicated no potential source of TCE in areas of highest TCE groundwater concentrations. The area above the highest TCE groundwater concentration (Well 39) is and has been historically used by Verizon (GTE) for parking. EPA concluded in their CERCLA Site inspection that the source of TCE in GTE monitoring wells was located off-Site to the north (upgradient). This conclusion is corroborated by the soil gas sampling subsequently performed by Boeing.

5.4 Potential Area Receptors

The shallow perched groundwater zone has no beneficial uses. It is hydrologically separated from the deep beneficially used aquifer. Therefore, no receptors are expected to be exposed to TCE in the perched groundwater.

TCE was detected on the Site in only a few soil gas samples and at very minimal concentrations. Concentrations are not anticipated to pose any risk to potential receptors. Based on the physical and chemical information presented in previous investigations, no receptors are exposed to TCE in perched groundwater at the Site.

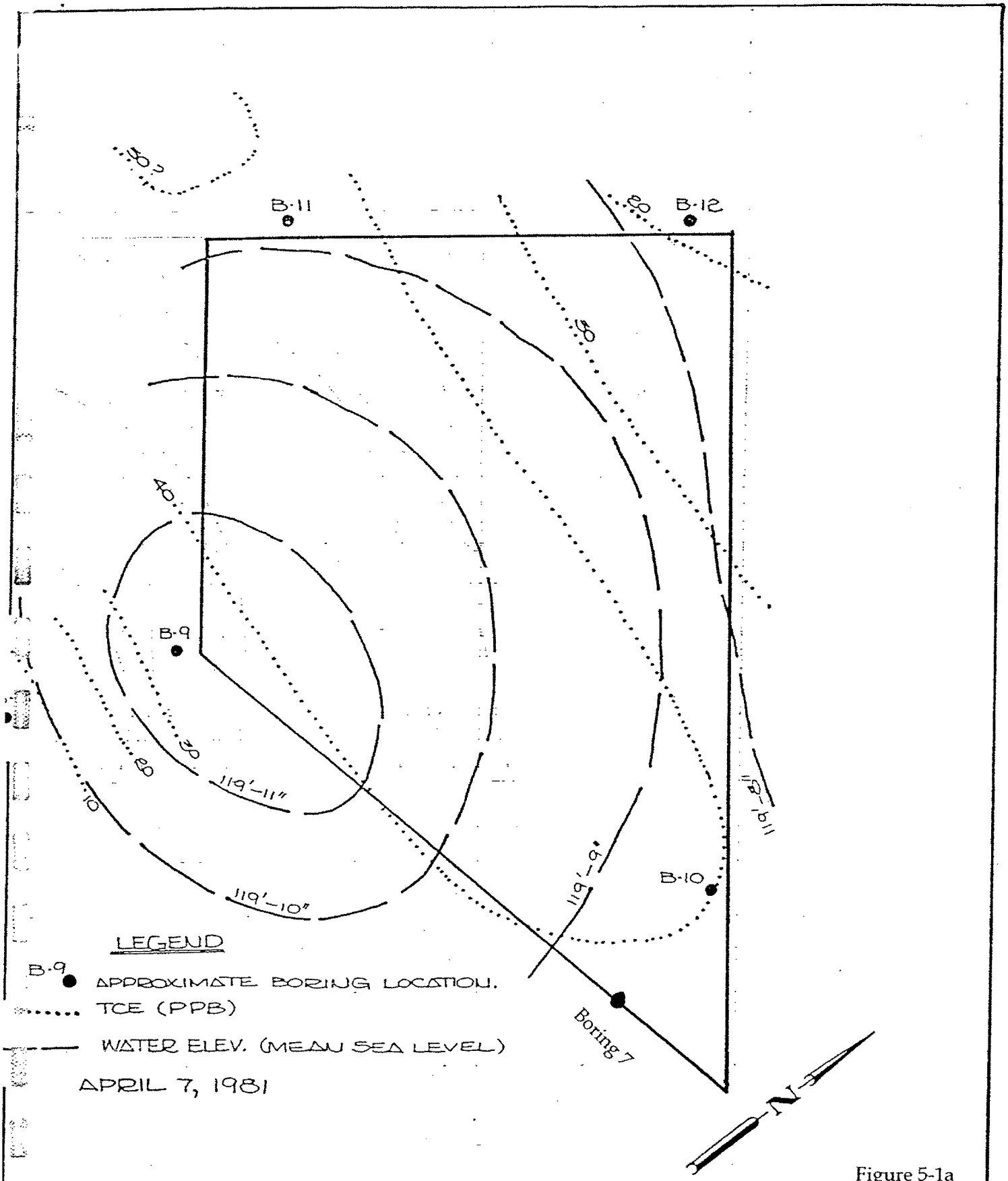
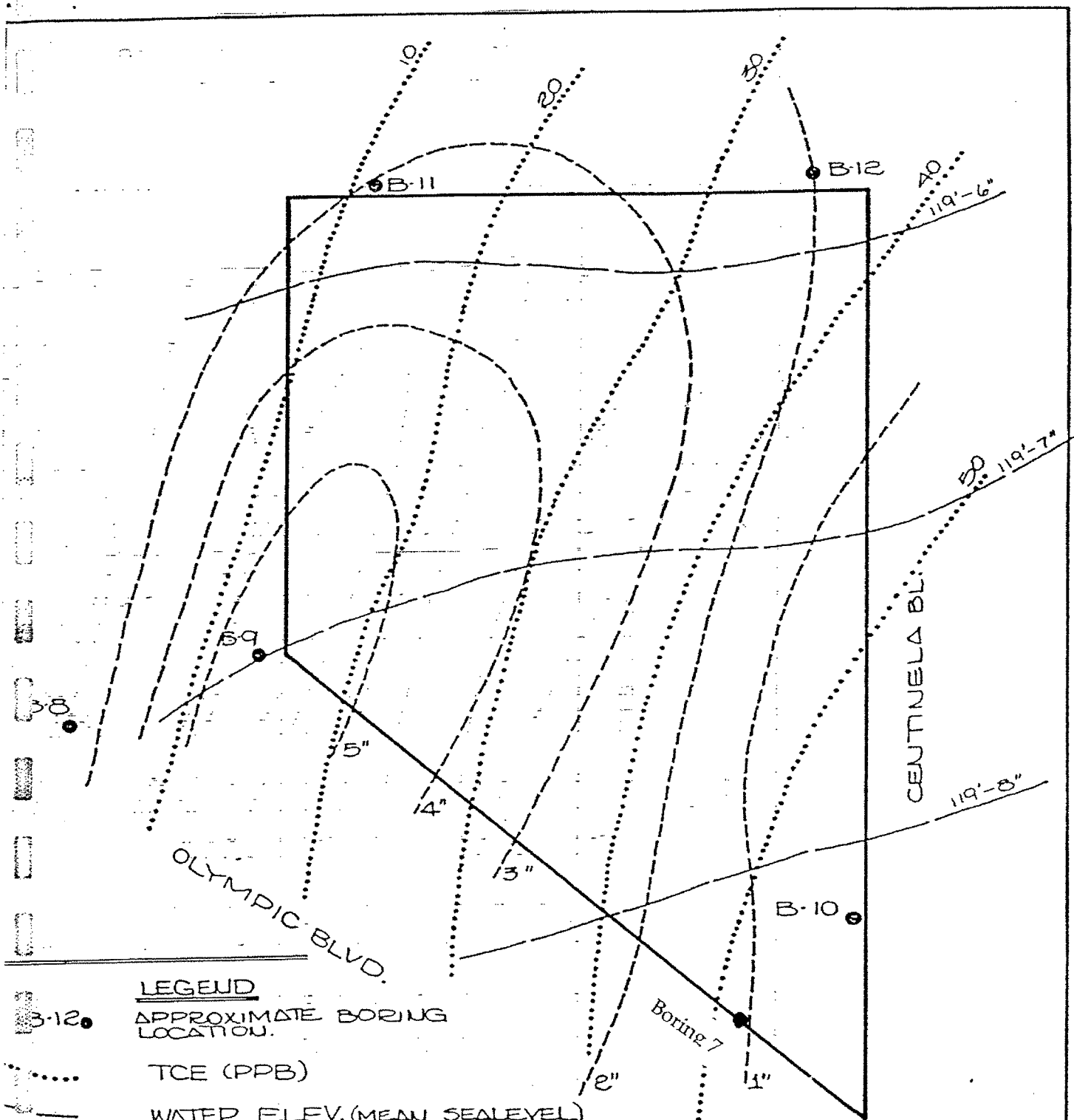


Figure 5-1a

PACIFIC SOILS ENGINEERING, INC.
1402 W. 240TH STREET, HARBOR CITY, CALIFORNIA 90710. TEL.: (213) 325-7272 OR 775-6771

W.O. 200984A DATE 7/15/81



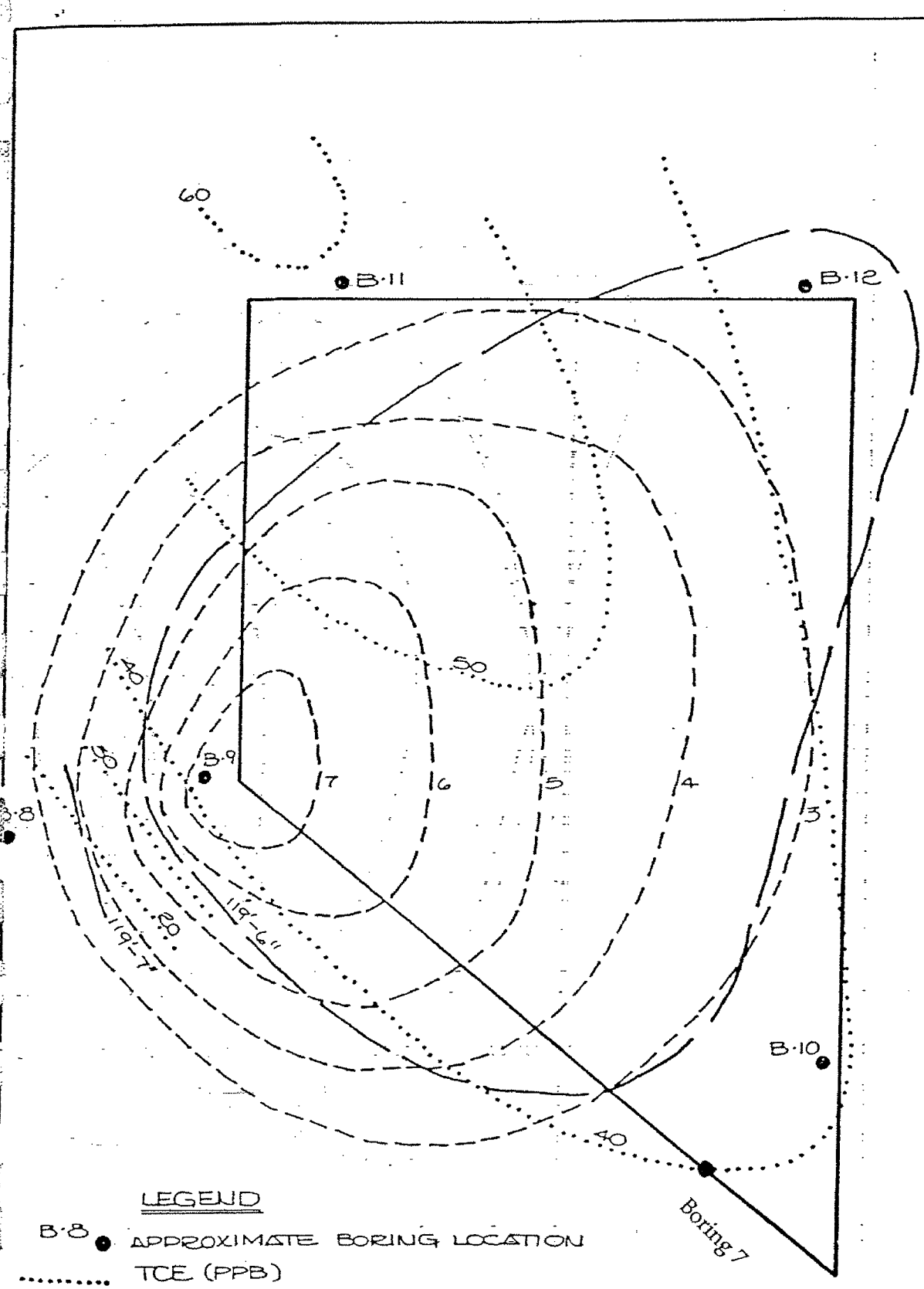
APRIL 23, 1981

Figure 5-1b

PACIFIC SOILS ENGINEERING, INC.

1402 W. 240TH STREET, HARBOR CITY, CALIFORNIA 90710, TEL.: (213) 325-7272 OR 775-6771

W.O. 200984A DATE 7/15/81



LEGEND

B-8 ● APPROXIMATE BORING LOCATION

..... TCE (PPB)

— — — WATER ELEV. (MEAN SEA LEVEL)

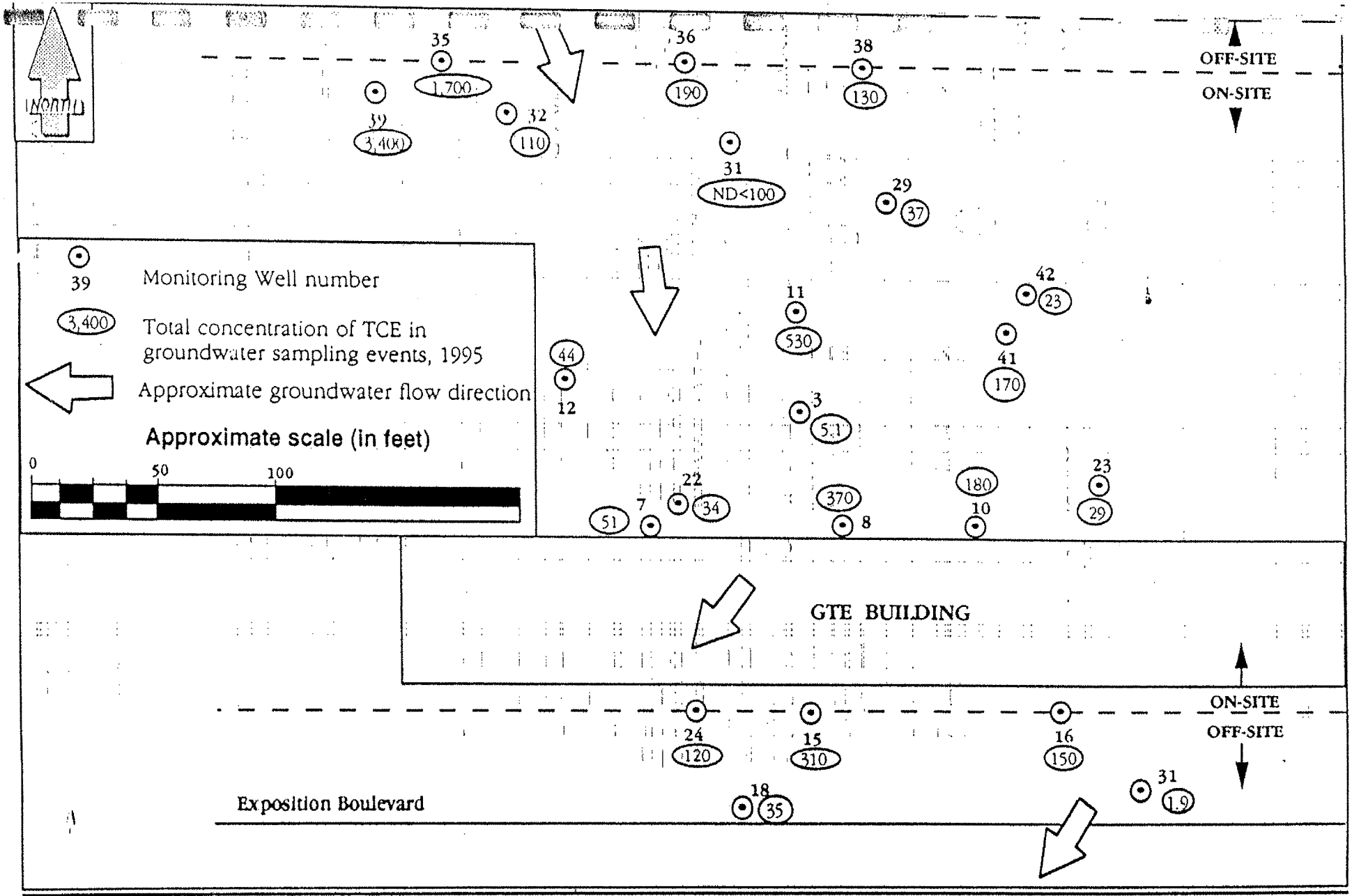
----- WATER DRAWDOWN (INCHES)

MAY 15, 1981

Figure 5-1c

PACIFIC SOILS ENGINEERING, INC.
1402 W. 240TH STREET, HARBOR CITY, CALIFORNIA 90710, TEL.: (213) 325-7272 OR 775-6771

W.O. 200984-A DATE 7/15/81



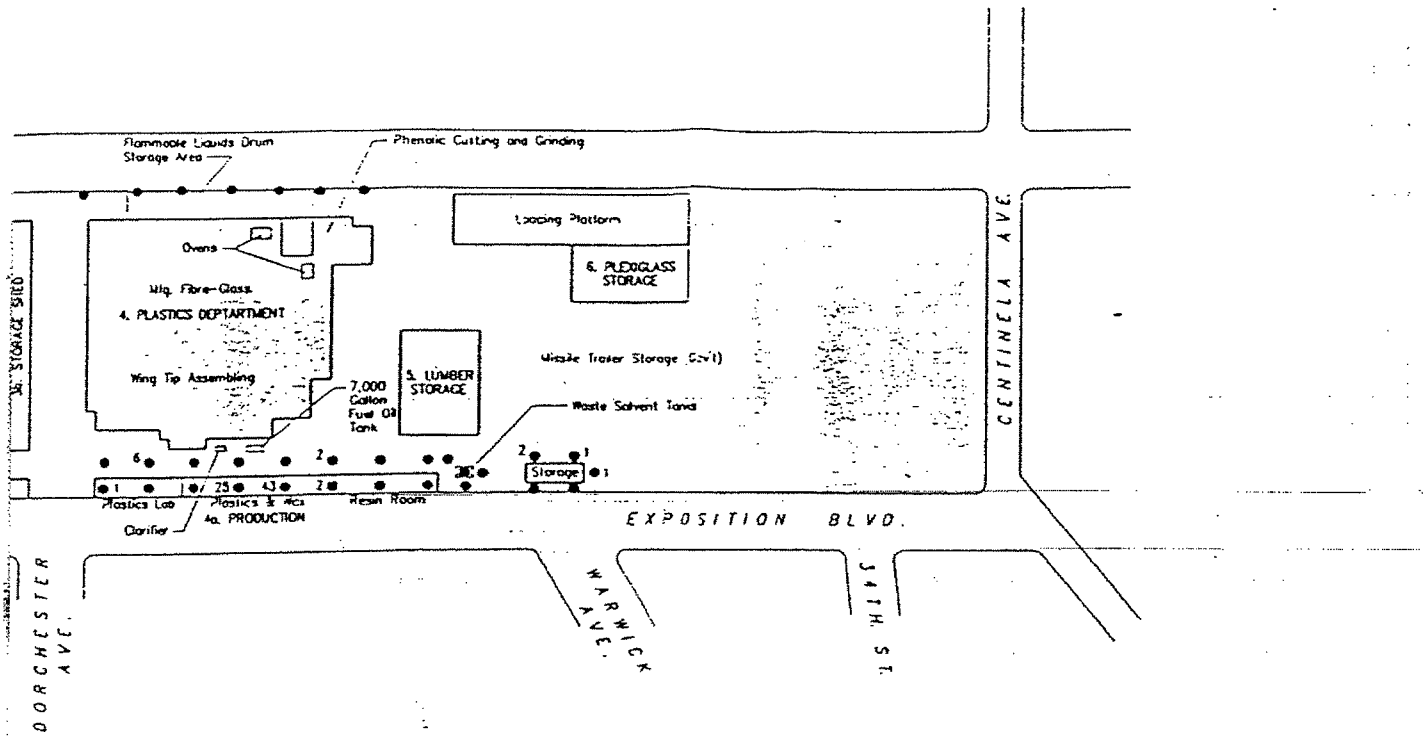
URS Consultants
100 California Street
San Francisco, CA 94111
January 22, 1996

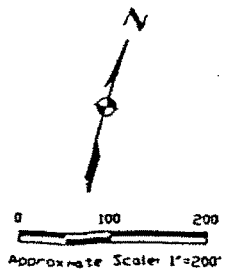
Concentrations of TCE in Shallow Groundwater (1995 Sampling Event)

Former Douglas Aircraft Facility (GTE Plant Yard)

Exposition Blvd. Site

Figure 5-2





END

RENT STRUCTURES

MER DOUGLAS PLANT A7 STRUCTURES

IVESTIGATION

SAMPLING LOCATION WITH TCE CONCENTRATION (UG/L)

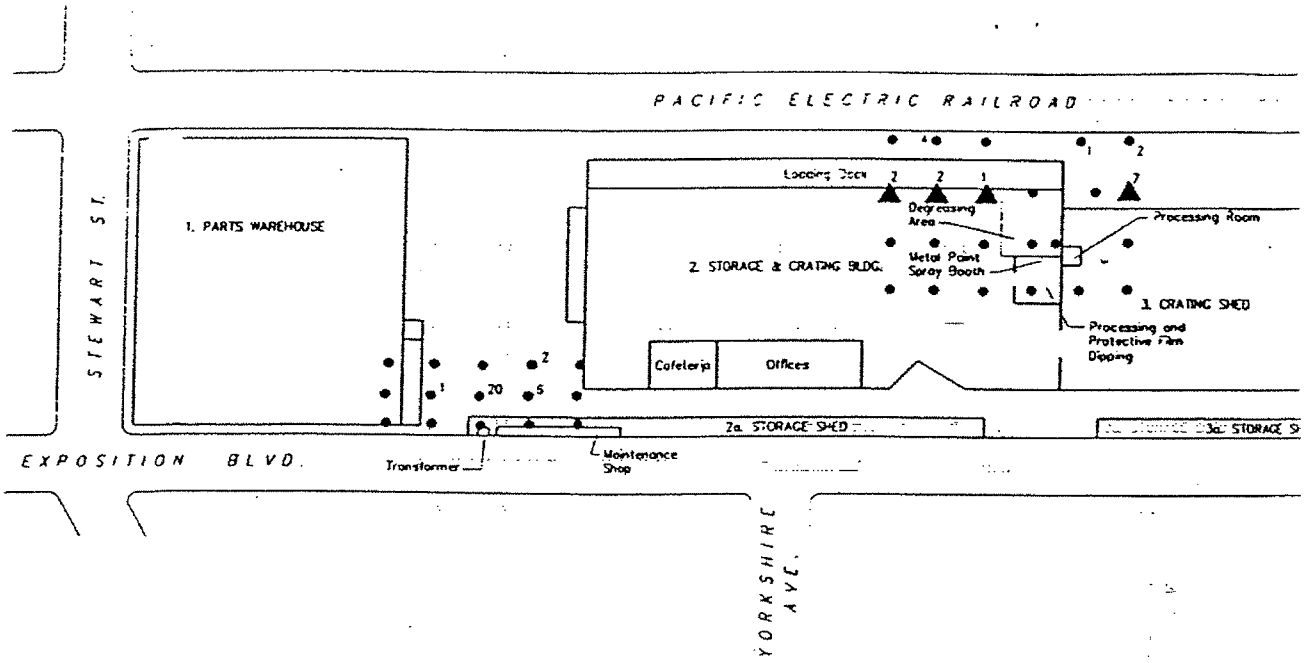
SAMPLING LOCATION WITH TOTAL BTEX CONCENTRATION XYLENES AND ETHYLBENZENE) (ug/L)

Kennedy/Jenks Consultants

Boeing Company
Santa Monica, California

Summary of Soil Gas Survey Results

Figure 5-3



NOTES:

1. PARTS WAREHOUSE — BUILDING NUMBERS WERE ARBITRARILY ASSIGNED IN THIS STUDY FOR EASE OF DISCUSSION.

== — UNDERGROUND STORAGE TANK OR CLARIFIER.

REFERENCES:
1. DOUGLAS AIRCRAFT. PLANT A7 FACILITY MAP. REVISED 1960. SCALE 1"=50'.
2. SANBORN FIRE INSURANCE MAP FOR THE CITY OF SANTA MONICA, PUBLISHED 1961.
3. IT CORPORATION, 1985, UNDERGROUND STORAGE TANK AND CLARIFIER REMOVAL CLOSURE REPORT, GTE SANTA MONICA PLANT YARD, 3303 EXPOSITION BOULEVARD, SANTA MONICA CALIFORNIA, 12 MAY 1995.
4. URS, 1996, CERCLA SITE INSPECTION, 2902-3303 EXPOSITION BOULEVARD, 31 OCTOBER 1996.

Table 5-1

Analytical Results for VOCs in Groundwater, IT 1995

Compound	Units	Method Detection Limit	WELL NUMBER															
			1	3	4	6	7	8	10	11	12	14	15	16	17	18	19	21
Bromomethane	ug/l	1.0	ND	ND	ND<20	ND	ND<20	ND<20	ND<20	ND<500	ND<25	ND	ND<20	ND<5.0	ND	ND<10	ND	ND
Vinyl Chloride	ug/l	1.0	ND	9.0	370	ND	170	78	86	ND<500	ND<25	ND	58	ND<5.0	ND	ND<10	ND	ND
Chloroethane	ug/l	1.0	ND	ND	ND<20	ND	ND<20	ND<20	ND<20	ND<500	ND<25	ND	ND<20	ND<5.0	ND	ND<10	ND	ND
Methylene Chloride	ug/l	1.0	2.3 B	2.0 B	ND<20	ND	ND<20	ND<20	ND<20	3,100	ND<25	ND	ND<20	ND<5.0	ND	ND<10	ND	ND
Trichlorofluoromethane	ug/l	1.0	ND	ND	ND<20	ND	ND<20	ND<20	ND<20	ND<500	ND<25	ND	ND<20	ND<5.0	ND	ND<10	ND	ND
1,1-Dichloroethene	ug/l	1.0	ND	ND	ND<20	ND	ND<20	ND<20	ND<20	ND<500	ND<25	ND	ND<20	ND<5.0	ND	ND<10	ND	ND
1,1-Dichloroethane	ug/l	1.0	ND	ND	ND<5	ND	ND<20	ND<20	ND<20	ND<500	ND<25	ND	ND<20	ND<5.0	ND	ND<10	ND	ND
trans-1,2-Dichloroethene	ug/l	1.0	ND	ND	8.6	ND	ND<20	ND<20	ND<20	ND<500	ND<25	ND	ND<20	ND<5.0	ND	ND<10	ND	ND
Chloroform	ug/l	1.0	ND	ND	ND<5	ND	ND<20	ND<20	ND<20	ND<500	ND<25	ND	ND<20	ND<5.0	ND	ND<10	ND	ND
1,2-Dichloroethane	ug/l	1.0	ND	ND	5.1	ND	ND<20	ND<20	ND<20	ND<500	ND<25	ND	ND<20	ND<5.0	ND	ND<10	ND	ND
1,1,1-Trichloroethane	ug/l	1.0	ND	ND	ND<10	ND	ND<20	ND<20	ND<20	ND<500	ND<25	ND	ND<20	ND<5.0	ND	ND<10	ND	ND
Carbon Tetrachloride	ug/l	1.0	ND	ND	ND<5	ND	ND<20	ND<20	ND<20	ND<500	ND<25	ND	ND<20	ND<5.0	ND	ND<10	ND	ND
Bromodichloromethane	ug/l	1.0	ND	ND	ND<5	ND	ND<20	ND<20	ND<20	ND<500	ND<25	ND	ND<20	ND<5.0	ND	ND<10	ND	ND
1,2-Dichloropropane	ug/l	1.0	ND	ND	ND<5	ND	ND<20	ND<20	ND<20	ND<500	ND<25	ND	ND<20	ND<5.0	ND	ND<10	ND	ND
cis-1,3-Dichloropropene	ug/l	1.0	ND	ND	ND<5	ND	ND<20	ND<20	ND<20	ND<500	ND<25	ND	ND<20	ND<5.0	ND	ND<10	ND	ND
Trichloroethene	ug/l	1.0	ND	5.1	ND<5	ND	51	370	180	530	44	ND	310	150	ND	35	ND	1.9
Dibromochloromethane	ug/l	1.0	ND	ND	ND<5	ND	ND<20	ND<20	ND<20	ND<500	ND<25	ND	ND<20	ND<5.0	ND	ND<10	ND	ND
1,1,2-Trichloroethane	ug/l	1.0	ND	ND	ND<5	ND	ND<20	ND<20	ND<20	ND<500	ND<25	ND	ND<20	ND<5.0	ND	ND<10	ND	ND
trans-1,3-Dichloropropene	ug/l	1.0	ND	ND	ND<5	ND	ND<20	ND<20	ND<20	ND<500	ND<25	ND	ND<20	ND<5.0	ND	ND<10	ND	ND
2-Chloroethyl Vinyl Ether	ug/l	1.0	ND	ND	ND<50	ND	ND<20	ND<20	ND<20	ND<500	ND<25	ND	ND<20	ND<5.0	ND	ND<10	ND	ND
Bromoform	ug/l	1.0	ND	ND	ND<5	ND	ND<20	ND<20	ND<20	ND<500	ND<25	ND	ND<20	ND<5.0	ND	ND<10	ND	ND
Tetrachloroethene	ug/l	1.0	ND	ND	ND<5	ND	ND<20	ND<20	ND<20	ND<500	ND<25	ND	ND<20	ND<5.0	ND	ND<10	ND	ND
1,1,2,2-Tetrachloroethane	ug/l	1.0	ND	ND	ND<5	ND	ND<20	ND<20	ND<20	ND<500	ND<25	ND	ND<20	ND<5.0	ND	ND<10	ND	ND
Chlorobenzene	ug/l	1.0	ND	ND	ND<5	ND	ND<20	ND<20	ND<20	ND<500	ND<25	ND	ND<20	ND<5.0	ND	ND<10	ND	ND
1,3-Dichlorobenzene	ug/l	1.0	ND	ND	ND<5	ND	ND<20	ND<20	ND<20	ND<500	ND<25	ND	ND<20	ND<5.0	ND	ND<10	ND	ND
1,2-Dichlorobenzene	ug/l	1.0	ND	ND	ND<10	ND	ND<20	ND<20	ND<20	ND<500	ND<25	ND	ND<20	ND<5.0	ND	ND<10	ND	ND
1,4-Dichlorobenzene	ug/l	1.0	ND	ND	10	ND	ND<20	ND<20	ND<20	ND<500	ND<25	ND	ND<20	ND<5.0	ND	ND<10	ND	ND
cis-1,2-Dichloroethene	ug/l	1.0	ND	13	100	ND	470	340	160	ND<500	340	ND	190	6.1	ND	170	ND	ND

Table 5-1

Analytical Results for VOCs in Groundwater, IT 1995

Compound	Units	Method Detection Limit	WELL NUMBER																
			22	23	24	26	27	29	31	32	33	34	35	36	37	38	39	41	42
Bromomethane	ug/l	1.0	ND	ND	ND<20	ND<2.0	ND<5.0	ND	ND<100	ND<10	ND	ND<5.0	ND<100	ND<10	ND<100	ND<10	ND<100	ND<10	ND
Vinyl Chloride	ug/l	1.0	40	2.4	62	ND<2.0	ND<5.0	47	ND<100	170	ND	ND<5.0	ND<100	66	ND<100	ND<10	ND<100	ND<10	ND
Chloroethane	ug/l	1.0	ND	ND	ND<20	ND<2.0	ND<5.0	ND	ND<100	ND<10	ND	ND<5.0	ND<100	ND<10	ND<100	ND<10	ND<100	ND<10	ND
Methylene Chloride	ug/l	1.0	ND	ND	ND<20	ND<2.0	ND<5.0	ND	740	ND<10	ND	ND<5.0	ND<100	72 B	ND<100	ND<10	ND<100	ND<10	ND
Trichlorofluoromethane	ug/l	1.0	ND	ND	ND<20	ND<2.0	ND<5.0	ND	ND<100	ND<10	ND	ND<5.0	ND<100	ND<10	ND<100	ND<10	ND<100	ND<10	ND
1,1-Dichloroethene	ug/l	1.0	1.5	ND	ND<20	ND<2.0	ND<5.0	ND	ND<100	ND<10	ND	ND<5.0	ND<100	ND<10	ND<100	ND<10	ND<100	ND<10	ND
1,1-Dichloroethane	ug/l	1.0	ND	ND	ND<20	ND<2.0	ND<5.0	ND	ND<100	ND<10	ND	ND<5.0	ND<100	ND<10	ND<100	ND<10	ND<100	ND<10	ND
trans-1,2-Dichloroethene	ug/l	1.0	4.3	ND	ND<20	ND<2.0	ND<5.0	ND	ND<100	ND<10	ND	ND<5.0	ND<100	ND<10	ND<100	ND<10	ND<100	ND<10	ND
Chloroform	ug/l	1.0	ND	1.0	ND<20	14	ND<5.0	ND	ND<100	14	ND	ND<5.0	ND<100	ND<10	ND<100	ND<10	ND<100	ND<10	ND
1,2-Dichloroethane	ug/l	1.0	2.8	ND	ND<20	ND<2.0	ND<5.0	ND	ND<100	ND<10	ND	21	ND<100	ND<10	ND<100	ND<10	ND<100	ND<10	ND
1,1,1-Trichloroethane	ug/l	1.0	ND	ND	ND<20	ND<2.0	ND<5.0	ND	ND<100	ND<10	ND	ND<5.0	ND<100	ND<10	ND<100	ND<10	ND<100	ND<10	ND
Carbon Tetrachloride	ug/l	1.0	ND	ND	ND<20	ND<2.0	ND<5.0	ND	ND<100	ND<10	ND	ND<5.0	ND<100	ND<10	ND<100	ND<10	ND<100	ND<10	ND
Bromodichloromethane	ug/l	1.0	ND	ND	ND<20	ND<2.0	ND<5.0	ND	ND<100	ND<10	ND	ND<5.0	ND<100	ND<10	ND<100	ND<10	ND<100	ND<10	ND
1,2-Dichloropropane	ug/l	1.0	ND	ND	ND<20	ND<2.0	ND<5.0	ND	ND<100	ND<10	ND	ND<5.0	ND<100	ND<10	ND<100	ND<10	ND<100	ND<10	ND
cis-1,3-Dichloropropene	ug/l	1.0	ND	ND	ND<20	ND<2.0	ND<5.0	ND	ND<100	ND<10	ND	ND<5.0	ND<100	ND<10	ND<100	ND<10	ND<100	ND<10	ND
Trichloroethene	ug/l	1.0	34	29	120	48	200	37	ND<100	110	1.9	97	1,700	190	ND<100	130	3,400	170	23
Dibromochloromethane	ug/l	1.0	ND	ND	ND<20	ND<2.0	ND<5.0	ND	ND<100	ND<10	ND	ND<5.0	ND<100	ND<10	ND<100	ND<10	ND<100	ND<10	ND
1,1,2-Trichloroethane	ug/l	1.0	ND	ND	ND<20	ND<2.0	ND<5.0	ND	ND<100	ND<10	ND	ND<5.0	ND<100	ND<10	ND<100	ND<10	ND<100	ND<10	ND
trans-1,3-Dichloropropene	ug/l	1.0	ND	ND	ND<20	ND<2.0	ND<5.0	ND	ND<100	ND<10	ND	ND<5.0	ND<100	ND<10	ND<100	ND<10	ND<100	ND<10	ND
2-Chloroethyl Vinyl Ether	ug/l	1.0	ND	ND	ND<20	ND<2.0	ND<5.0	ND	ND<100	ND<10	ND	ND<5.0	ND<100	ND<10	ND<100	ND<10	ND<100	ND<10	ND
Bromoform	ug/l	1.0	ND	ND	ND<20	ND<2.0	ND<5.0	ND	ND<100	ND<10	ND	ND<5.0	ND<100	ND<10	ND<100	ND<10	ND<100	ND<10	ND
Tetrachloroethene	ug/l	1.0	ND	ND	ND<20	ND<2.0	27	ND	ND<100	ND<10	ND	ND<5.0	ND<100	ND<10	ND<100	ND<10	ND<100	ND<10	ND
1,1,2,2-Tetrachloroethane	ug/l	1.0	ND	ND	ND<20	ND<2.0	ND<5.0	ND	ND<100	ND<10	ND	ND<5.0	ND<100	ND<10	ND<100	ND<10	ND<100	ND<10	ND
Chlorobenzene	ug/l	1.0	ND	ND	ND<20	ND<2.0	ND<5.0	ND	ND<100	ND<10	ND	ND<5.0	ND<100	ND<10	ND<100	ND<10	ND<100	ND<10	ND
1,3-Dichlorobenzene	ug/l	1.0	ND	ND	ND<20	ND<2.0	ND<5.0	ND	ND<100	ND<10	ND	ND<5.0	ND<100	ND<10	ND<100	ND<10	ND<100	ND<10	ND
1,2-Dichlorobenzene	ug/l	1.0	1.5	ND	ND<20	ND<2.0	ND<5.0	ND	ND<100	ND<10	ND	ND<5.0	ND<100	ND<10	ND<100	ND<10	ND<100	ND<10	ND
1,4-Dichlorobenzene	ug/l	1.0	ND	ND	ND<20	ND<2.0	ND<5.0	ND	ND<100	ND<10	ND	ND<5.0	ND<100	ND<10	ND<100	ND<10	ND<100	ND<10	ND
cis-1,2-Dichloroethene	ug/l	1.0	210	2.8	290	ND<2.0	100	14	370	240	ND	ND<5.0	540	190	180	ND<10	ND<100	ND<10	ND

Table 5-1

Analytical Results for VOCs in Groundwater, IT 1995

B - COMPOUND ALSO DETECTED IN THE BLANK.

ND - NOT DETECTED AT OR ABOVE THE STATED DETECTION LIMIT.

SAMPLING DATES:

5/9/95 - Wells 1,3,11,31, and 36

5/16/95 - Wells 16,18,19,21,26,27,33, and 34

5/18/95 - Wells 6,12,14,22,29,39,41, and 42

5/19/95 - Wells 7,8,10,15,17,23,24,32,35, and 37

7/10/95 - Well 4

Table 5-2

Analytical Results for Groundwater Samples, Eckland Consultants 1996

Micrograms per Liter (µg/L)

Boring Number	P1	P2	P3	P4
Analyte	**Result**	**Result**	**Result**	**Result**
Acetone	18	ND	13	ND
TCE	3.4	4.3	17	18
Chloroform	22	34	ND	6.5
TPH	NA	NA	NA	ND

NA = not analyzed
ND = Not detected
TPH = total petroleum hydrocarbons

Table 5-3

Analytical Results for VOCs in Groundwater, URS 1996

Sample ID	GW-01	MW-15	MW-18	MW-35	MW-37	MW-39	MW-40*
Date Collected	7/27/96	7/25/96	7/24/96	7/25/96	7/25/96	7/24/96	7/24/96
VOC	Result (µg/L)	Result (µg/L)	Result (µg/L)	Result (µg/L)	Result (µg/L)	Result (µg/L)	Result (µg/L)
TCE	U (<10)	340	77	620	140	1,100	1,100
Total DCE	U (<10)	290	180	310	480	25 (J)	28 (J)
Benzene	U (<10)	11 (J)	62	U (<59)	45	U (<69)	U (<93)
Toluene	U (<10)	U (<26)	9 (J)	U (<59)	U (<20)	U (<69)	U (<93)
2-Butanone	16 (J)	U (<26)	U (<10)	U (<59)	U (<20)	U (<69)	U (<93)
Total Xylenes	U	U	U	U	39	U (<69)	U (<93)
Ethyl-benzene	U	U	U	U	38	U (<69)	U (<93)

Note: The data validation report indicated that 2-butanone is likely a laboratory artifact, even though it did not appear in any of the other environmental samples.

DCE: dichloroethane

U: Not detected above the detection limit

J: Qualifier indicates that the number assigned was an estimated concentration of a positively identified compound

* GW-40 is a duplicate of the sample from MW-39

TABLE 5-4
ANALYTICAL RESULTS FOR GROUNDWATER
BOEING QUARTERLY MONITORING
Source: Kennedy/Jenks 2000

		Volatile Organic Compounds (µg/L)																						
Well	Sample Date	Detection Limit Adjustment Factor[1]	Benzene	n-Butylbenzene	sec-Butylbenzene	1,2-Dichlorobenzene	1,2-DCA	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	Ethylbenzene	Naphthalene	Isopropylbenzene	n-Propylbenzene	4-Isopropyltoluene	PCE	Toluene	TCE	1,3,5-Trimethylbenzene	1,2,4-Trimethylbenzene	Vinyl Chlrodie	Xylene	MtBE	Turbidity (NTU)
	Detection Limit		2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	5
MW-37*	01/27/2000	10	6,900				140		120		2,400	860	75	260			260		710	3,000		9,600		85
	04/28/2000	10	8,700	120	2,100		200		180		3,100	750	77	240			310		700	2,800		12,000		56
	07/27/2000	10	5,900						120		2,300	1,400	71	240		130	170		690	280		4,100		19
MW-10*	01/27/2000	1	5.7						240			3.5	3.0				70	440			65			5.1
	04/28/2000	1	14						190		7.2		4.9	6.5				500			45	2.9		5.2
	07/27/2000	1	7.8						150		3.5	2.5	4.1	4.5				370						
MW-11*	01/27/2000	1	8.7	20	9.7				450		68	15	28	78	3.2		57	760	85	210	98	120		350
	04/28/2000	1	5.7						220				13	32				550	12	60				320
	07/27/2000	1	4.6	11	5.3				340		31	14	12	30		76		540	15	69	68	21	4.4	100

TABLE 5-4
ANALYTICAL RESULTS FOR GROUNDWATER
BOEING QUARTERLY MONITORING
Source: Kennedy/Jenks 2000

Well	Sample Date	Detection Limit Adjustment Factor[1]	Volatile Organic Compounds (µg/L) Benzene	n-Butylbenzene	sec-Butylbenzene	1,2-Dichlorobenzene	1,2-DCA	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	Ethylbenzene	Naphthalene	Isopropylbenzene	n-Propylbenzene	4-Isopropyltoluene	PCE	Toluene	TCE	1,3,5-Trimethylbenzene	1,2,4-Trimethylbenzene	Vinyl Chlrodie	Xylene	MtBE	Turbidity (NTU)
Detection Limit			2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	5
MW32*	01/27/2000	1	11		7.5		1	4.1	370	15	36	3.0	18	42			81	710	41	95	130	60		49
	04/28/2000	1	9.9						340									600					370	97
	07/27/2000	1	9.0		4.5	3.0			170	14		5.5					3.7	240			81		240	34
MW-36*	01/27/2000	1	8.2		5.9				310	12	8.9		5.2	3.0			140	290	3.6	12.0	250	46		12
	04/28/2000	1	3.3		4.5				310				3.3					210			62			
	07/27/2000	1	2.8		5.2				250				3.3			17	3.3	130			58			

Table Notes:
Blank cell indicates constituent result was below the detection limit.
Table shows only compounds that were detected at least once in the groundwater samples.
Volatile organic compounds (VOCs) were analyzed by EPA Method 524.2.
Turbidity was analyzed by EPA Method 180.1.
1. Elevated detection limits are determined by multiplying by adjustment factor.
Kennedy/Jenks. 2000. Groundwater Monitoring Report, Third Quarter 2000.
Former Douglas Aircraft Plant A7. Prepared for the Boeing Company.
Kennedy/Jenks renamed MWs as follows:
GTE MW 37 = K/J MW 2 GTE MW 32 = K/J MW 5
GTE MW 10 = K/J MW 3 GTE MW 36 = K/J MW 6
GTE MW 11 = K/J MW 4

Table Key:

DCA	Dichloroethane
DCE	Dichloroethene
TCE	Trichloroethene
MtBE	Methyl tert-Butyl Ether
NTU	Nephelometric Turbidity Units
µg/L	micrograms per liter

Section 6
Data Gaps

Groundwater quality investigation objectives consist of the following:

- Determine whether TCE in the shallow perched groundwater at the Site has the potential to impact City of Santa Monica water supply wells.
- Identify potential source areas of TCE to shallow-perched groundwater at the Site.
- Determine the lateral and vertical extent of TCE in the groundwater at the Site.

Existing Site information and data include geological and hydrogeological characteristics, current and historical Site uses and operations, and chemical data characterizing TCE concentrations in Site groundwater, soils, and soil gas. The existing data are sufficient to satisfy the objectives of the groundwater quality investigation. No gaps are identified in the existing data set. Conclusions regarding these objectives based on the existing data set are discussed in Section 7.

Section 7
Conclusions

The purpose of this TM is to identify groundwater quality investigation objectives, evaluate whether existing data can be used to meet these objectives, and determine whether there are gaps in the existing data set.

Groundwater quality investigation objectives consist of the following:

- Determine whether TCE in the shallow perched groundwater at the Site has the potential to impact City of Santa Monica water supply wells.
- Identify potential source areas of TCE to shallow perched groundwater at the Site.
- Determine the lateral and vertical extent of TCE in the groundwater at the Site.

Review of previously conducted investigations indicates that the existing data set is sufficient to satisfy these objectives. No data gaps are identified in the Site data set.

Conclusions based on existing Site data and information are as follows:

- The horizontal extent of TCE in shallow perched groundwater beneath the Site has been well characterized.
- Groundwater samples collected in 1995 and 1996 from GTE monitoring wells showed the highest TCE concentrations in the northwestern most monitoring well 39 (IT, 1996 and URS, 1996). This area of the Site is covered with asphalt paving and is/has been used for parking. TCE concentrations tend to decrease across the Site to the south. Verizon's operation buildings (i.e., administrative and warehouse buildings) are located to the south of the Site.
- It is unnecessary to characterize the vertical extent of TCE in perched groundwater beneath the Site given its relatively thin and limited nature.
- The shallow perched groundwater zone has no beneficial uses.
- The shallow perched groundwater zone is hydrologically separated from the deeper beneficially used groundwater by a clay layer.
- TCE concentrations observed on-Site in the shallow perched groundwater are not sufficiently high to produce the contamination noted in water supply wells given the following: 1) hydrological separation between perched groundwater and the deeper aquifer; 2) upgradient and cross-gradient locations of the water supply wells from the Site; 3) the distance of the water supply wells from the Site; and 4) the size of the deeper aquifer versus the limited nature of the shallow perched groundwater.
- No receptors are expected to be exposed to TCE in the perched groundwater.
- GTE has shown that they did not use TCE in Site operations.

- Multiple investigations have been performed to evaluate suspected TCE source areas associated with historic activities at the Douglas site. Results of these investigations indicate no potential TCE sources or releases on-Site.
- Soil and soil gas samples were collected above areas of the highest TCE groundwater concentrations. These results indicated no source of TCE above these areas.
- A study performed in 1981 for the City of Santa Monica revealed high TCE concentrations in shallow perched groundwater to the northeast and northwest of the Site, while sampling locations closest to the Site had much lower TCE concentrations (Pacific Soils Engineering, 1981).
- Evidence suggests that TCE is migrating on-Site from an upgradient, off-Site unknown source. EPA also reached this conclusion (URS, 1996).

Given the lack of on-Site sources of TCE, the fact that GTE did not historically use TCE, the lack of data gaps in Site data, and the off-Site, upgradient nature of the TCE source, the Site does not appear to require additional groundwater investigation. Groundwater investigation may be necessary to identify the upgradient, off-Site PRP; however, Verizon is not the appropriate party to perform that investigation.

Section 8
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