

JUN 17 '91 T.L.H.
June 13, 1991

Nancy Vukelich
Chevron USA
P.O. Box 5004
San Ramon, CA 94583-0804

Re: Chevron Service Station #9-0076
4265 Foothill Boulevard
Oakland, California
WA Job #4-417-08

Dear Ms. Vukelich:

This letter presents Weiss Associates' proposed work plan for ground water remediation at the site referenced above. The site background and the work plan are discussed in the following sections.

SITE BACKGROUND

The site is located in a mixed residential and commercial area on the southwest corner of Foothill Boulevard and High Street in Oakland, California (Figure 1). On May 21, 1987, three steel gasoline and one fiberglass waste oil tank were removed from the site. Immediately following the tank removal, Blaine Tech Services (BTS) of San Jose, California, collected ten soil samples from directly beneath the former tanks and from the excavated soil stockpiled on site. Up to 21 parts per million (ppm) total petroleum hydrocarbons as gasoline (TPH-G) were detected in two of the six samples from beneath the gasoline tanks. Trace concentrations of benzene, toluene and xylenes were detected in three of the six samples. 63 ppm TPH as waste oil and 100 ppm total oil and grease were detected in one of two soil samples collected from beneath the waste oil tank. Soil samples from the stockpiled soil contained up to 870 ppm TPH-G, 17 ppm benzene, 32 ppm toluene and 29 ppm xylene¹.

¹ Blaine Tech Services, Inc., 1987, Sampling Report, Chevron #9-0076, 4265 Foothill Boulevard, Oakland, California, consultant's report prepared for Chevron USA, Inc., June 4, 1987, 3 p. and 2 attachments.

On June 4, 1987, three 10,000-gallon double-wall fiberglass tanks were installed in the same location as the removed tanks. The waste oil tank was not replaced and its excavation was backfilled and compacted².

On July 8, 1987, a gasoline odor and small amount of water with a product sheen was detected in an 11 ft deep sign footing on the Foothill Boulevard side of the site. No water or petroleum odors were detected in any other site excavation.

On August 13, 1987, Pacific Environmental Group, Inc. (PEG) of Santa Clara, California, drilled five exploratory soil borings and installed ground water monitoring wells in four of the borings. The remaining boring was backfilled with concrete. Three of five soil borings contained TPH-G between 500 and 3,600 ppm with the highest concentration detected in boring C-A, the backfilled boring. Hydrocarbons were detected in ground water from all sampled monitoring wells except for well C-2 which was not sampled because it contained over two feet of floating hydrocarbons. Dissolved gasoline concentrations ranged from 250 to 22,000 parts per billion (ppb) in the three sampled wells³.

On April 28, 1989, WA collected ground water samples from all four site wells. Monitoring well C-2 contained about 0.01 ft of floating hydrocarbons. TPH-G was detected in ground water from monitoring wells C-2 and C-4 at over 1,000 ppb. Benzene was detected in samples from all four wells in concentrations in excess of regulatory action levels⁴.

On August 8, 1989, WA collected ground water samples from three of the four ground water monitoring wells. Monitoring well C-2 was not sampled because it contained about 0.1

² Huffman, Kay, 1987, letter from Kay Huffman, Chevron environmental engineer, to Ted Gerow, Alameda County Environmental Health department, August 14, 1987, 2 p.

³ Pacific Environmental Group, Inc., 1987, Soil and Groundwater Investigation, Chevron USA Station #9-0076, 4625 Foothill Boulevard at High Street, Oakland, California, consultant's report prepared for Gettler-Ryan, Inc., September 23, 1987, 12 p. and 2 appendices.

⁴ Weiss Associates, 1989a, Ground Water Sampling, Operating Chevron service station #9-0076, 4625 Foothill Boulevard, Oakland, California, consultant's letter-report prepared for Chevron USA, May 24, 1989, 6 p. and 3 attachments.

inch of floating hydrocarbons. Ground water from monitoring well C-4 contained TPH-G at 8,000 ppb, and all wells sampled contained benzene at or above regulatory action levels⁵.

Between July 31 and November 1, 1990, WA drilled four soil borings and installed ground water monitoring wells in each boring. TPH-G was detected at 54 ppm and 42 ppm in the soil samples from 11 ft depth from boring BH-E and 31 ft depth from boring BH-F, respectively. Lower BETX concentrations were detected in other soil samples⁶.

On August 27, 1990, ground water samples were collected from monitoring wells C-1 and C-3 through C-8. Monitoring well C-2 contained 0.17 ft of floating hydrocarbons and was not sampled. Ground water samples from wells C-4 and C-6 contained TPH-G and benzene concentrations over 1,000 ppb. Samples from wells C-1 and C-7 contained TPH-G over 100 ppb and benzene over 10 ppb. No hydrocarbons were detected in water samples from monitoring wells C-3, C-5 and C-8. Analytical results for ground water are compiled in Table 1. Ground water elevations are presented in Table 2. Ground water occurs in a shallower, possibly perched, zone beneath the site, and in a deeper zone off-site (Figure 3).

PROPOSED REMEDIATION SYSTEM

The proposed remediation method consists of ground water and hydrocarbon extraction from monitoring well C-2 by a dedicated total fluids pump. Extracted ground water will be collected in a 1,500-gallon above ground tank. A registered hauler will transport recovered ground water and hydrocarbons to a licensed recycling facility contracted directly by Chevron.

WA evaluated initial ground water extraction rates from preliminary pump test data. Well C-2 assumed long-term extraction rate is approximately 100 gallons per day (gpd). WA also considered downgradient well C-4 as a possible extraction point, but well C-4 is screened in less permeable sediments than well C-2. Consequently, C-4 will probably not provide a sustainable

⁵ Weiss Associates, 1989b, Ground Water Sampling, Chevron Service Station #9-0076, 4625 Foothill Boulevard, Oakland, California, consultant's letter-report prepared for Chevron USA, September 13, 1989, 6 p. and 3 attachments.

⁶ Weiss Associates, 1990, Subsurface Investigation, Chevron Service Station #9-0076, 4265 Foothill Boulevard, Oakland, California, consultant's report prepared for Chevron USA, December 18, 1990, 24 p. and 3 appendices.

flow rate using pumping equipment currently available. The proposed remediation system layout is presented in Figure 4. The system consists of a dedicated total fluids pump installed in well C-2, underground double contained extracted water and pump air tubing, a 1HP air compressor, a control air filtering system, a pump control panel and a 1,500-gallon high density polyethylene (HDPE) collection tank. Collection tank auxiliary equipment includes a 1,760-gallon HDPE containment basin, a high water level cut-off switch, a flame arrestor and a 200-pound granular activated carbon (GAC) vapor emissions control drum.

WA will inspect the system and schedule extracted ground water collection every two weeks during the first two months and as needed later.

WA will obtain City of Oakland building and electrical permits and an Oakland Fire Department Hazardous Materials Storage permit for this project. A Bay Area Air Quality Management District (BAAQMD) Authority to Construct/Permit to Operate may also be required.

Weiss Associates appreciates the opportunity to provide environmental consulting services to Chevron USA. We trust that this report will meet your needs. If you have any questions please call Fatima Lelic.



Sincerely,
Weiss Associates

Qing Zhu

Qing Zhu
Senior Staff Engineer

Fatima S. Lelic

Fatima S. Lelic, P.E., D.E.E.
Principal Engineer

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Attachment A - Cost Estimate

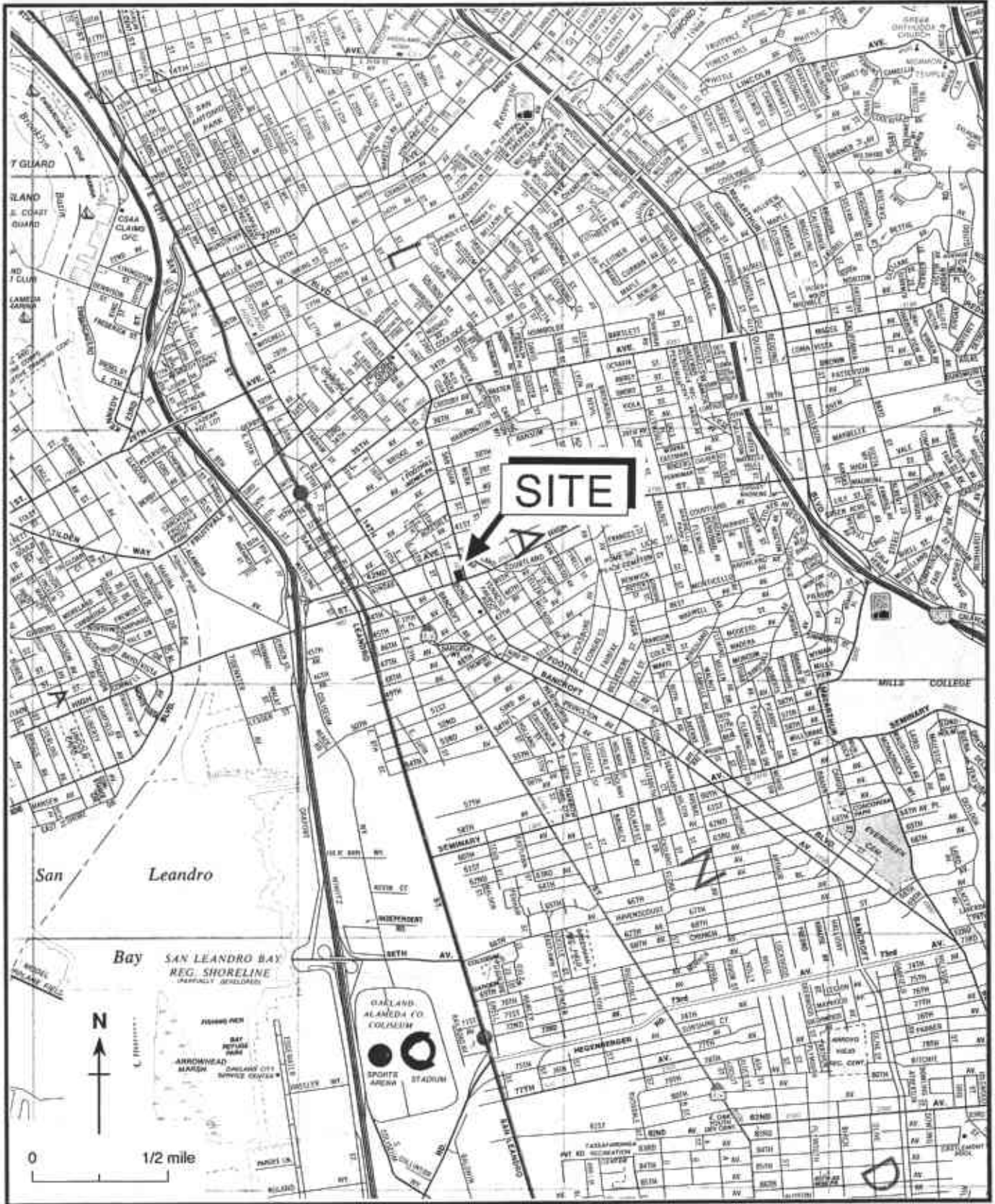
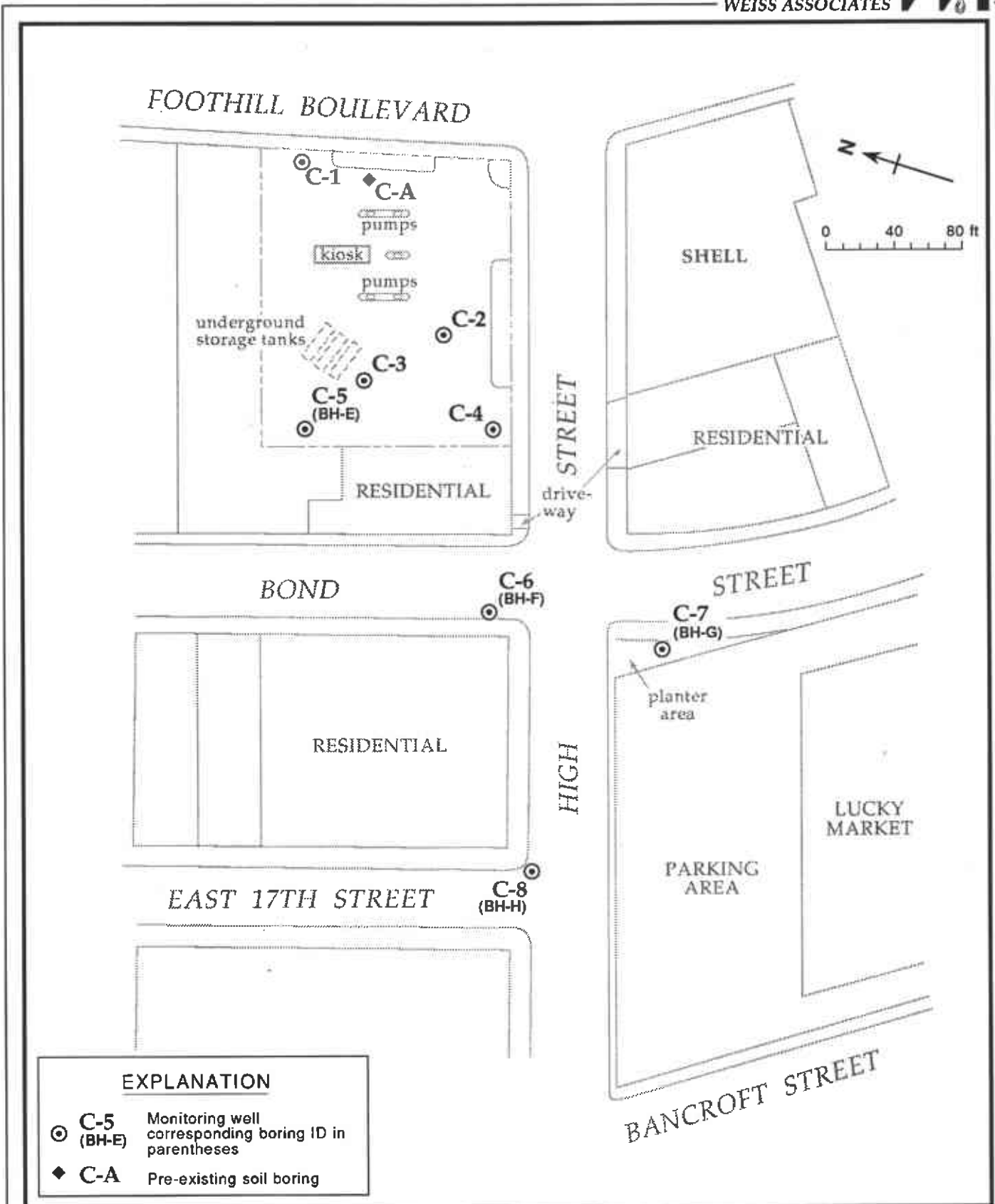
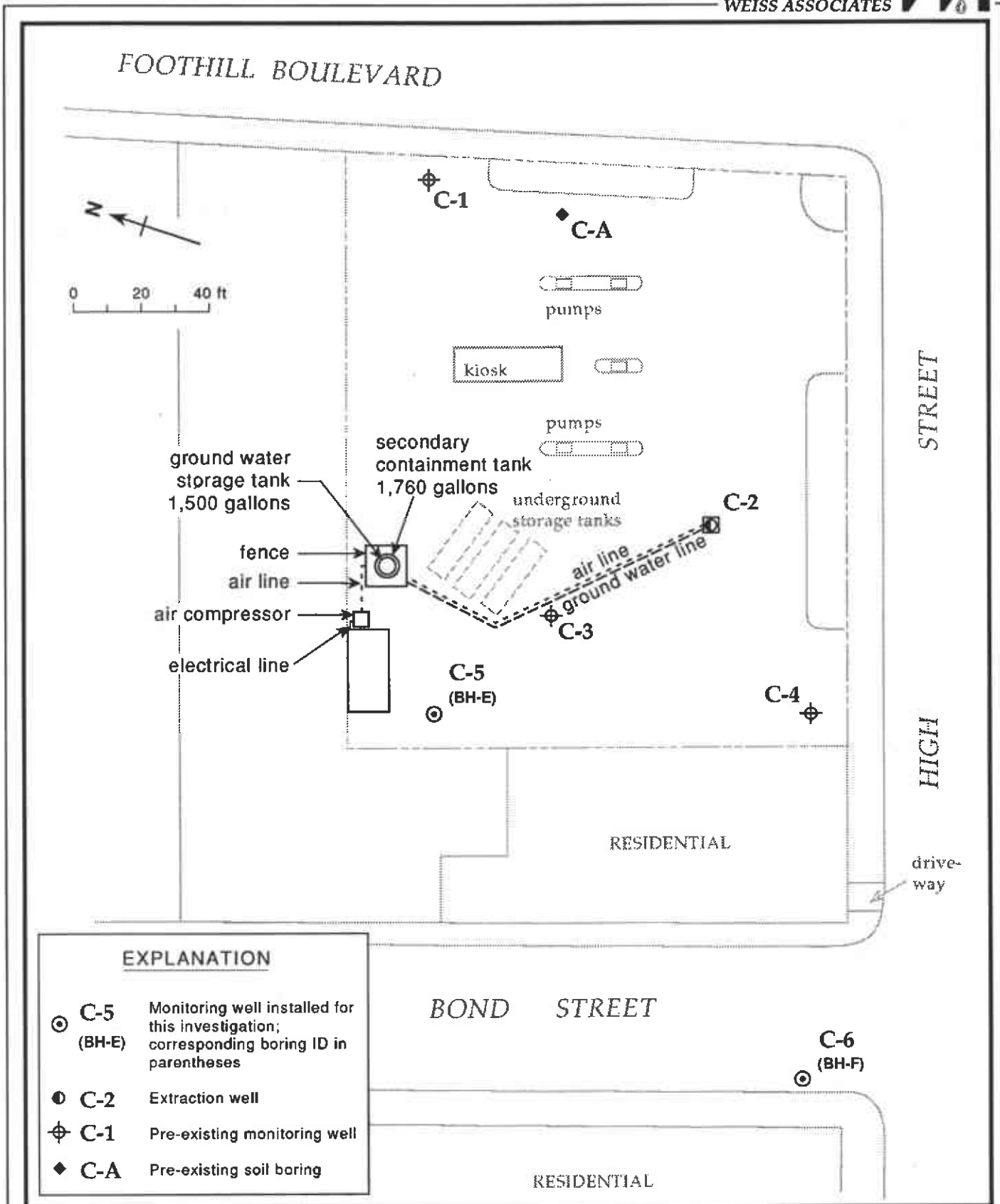


Figure 1. Site Location Map - Chevron Service Station #90076, Oakland, California



EXPLANATION	
⊙ C-5 (BH-E)	Monitoring well corresponding boring ID in parentheses
◆ C-A	Pre-existing soil boring

Figure 2. Monitoring Well Locations for Chevron Service Station #9-0076, 4265 Foothill Boulevard, Oakland, California



EXPLANATION

- ⊙ C-5 Monitoring well installed for this investigation; corresponding boring ID in parentheses
- C-2 Extraction well
- ⊕ C-1 Pre-existing monitoring well
- ◆ C-A Pre-existing soil boring

Figure 4. Proposed Ground Water Remediation System - Chevron Service Station #9-0076, 4265 Foothill Blvd., Oakland, California

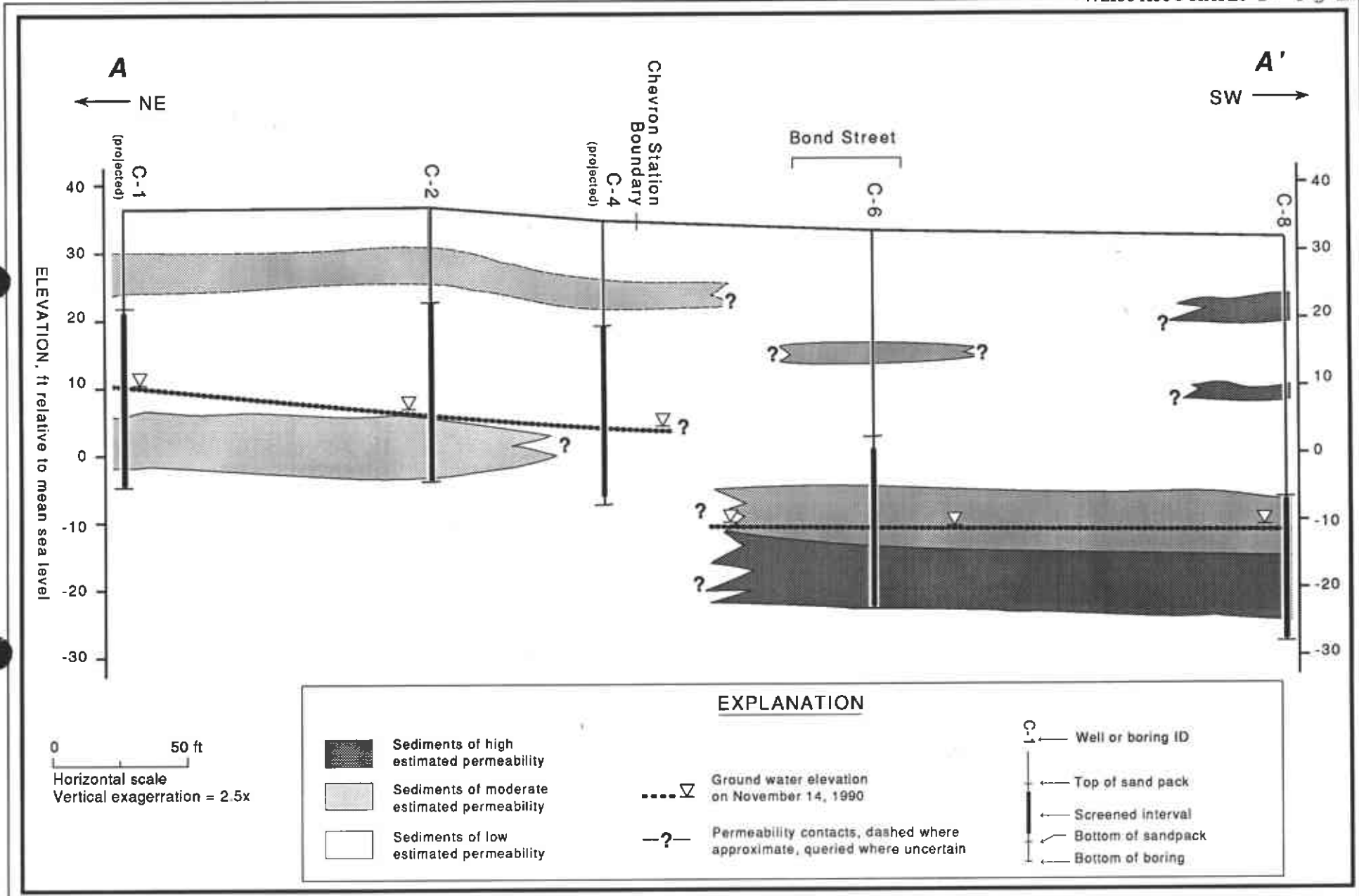


Figure 3. Geologic Cross-Section A-A' - Chevron Service Station #9-0076, 4265 Foothill Boulevard, Oakland, California