BT Associates
Environmental Services

31 Nightowl Court, Richmond, CA 94803
(Office) 510-222-1541 (Fax) 510-525-2178

QUARTERLY GROUNDWATER MONITORING
WELL SAMPLING REPORT FOR:

1435 WEBSTER STREET
ALAMEDA, CA

(July 9, 1995)

SITE DESCRIPTION

1435 Webster Street is located in the northwest portion of the City of Alameda, which is in Alameda County, California (Figures 1 and 2). This address is on the northwest corner of the intersection of Webster and Taylor Streets, and occupies Alameda County Assessor's Parcel number 74-427-51 (Figure 3). It is 1.5 miles south of the Webster Street Tunnel, approximately 3.0 miles south of Interstate Highway 880, and 1.0 mile southeast of the former U.S. Naval Air Station. The subject site is currently a City of Alameda public parking lot (street level only). Property use in the area is multi-purpose in nature with commercial, residential, and light industrial usage.

GEOLOGY AND HYDROGEOLOGY

The subject site is located on bay plain deposits approximately ¼ mile east of the San Francisco Bay. The bay is a drowned valley which is thought to have been originally formed by erosion of the ancestral Sacramento River and subsequently widened by subsidence and rise in the level of the sea. Quaternary (Pleistocene to recent) sediments deposited in what is now San Francisco Bay include both shallow marine and continental deposits known as "Bay Mud". The geologic deposits encountered during drilling in January of 1993 consisted primarily of fine to medium, loose to medium-dense, poorly-sorted, brown sand with some gravel. At that time, groundwater was encountered at 11.5 feet below ground surface (bgs).

OVERVIEW OF PREVIOUS ENVIRONMENTAL COMPLIANCE ACTIVITIES PERFORMED AT THE SITE

Removal of Underground Storage Tanks

On October 11, 1988, CHIPS Environmental Consultants, Inc. performed soil gas analyses at the subject site at the request of Accutite Tank Testing and Maintenance Services (a division of Olympian Oil Company) of South San Francisco. The CHIPS study was specific to the area occupied by two (2) 10,000-gallon underground gasoline storage tanks, one 7,500-gallon underground diesel storage tank, and one 500-gallon waste oil tank. High soil gas readings were obtained on the east side of one of two (2) gasoline pump islands, between the islands, and from the backfill between the gasoline storage tanks at both 8 and 11 feet below ground surface (bgs). Soil gas concentrations on the west side of the tank pits were relatively low.

All underground storage tanks were removed during September of 1989. Soil samples acquired for certified laboratory analyses attendant to the removal of the tanks contained concentrations of Total Petroleum Hydrocarbons as Gasoline (TPH-G) to 220 parts per million (ppm), Total Petroleum Hydrocarbons as Diesel (TPH-D) to 430 ppm, and 650 ppm Total Oil and Grease (TOG).

Over-excavation of the Former Tank Pits and Attendant Sampling

On January 11, 15, and 23, 1991, exploratory/remedial excavations of the fuel hydrocarbon contaminated soil were conducted by AAA Tank Removal/Forcade Excavation Services (California licensed contractors) under the direction of a staff geologist from Uriah Environmental Services, Inc. (UES) of Livermore/Modesto. The work performed was done in accordance with a workplan previously submitted to, and approved by, the Alameda County Health Care Services Agency (ACoHCSA).

Approximately 550 cubic yards of contaminated soil was removed from the area of the pit(s) previously occupied by the underground storage tanks. At that time, the dimensions of the excavation measured 34'(W) x 40'(L) x 18'(D). No further excavation was undertaken as the surface of the site was fully occupied by treatment beds constructed for the biological detoxification of previously excavated soil.

Following the bioremediation of the previously excavated soil, excavation activities resumed on September 23-25, 1991. All work was performed by W.A. Craig, Inc. (a California licensed contractor), under the direction of a UES staff hydrogeologist. The excavation was expanded to 34' (W) x 55' (L) x 18' (D), and an additional 300 cubic yards of contaminated soil was removed. During the course

of the expanded excavation, contamination was observed to be confined to sandy clay lenses that were present at various depths along the south wall of the pit. On September 27, 1991, four (4) discrete soil samples were acquired from the sidewalls of the expanded excavation. These samples were found to be free of detectable concentrations of TPH-G, TOG, and benzene, toluene, ethylbenzene, and total xylenes (BTEX), but contained 21-24 ppm TPH in the diesel range. The "non-standard diesel pattern" reported by the laboratory was previously compared to a tar wrap fabric by running comparative chromatographic standards. This comparative study appeared to confirm the hypothesis that the "non-standard" TPH-D range material detected was composed of partially-degraded, extractable hydrocarbons which comprise a portion of the tar wrap material.

A soil sample acquired from the floor of the expanded excavation was found to contain benzene at 120 parts per billion (ppb), toluene at 16 ppb, and ethylbenzene at 23 ppb.

Bioremediation of Hydrocarbon-Contaminated Soil

Following the excavation of contaminated soil in January, 1991, this material and approximately 50 cubic yards of stockpiled soil remaining from the underground storage tank excavation were configured on-site in quadrilateral beds atop bermed, hydrocarbon-resistant liners. The treatment beds were inoculated with a bio-nutrient solution containing common, non-pathogenic, hydrocarbon-utilizing soil bacteria and a dilute commercial fertilizer solution. During the course of treatment, the soil was monitored to determine rates of degradation, soil temperature, moisture, pH, and nutrient levels.

On September 20, 1991, soil samples were acquired and submitted for uncertified analyses. Levels of TPH-G were found to be below the detection limit of 10 ppm, while concentrations of TPH-Oil had been reduced to below the detection limit of 50 ppm. Based upon these results, twelve (12) discrete samples (one for every 50 cubic yards of soil under treatment) were obtained for certified analyses. All samples were free of detectable concentrations of TPH-G, BTEX, and TOG. Ten (10) of twelve (12) samples were found to be free of detectable concentrations of TPH-D, with the two (2) remaining samples containing 16 and 44 ppm TPH-D, respectively. According to UES (and as noted above), these levels of "TPH-D" were not represented by a chromatographic pattern typical of diesel fuel and represented, instead, partially degraded tar wrap.

On December 2, 1991, ten (10) discrete soil samples (one for every 20 cubic yards of soil under treatment) were acquired from approximately 200 cubic yards of contaminated soil remaining under treatment. All samples were found to be free of detectable concentrations of the referenced analytes. For additional and/or more specific information regarding these sampling and remediation activities (sample locations, methodologies, etc.), please refer to the aforementioned UES

workplan and the UES Report, "Installation of Three Groundwater Monitoring Wells" (March 25, 1993).

Installation of Groundwater Monitoring Wells

On January 11 and 12, 1993, three (3) soil borings were advanced on the subject site under the direction of a UES staff hydrogeologist. Discrete soil samples were collected at five-foot intervals between the ground surface and the top of the capillary fringe. The samples collected were submitted for certified analyses for TPH-D, TPH-G, BTEX, and TOG. All samples were found to be free of detectable concentrations of the referenced analytes.

Following completion of the drilling and soil sampling, each boring was converted into a 2-inch inside-diameter groundwater monitoring well (Figure 4). All work performed was done under the authority of a permit (#92664) issued by the Alameda County Zone 7 Water Resources Agency.

For additional and/or more specific information regarding these borings (boring logs, well construction details, etc.), please refer to the UES Report, "Installation of Three Groundwater Monitoring Wells" (March 25, 1993).

COMPLIANCE MONITORING/ON-SITE GROUNDWATER MONITORING WELLS

According to information made available to BT Associates, the on-site groundwater monitoring wells were developed and sampled by UES at the end of the first quarter of 1993. However, analytical results for the initial groundwater samples collected are not available. In April of 1993, UES ceased business operations. In May of 1993, the sampling and reporting responsibilities for the subject site were assumed by BT Associates.

BT Associates first collected groundwater samples from the on-site monitoring wells on June 3, 1993. Subsequent sampling activities were placed on hold until the on-site monitoring wells could be surveyed with respect to mean sea level datum. This work was delayed, however, pending resolution of a separate billing issue between the property owner and the company that was to conduct the survey (as obtaining similar service from another company was also not requested). This issue was eventually resolved and the survey was completed on September 14, 1994. Following notification of ACoHCSA, BT Associates resumed sampling activities at the subject site. The most recent sampling event at this location was conducted on July 9, 1995. On that date, the hydraulic gradient was calculated as 0.003 ft./ft., and the direction of groundwater flow was determined to be slightly to the northwest (N07°W). The only well required to be sampled during this round was MW-1 (per ACoHCSA, discussed in the last section of this

report). Analytical results for groundwater samples collected at the subject site are summarized in Table I, below:

Table I - Groundwater Sampling Results

Well #	Date	Depth to Water (ft)	TPH-G (ppb)	TPH-D (ppb)	Benzene (ppb)	Toluene (ppb)	Ethyl-benzene (ppb)	Total Xylenes (ppb)	TOG (ppm)
MW-1	6/3/93	na+	na+	na+	na+	na+	na+	na+	na+
	9/14/94	11.46	14,000	ND	44	28	25	50	0.8
	12/30/94	9.22	4,000	ND	12	9	6.8	30	ND
	3/26/95	6.76	1,000	ND	21	10	7.1	25	2.1
	7/9/95	8.92	16,000	ND	57	28	25	53	na
MW-2	6/3/93	9.54	ND	ND	5.8	ND	ND	ND	ND
	9/14/94	11.82	ND	ND	ND	ND	ND	ND	ND
	12/30/94	9.46	160	ND	1.4	1.4	0.8	5	ND
	3/26/95	6.82	ND	ND	ND	ND	ND	ND	ND
	7/9/95	9.22	na	na	na	na	na	na	na
MW-3	6/3/93	9.80	ND	ND	ND	ND	ND	ND	ND
	9/14/94	12.19	ND	ND	ND	ND	ND	ND	ND
	12/30/94	9.72	ND	ND	ND	ND	ND	ND	ND
	3/26/95	6.88	ND	ND	ND	ND	ND	ND	ND
	7/9/95	9.52	na	na	na	na	na	na	na
Method Detection Limits	-	-	50	50	0.5	0.5	0.5	0.5	0.5
Method of Analysis	-	-	5030/ 8015	3510/ 8015	602	602	602	602	5520 C&F

TPH-G = Total Petroleum Hydrocarbons as Gasoline
TPH-D = Total Petroleum Hydrocarbons as Diesel
TOG = Total Oil and Grease
ND = Not detected at or above the Method Detection Limit
na = Not analyzed/requested
na+ = Not sampled/well inaccessible
ppb = Parts per billion
ppm = Parts per million
Note: Sampling of MW-2 and MW-3 on 07/09/95 not required by ACoHCSA

Well Sampling Methodology

Depth to water and total well depth were measured using an electric tape, and the volume of water within the 2-inch inside-diameter casings computed. MW-1 was then purged using a clean, disposable polyethylene bailer until the groundwater was free of significant sand, silt, and/or other grit material, and pH, conductivity, and temperature readings stabilized. Over three (3) well

volumes were removed from this well. Measurements of pH, conductivity, and temperature were recorded as referenced within Appendix B.

Subsequent to purging the well, a groundwater sample was collected from MW-1 using a clean, disposable polyethylene bailer lowered to a point just below the water surface. Using a Voss VOC Sampler, each groundwater sample was immediately transferred into two (2) Volatile Organic Analysis (VOA) vials and a one-liter, amber glass bottle. Each sample container was promptly sealed with a teflon-lined screw cap, labeled, placed on ice in an insulated container, and transported under chain-of-custody to a California state-certified hazardous waste analytical laboratory for analysis for Total Petroleum Hydrocarbons as Gasoline (TPH-G), benzene, toluene, ethylbenzene, and total xylenes (BTEX) using EPA Methods 5030/8015-8020 (602); and Total Petroleum Hydrocarbons as Diesel (TPH-D) using EPA Methods 3510/8015.

Extracted groundwater, in excess of that acquired for laboratory analysis, was taken to Richmond for eventual introduction into a bioreactor currently developing liquid inoculum for use in bioremediation operations.

Results of Certified Laboratory Analyses

The level of Total Petroleum Hydrocarbons as Diesel (TPH-D) was found to be non-detectable (ND) in the groundwater sample from MW-1. Total Petroleum Hydrocarbons as Gasoline (TPH-G) and benzene, toluene, ethylbenzene, and total xylenes (BTEX) were detected in MW-1 as follows: TPH-G - 16,000 parts per billion (ppb); benzene - 57 ppb; toluene - 28 ppb; ethylbenzene - 25 ppb; and total xylenes - 53 ppb. Analytical results for the groundwater sample collected have been summarized in Table I (page 5, above, and Appendix A). Copies of all laboratory results as received from the certified hazardous waste analytical laboratory are enclosed within Appendix B.

CONCLUSIONS AND RECOMMENDATIONS

The level of Total Petroleum Hydrocarbons as Diesel (TPH-D) was found to be non-detectable (ND) in the groundwater sample from MW-1 on July 9, 1995. Total Petroleum Hydrocarbons as Gasoline (TPH-G) was detected in MW-1 at 16,000 parts per billion (ppb). The levels of benzene, toluene, ethylbenzene, and total xylenes (BTEX) in the sample from this well were reported as follows: benzene - 57 ppb; toluene - 28 ppb; ethylbenzene - 25 ppb; and total xylenes - 53 ppb. The sampling conducted represents the fifth sampling event for the subject site (fourth consecutive quarter).

Groundwater flow directions determined over the last four (4) quarters appear to indicate that a monitoring well is not located in the area presumed to be down-gradient from the former tank pit (Figures 5 and 6). The flow direction at the time the on-site monitoring wells were installed was initially reported to be to the south-southwest. As noted previously, first quarter sampling results for 1993 and other data pertaining to the well installations is not available from UES. As such, ACoHCSA has directed that two (2) soil samples be acquired from areas to the northwest and northeast of the former tank pit. and 'grab' GW samples!

ACoHCSA agreed to limit the sampling in this quarter to MW-1 with the understanding that soil samples would be acquired as indicated above. Discussions with the clients/Responsible Parties in September and October of 1995 concluded with the agreement to conduct the sampling, and BT Associates was authorized to prepare the corresponding Work Plan.

It should be noted that, if significant soil contamination is encountered during sampling, ACoHCSA has also indicated that the installation of another groundwater monitoring well may be necessary. it will be!

Should you have any questions, please feel free to contact either of the undersigned at 510-222-1541.

Sincerely,

Bruce A. Tsutsui
President, BT Associates
Registered Environmental Health Specialist (#4522)

Marvin D. Kirkeby
President, Kirkeby Engineering
Registered Civil Engineer (#14001)

BT801/WEB1435QMR5/102395

APPENDIX A

FIGURES AND TABLES

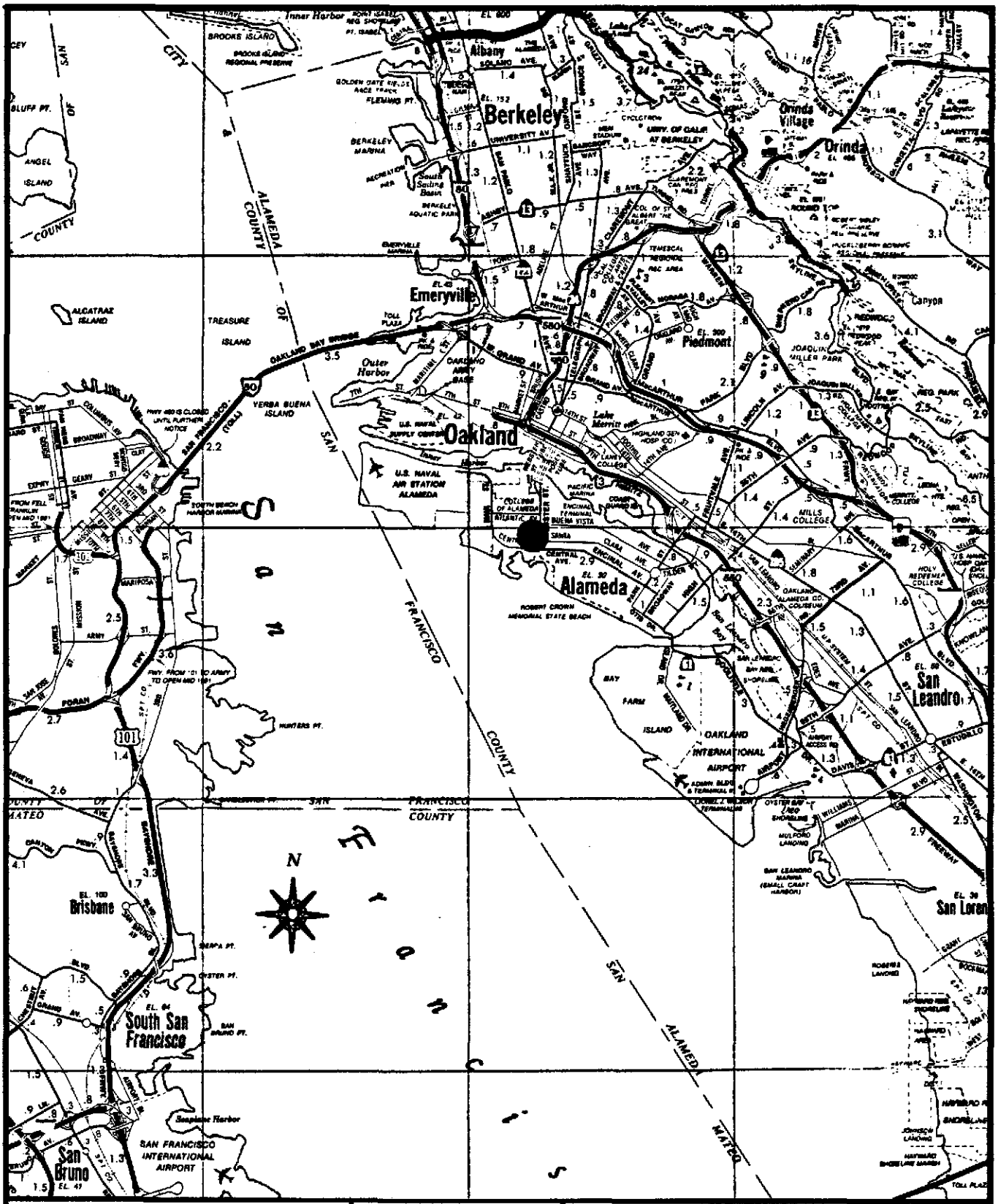

Figure 1 - Regional Map

Colored circle denotes location of 1435 Webster Street, Alameda, CA

0 3

Scale (miles)

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Environmental Services
31 Nightowl Court, Richmond, CA 94803

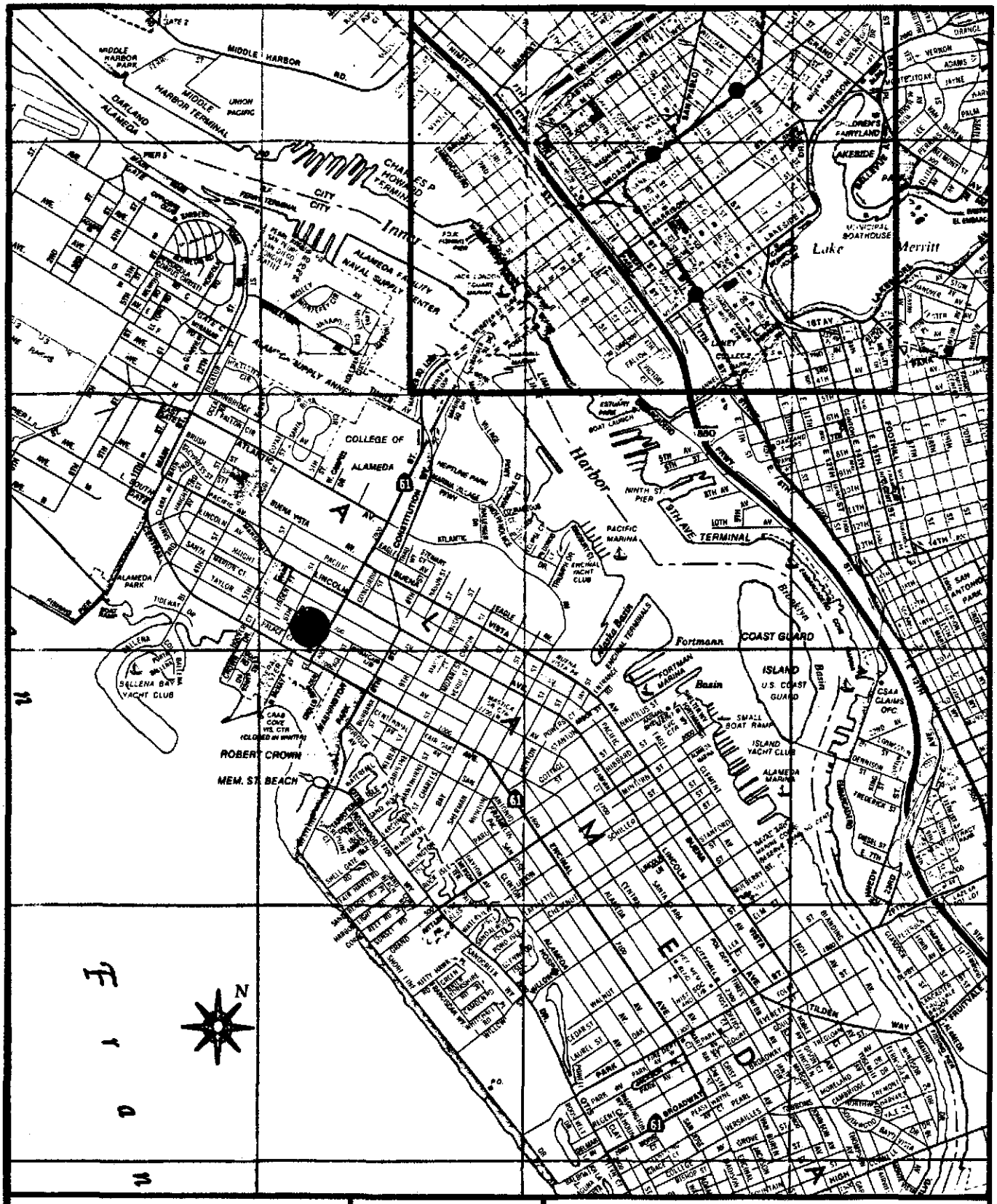

Figure 2 - Locality Map

Colored circle denotes location of 1435 Webster Street, Alameda, CA

0 0.5

Scale (miles)

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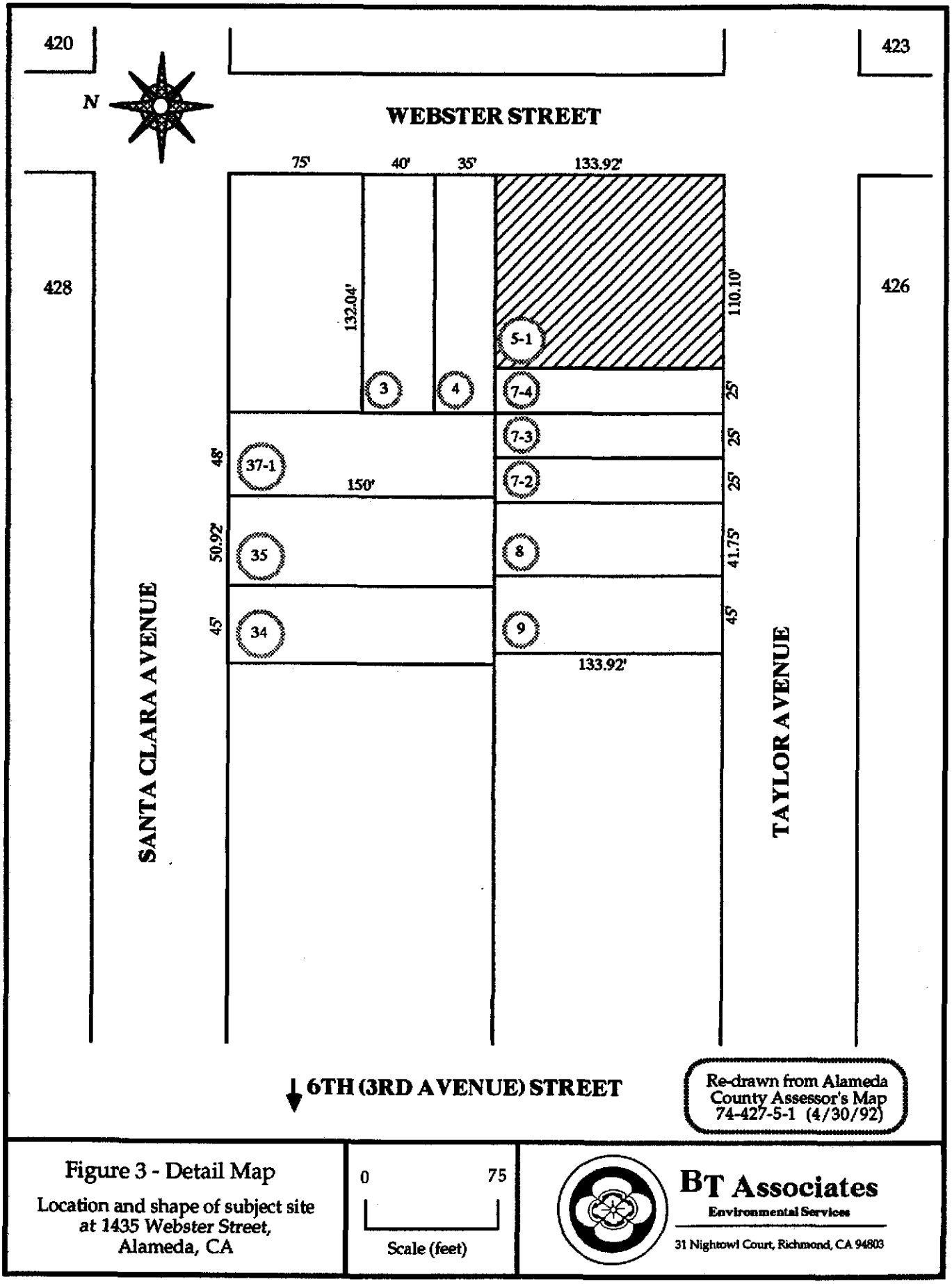

Figure 3 - Detail Map

Location and shape of subject site at 1435 Webster Street, Alameda, CA

0 75

Scale (feet)

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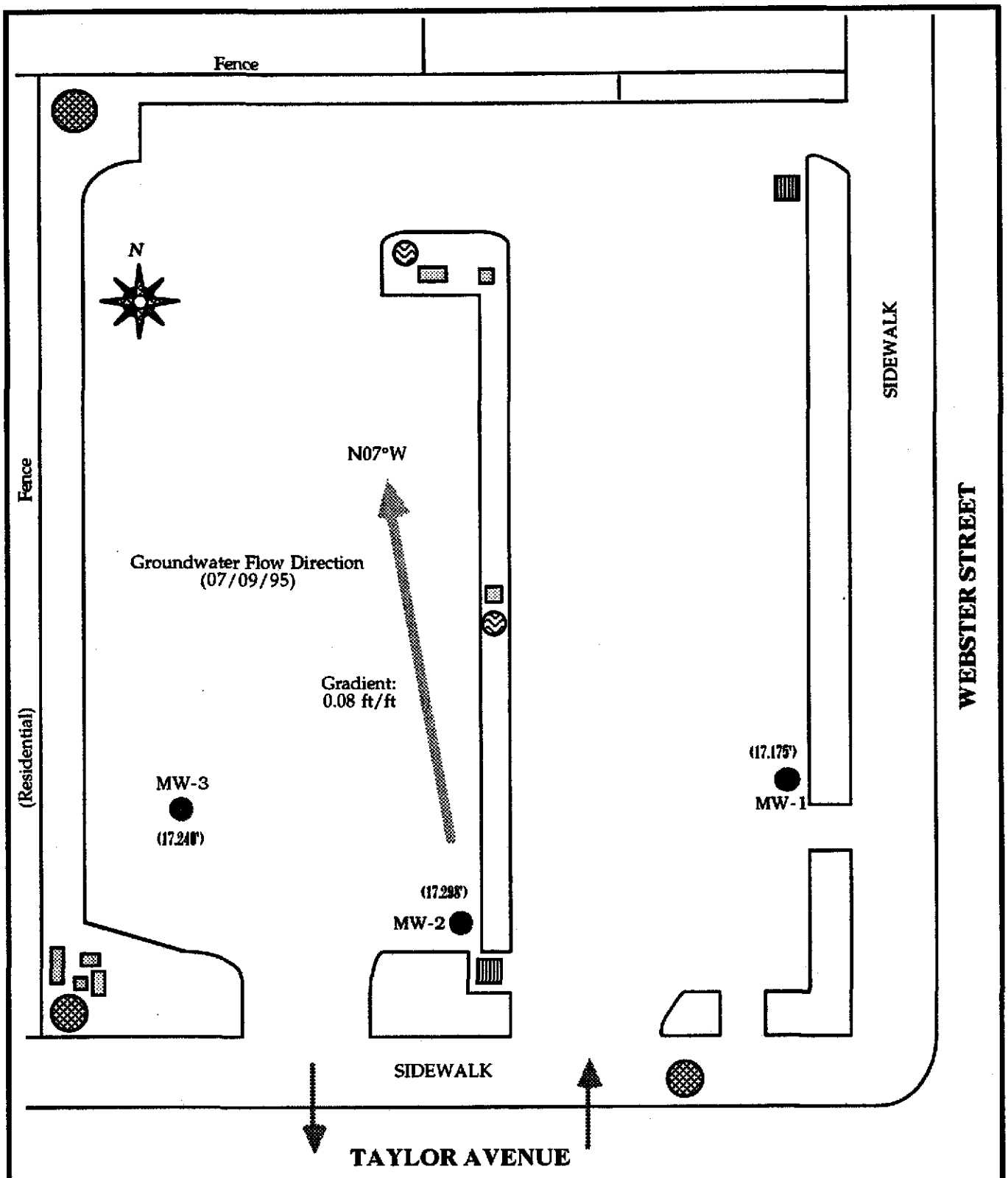

Figure 5 - Detail Map

Direction of groundwater flow beneath subject site at 1435 Webster Street, Alameda, CA

0 25

Approx. scale (feet)

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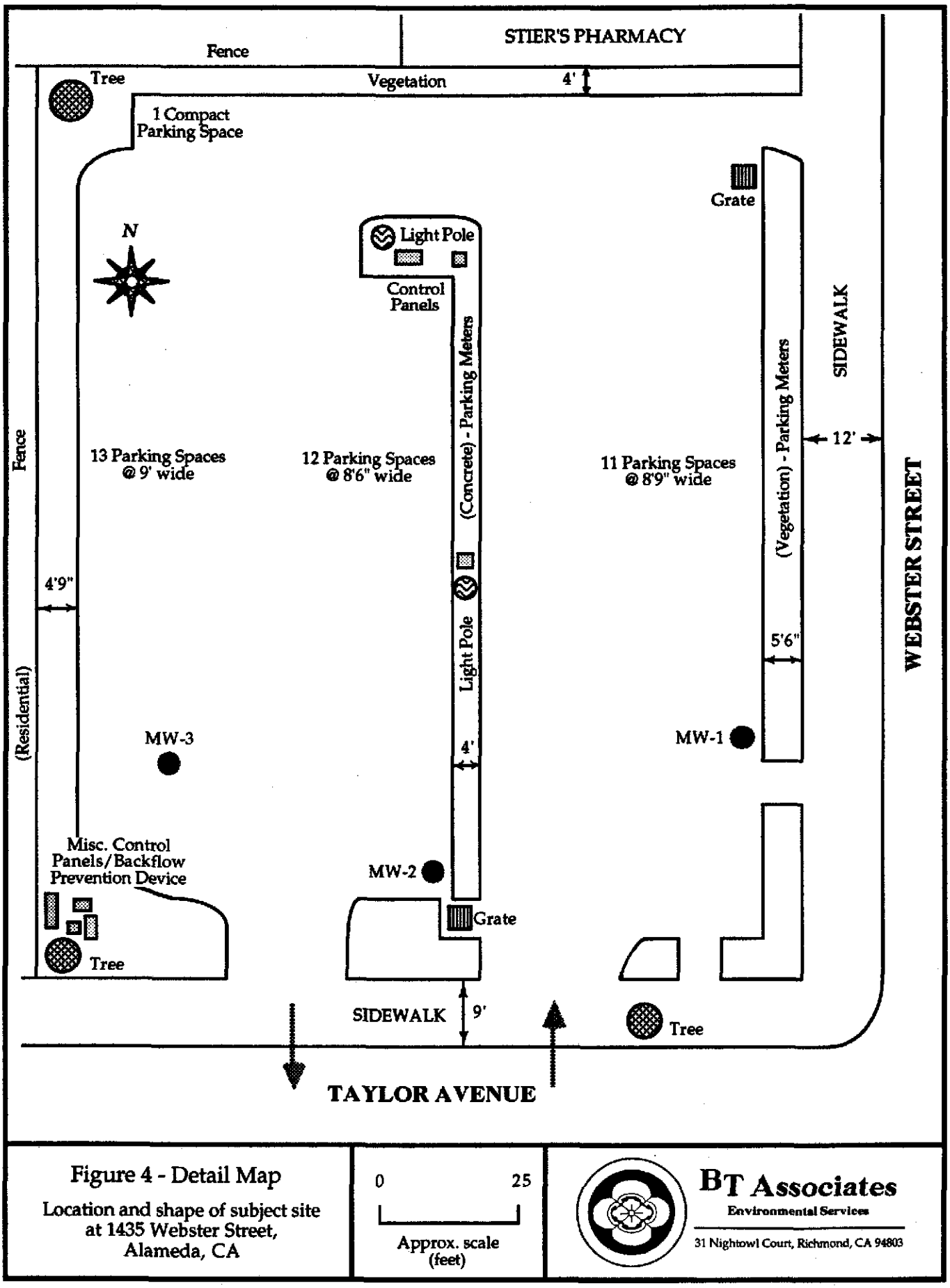

Figure 4 - Detail Map

Location and shape of subject site at 1435 Webster Street, Alameda, CA

0 25

Approx. scale (feet)

BT Associates

Environmental Services

31 Nightowl Court, Richmond, CA 94803

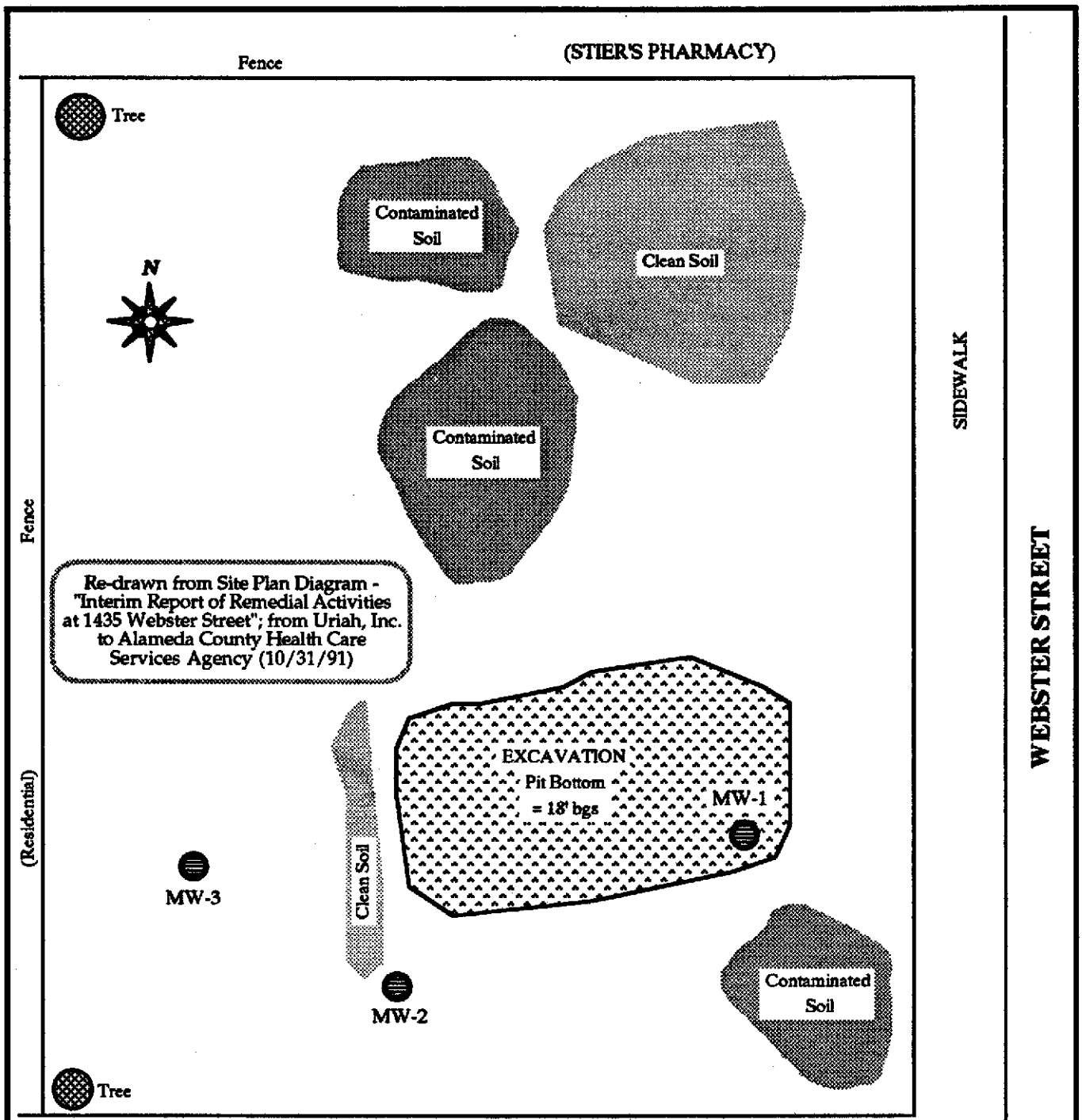

Figure 6 - Detail Map/Overlay

Excavation and stockpile locations after 9/23/91 with present locations of groundwater monitoring wells at 1435 Webster Street, Alameda, CA

0 25

Scale (feet)

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	9/14/94	11.46	14,000	ND	44	28	25	50	0.8
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	7/9/95	9.22	na	na	na	na	na	na	na
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	12/30/94	9.72	ND	ND	ND	ND	ND	ND	ND
	3/26/95	6.88	ND	ND	ND	ND	ND	ND	ND
	7/9/95	9.52	na	na	na	na	na	na	na
Method Detection Limits	-	-	50	50	0.5	0.5	0.5	0.5	0.5
Method of Analysis	-	-	5030/ 8015	3510/ 8015	602	602	602	602	5520 C&F

TPH-G = Total Petroleum Hydrocarbons as Gasoline
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TOG = Total Oil and Grease
ND = Not detected at or above the Method Detection Limit
Note : Sampling of MW-2 and MW-3 on 07/09/95 not required by ACoHCSA

na = Not analyzed/requested
na+ = Not sampled/well inaccessible
ppb = Parts per billion
ppm = Parts per million

APPENDIX B

REPORTS OF CERTIFIED LABORATORY ANALYSES
CHAIN-OF-CUSTODY AND QA/QC DOCUMENTS
WELL MONITORING FORMS

PRIORITY ENVIRONMENTAL LABS

Precision Environmental Analytical Laboratory

July 13, 1995 PEL # 9507013

BT ASSOCIATES

Attn: Bruce Tsutsui

Re: One water sample for Gasoline/BTEX and Diesel analyses.

Project name: Ferrar / Olympian
Project location: 1435 Webster St., - Alameda, CA.

Date sampled: Jul 09, 1995
Date extracted: Jul 11-12, 1995

Date submitted: Jul 11, 1995
Date analyzed: Jul 11-12, 1995

RESULTS:

SAMPLE I.D.	Gasoline (ug/L)	Diesel (ug/L)	Benzene (ug/L)	Toluene (ug/L)	Ethyl Benzene (ug/L)	Total Xylene (ug/L)
MW-1	16000	N.D.	57	28	25	53
Blank	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Spiked Recovery	94.6%	87.8%	81.2%	85.8%	80.1%	98.3%
Detection limit	50	0.5	0.5	0.5	0.5	10
Method of Analysis	5030 / 8015	3510 / 8015	602	602	602	602

David Duong
Laboratory Director

1764 Houret Court Milpitas, CA. 95035 Tel: 408-946-9636 Fax: 408-946-9663

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CHAIN OF CUSTODY

Date: JULY 11, 1995 Page 1 of 1

PROJECT I.D. FERRAR/OLYMPIAN

ADDRESS 1425 WEBSTER ST., ALAMEDA

SAMPLER'S NAME BRUCE TSUTSUI

SIGNATURE Bruce A. Tsutsui

TELEPHONE NUMBER 510-222-1541

ANALYSIS REQUEST

SAMPLE I.D.	DATE	TIME	MATRIX	TPHG	TPHD	TPHG & BTEX	BTEX	O & G	METALS Cd,Cr Pb,Zn Ni	PHUARGOCABLE BONS	VOLATILE ORGANICS	ORGANIC LEAD	TOTAL LEAD	SOLUBLE LEAD	CAL TITLE 22 METALS (BY)				# OF CONTAINERS
MW-1	07-09-95	14:30	Soil (Water)		X	X									*				3
			Soil Water																
			Soil Water																
			Soil Water																
			Soil Water																
			Soil Water																

PEL # 9507013

INV # 26131

LABORATORY INSTRUCTIONS / COMMENTS:

Turn-around Time (Circle One)

Same Day 24 Hrs. 48 Hrs. 72 Hrs. (Normal)

TWO (2) FOUR (4) VOAs, ONE (1) 1-LITER AMBER BOTTLE; ALL SAMPLES HELD UNDER REFRIGERATION/ STORED ON ICE DURING TRANSPORTATION

ANALYTICAL LABORATORY PRIORITY ENVIRON. LABS

CITY MILPITAS

RELINQUISHED BY:	RELINQUISHED BY:	RELINQUISHED BY:
BRUCE A. TSUTSUI		
Printed Name	Printed Name	Printed Name
BT ASSOCIATES		
Company	Company	Company
Bruce A. Tsutsui		
Signature	Signature	Signature
Time 1213 Date 7/11/95	Time ____ Date ____	Time ____ Date ____
RECEIVED BY:	**RECEIVED BY:**	**RECEIVED BY:**
Printed Name	Printed Name	Printed Name
Company	Company	Company
Signature	Signature	Signature
Time ____ Date ____	Time ____ Date ____	Time ____ Date ____

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WELL MONITORING FORM

CLIENT: *Ferrar Property* DATE: *July 9, 1995*

SITE ADDRESS: *1435 Webster Street* COUNTY REPRESENTATIVE: *Ms. Eva Chu*

Alameda, CA COUNTY REPRESENTATIVE CONTACTED PRIOR TO SAMPLING? *Yes*

Note 1: TOTAL WELL DEPTH & DEPTH TO WATER measurements are read to an accuracy of .01' from a straight edge placed in a north-south orientation on top of the christy box.

Note 2: The 0.17 figure used below to convert WATER COLUMN HEIGHT to gallons has units of gallons/linear foot, and is for a 2" diameter, Schedule 40 PVC pipe with an inside diameter of 2.067". Similiarly, use a conversion factor of 0.66 for a 4" pipe, which has a 4.026" I.D.

TOTAL WELL DEPTH *23.18'* MONITORING WELL # *MW-1*

– DEPTH TO WATER *8.92'* PURGE METHOD: *Disposable Polyethylene Bailer*

= WATER COLUMN HEIGHT *14.26'* x 0.17 = *2.42* Gallons (1 well volume)

Multiply 1 well volume by 3 to obtain the minimum number of gallons of water to be purged from monitoring well prior to taking samples.

3 x *2.5* = *7.5* Gallons (3 Well Volumes)

TIME	GALLONS	TEMPERATURE (°F)	pH	CONDUCTIVITY µmhos/cm
1340	*0*	*76.8*	*8.07*	*457*
1348	*2.5*	*74.7*	*7.06*	*545*
1357	*5*	*72.2*	*6.68*	*552*
1406	*7.5*	*72.9*	*6.75*	*554*

(grayish color)

CONTAMINANT ODOR? *No* TIME OF SAMPLE COLLECTION: *1410*

TURBIDITY LEVEL: *Moderate* WITNESSED BY: *No Witness*

SHEEN ON WATER? *No* SAMPLER'S SIGNATURE: *Bruce Tsutsui*

(Bruce Tsutsui)