RO 495

Shell Oil Products US

July 10, 2003

Scott Seery
Alameda County Health Care Services Agency
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502-6577

Subject: **Shell-branded Service Station**
29 Wildwood Avenue
Piedmont, California

Dear Mr. Seery:

Attached for your review and comment is a copy of the *Second Quarter 2003 Monitoring Report and Agency Request* for the above referenced site. Upon information and belief, I declare, under penalty of perjury, that the information contained in the attached document is true and correct.

As always, please feel free to contact me directly at (559) 645-9306 with any questions or concerns.

Sincerely,

Shell Oil Products US

Karen Petryna

Karen Petryna
Sr. Environmental Engineer

P.O. Box 7869 Burbank, CA 91510-7869 Phone (559) 645-9306 Facsimile (559) 645-5643

CAMBRIA

July 9, 2003

Scott Seery
Alameda County Health Care Services Agency
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502-6577

Re: **Second Quarter 2003 Monitoring Report and Agency Response**
Shell-branded Service Station
29 Wildwood Avenue
Piedmont, California
Incident #98995822
Cambria Project# 245-0687-002

Dear Mr. Seery:

On behalf of Equilon Enterprises LLC dba Shell Oil Products US (Shell), Cambria Environmental Technology, Inc. (Cambria) is submitting this groundwater monitoring report in accordance with the reporting requirements of 23 CCR 2652d.

SECOND QUARTER 2003 ACTIVITIES

Groundwater Monitoring: Blaine Tech Services, Inc. (Blaine) of San Jose, California measured dissolved oxygen (DO) concentrations, gauged and sampled all site wells, calculated groundwater elevations, and compiled the analytical data. Cambria prepared a vicinity map (Figure 1) and a groundwater elevation contour map (Figure 2). Blaine's report, presenting the laboratory report and supporting field documents, is included as Attachment A.

May 15, 2003 Agency Letter: The Alameda County Health Care Services Agency's (ACHCSA's) May 15, 2003 letter to Shell reviewed the historic fuel leak case file; requested that a preferential pathway study, including a conduit/utility survey, well search, and site conceptual model (SCM) be completed for the site; and set a schedule for the new requested reports and quarterly groundwater monitoring reports. In addition, the letter denied Shell's request to implement Cambria's proposed sampling frequency reductions.

Cambria previously conducted a conduit study at Shell's request. A copy of Cambria's January 30, 2003 *Conduit Study Report* is included as Attachment B. The study evaluated potential man-made and geogenic conduits and pathways. Cambria's maps summarize the utility

Cambria Environmental Technology, Inc.

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and former stream channel information obtained from other sources, and copies of the original source maps are included as attachments. In general, Cambria's map of utilities shows the location and depth of identified utilities and flow directions. Slopes or grades of the storm drain and sanitary sewer utilities were not calculated, but can be derived from the flow line elevations on the City of Piedmont utility map. Depth information for water, electrical, gas, and communication utilities is not readily available from the utilities and was not further researched. Also, trench construction and backfill material information were not available or researched.

The *Conduit Study Report* rendered professional interpretations, and concluded that:

- It is very likely that water mains, electrical conduits, and gas piping near the site, or their installation trenches, have intersected the groundwater table. As a result, these utility trenches would likely act as preferential pathways for groundwater flow.
- The storm sewer drain piping and their trenches are very likely to intersect groundwater frequently, and these utility trenches likely act as preferential pathways for groundwater flow.
- Some sanitary sewers are nearly always below the water table, and likely act as preferential pathways for groundwater flow.
- The now buried former creek channels adjacent to two sides of the site likely act as natural barriers and conduits for groundwater flow. It is likely that any shallow or deep groundwater leaving the site will be contained within the confines of the former creek channels. Groundwater is expected to flow within the natural valley of the former Wildwood Creek towards Lake Merritt, consistent with groundwater monitoring results.

Together, these findings, and the consistently observed groundwater flow direction, indicate that groundwater will flow within the confines of the natural valley of the former Wildwood Creek, regardless of the presence of man-made conduits or preferential pathways. As a result, Cambria believes no further investigation of conduits or preferential pathways is necessary.

Cambria is currently conducting the requested ½-mile well survey by reviewing well data provided by the Department of Water Resources, and as available, data from the State Water Resources Control Board Geotracker database. The well survey results and the SCM will be provided under separate cover.

May 16, 2003 Agency Letter: The ACHCSA's May 16, 2003 letter directed Shell to continue analyzing all groundwater monitoring samples for the fuel oxygenates methyl tertiary butyl ether (MTBE), tert amyl methyl ether (TAME), ethyl tert butyl ether (ETBE), di-isopropyl ether (DIPE), and tert butyl alcohol (TBA) by EPA Method 8260 until further notice. Cambria has tabulated prior oxygenate analytical data (Table 1). Groundwater samples have been analyzed for these five oxygenates in October 2001 and October 2002. Results of all oxygenate analyses to

date indicate that TAME and TBA have been detected only in the October 2002 samples from well MW-3, at concentrations of 7.4 parts per billion (ppb) and 300 ppb, respectively.

The October 2002 samples from wells MW-1 through MW-5 were also analyzed for ethanol and the lead scavengers 1,2-dichlorethane (1,2-DCA) and ethylene dibromide (EDB). The October 2002 ethanol result for well MW-2 was 150,000 ppb, while the results for 1,2-DCA and EDB were below reporting limits for all samples.

Well MW-1 is upgradient of the fuel underground storage tanks, and five monitoring events have not detected MTBE by EPA Method 8260 in MW-1 samples. Other oxygenates were not detected in recent sampling of this well. Therefore, Cambria believes analysis of MW-1 samples will not provide useful information. Likewise, MTBE has not been detected in wells MW-4 and MW-5 during five monitoring events, and no other oxygenates were detected in recent sampling of these wells. Since prior sampling and analysis have detected oxygenated compounds only in wells MW-2 and MW-3, Cambria requests approval to conduct analyses for the five oxygenates only from samples from MW-2 and MW-3. In addition, Cambria will have samples from wells MW-2 and MW-3 analyzed for ethanol to evaluate the prior detection of that compound in well MW-2.

ANTICIPATED THIRD QUARTER 2003 ACTIVITIES

Groundwater Monitoring: Blaine will measure DO, gauge and sample all site wells, and tabulate the data. Cambria will submit a monitoring report by October 15, 2003.

Additional Oxygenate Analysis: Pending approval of Cambria's request above to limit the additional analyses to MW-2 and MW-3, groundwater samples from all monitoring wells will be analyzed for four additional oxygenates (TAME, ETBE, DIPE, TBA) in addition to the regular analysis for total petroleum hydrocarbons as gasoline, benzene, toluene, ethylbenzene, total xylenes, and MTBE. Samples from wells MW-2 and MW-3 will also be analyzed for ethanol. The results will be included in the monitoring report.

SCM and ½-Mile Well Survey Results: The SCM and ½-mile well survey results will be submitted under separate cover by July 15, 2003.

CLOSING

We appreciate the opportunity to work with you on this project. Please call Matt Derby at (510) 420-3332 if you have any questions or comments.

Sincerely,
Cambria Environmental Technology, Inc

Anni Kreml
Senior Staff Scientist

Matthew W. Derby, P.E.
Senior Project Manager

REGISTERED PROFESSIONAL ENGINEER
MATTHEW W. DERBY
No. C055475
Exp. 12/31/04
CIVIL
STATE OF CALIFORNIA

Figures: 1 - Vicinity Map
2 - Groundwater Elevation Contour Map

Table: 1 - Groundwater Analytical Data - Oxygenates

Attachments: A - Blaine Groundwater Monitoring Report and Field Notes
B - Cambria's January 30, 2003 *Conduit Study Report*

cc: Karen Petryna, Shell Oil Products US, P.O. Box 7869, Burbank, CA 91510-7869

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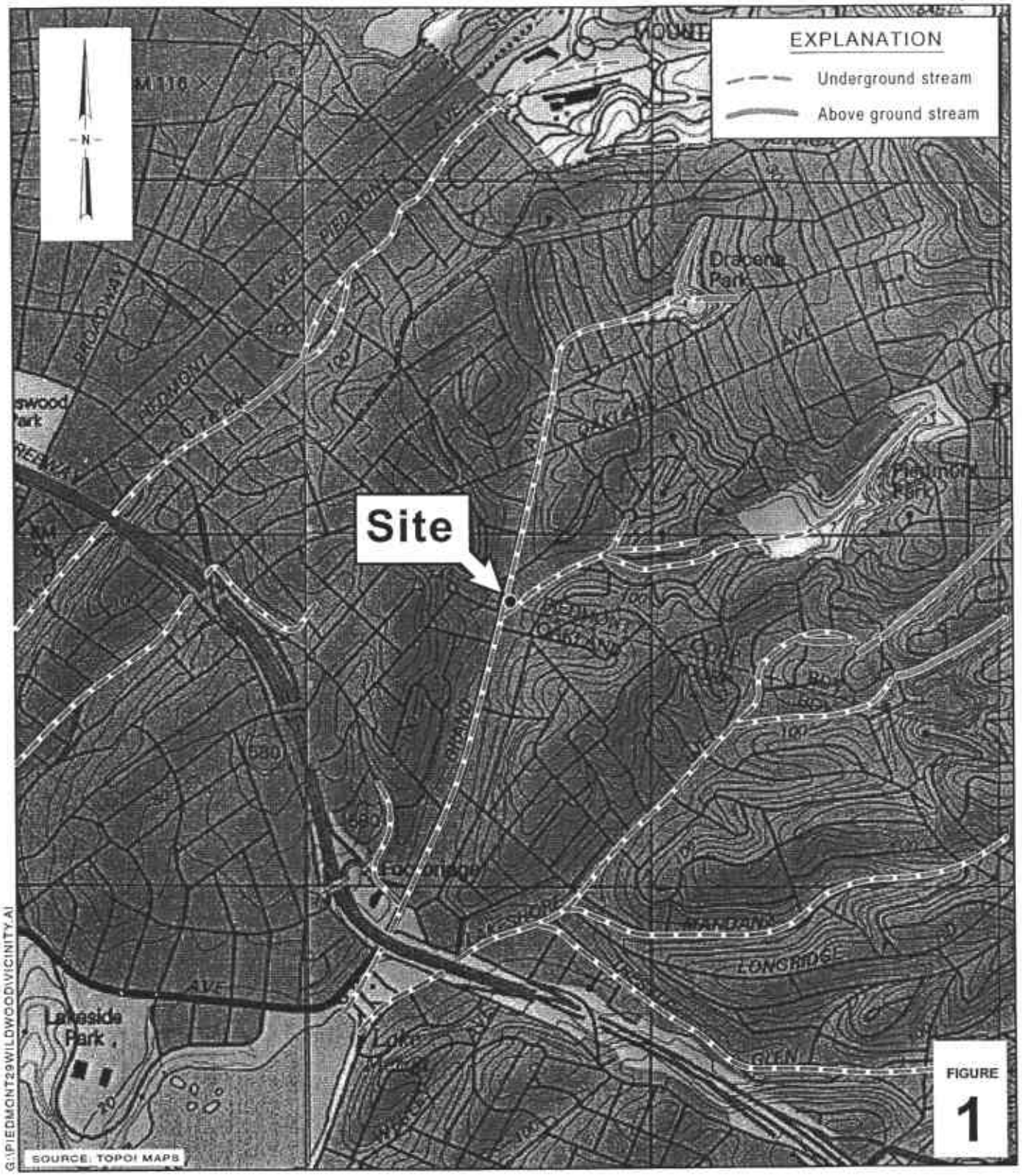
12/30/02



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0 1/8 1/4 1/2 1

SCALE : 1" = 1/4 MILE

Shell-branded Service Station
29 Wildwood Avenue
Piedmont, California
Incident #98995822

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Vicinity Map

06/23/03

EXPLANATION

- MW-1 — Monitoring well
- E-4 — Destroyed flowing artesian monitoring well
- Groundwater flow direction
- XX.XX — Groundwater elevation contour, in feet above mean sea level (msl), approximately located; dashed where inferred

Well
ELEV
Benzene
MTBE

- Well designation
- Groundwater elevation, in feet above msl
- Benzene and MTBE concentrations are in parts per billion and are analyzed by EPA Method 8260.

JEAN STREET

businesses

businesses

MW-5
30.48
<0.50
<5.0

31.00

31.00

32.00

32.00

33.00

33.00

MW-4
33.26
<0.50
<5.0

GRAND AVENUE

W
N
S
E

Groundwater Flow Direction
(2Q99 through 2Q03)

34.00

34.00

MW-3
34.58
56
540

E-4

MW-2
34.45
<5.0
410

35.00

35.00

4
3
dispensers

UST

Shell-branded
Service Station
29 Wildwood

36.00

36.00

2
1
dispensers

37.00

37.00

38.00

38.00

W/D
UST

MW-1
38.18
<0.50
<5.0

residential

businesses

businesses

BOULEVARD WAY

residential

WILDWOOD AVENUE

0 15 30 60
SCALE 1:30 FEET

G:\PIEDMONT29WILDWOOD\FIGURES\2Q03-MP.AI

Groundwater Elevation Contour Map

April 30, 2003

CAMBRIA

FIGURE
2

Shell-branded Service Station
29 Wildwood Avenue
Piedmont, California
Incident #98995822

Table 1. **Groundwater Analytical Data - Oxygenates** - Former Shell Service Station, Incident #98995822, 29 Wildwood Avenue, Piedmont, California

Sample ID	Date Sampled	MTBE	DIPE	ETBE	TAME	TBA	Ethanol	1,2-DCA	EDB
		(Concentrations in ppb)							
MW-1	10/23/02	<0.50	<2.0	<2.0	<2.0	<50	--	<2.0	<2.0
MW-2	10/31/01	<100	<100	<100	<100	<1,000	150,000	--	--
	10/23/02	140	<2.0	<2.0	<2.0	<50	--	<2.0	<2.0
MW-3	10/31/01	31	<2.0	<2.0	<2.0	<50	<500	--	--
	10/23/02	1,400	<5.0	<5.0	7.4	300	--	<5.0	<5.0
MW-4	10/23/02	<0.50	<2.0	<2.0	<2.0	<50	--	<2.0	<2.0
MW-5	10/23/02	<0.50	<2.0	<2.0	<2.0	<50	--	<2.0	<2.0

Abbreviations:

MTBE = Methyl tert-butyl ether, analyzed by EPA Method 8260
DIPE = Di-isopropyl ether, analyzed by EPA Method 8260
ETBE = Ethyl tert-butyl ether, analyzed by EPA Method 8260
TAME = Tert-amyl methyl ether, analyzed by EPA Method 8260
TBA = Tert-butyl alcohol, analyzed by EPA Method 8260
Ethanol analyzed by EPA Method 8260
1,2-DCA = 1,2-Dichloroethane, analyzed by EPA Method 8260
EDB = 1,2-Dibromoethane, analyzed by EPA Method 8260
ppb = Parts per billion

G:\Piedmont 29 Wildwood\QM\2q03\[qmtable1-oxygenates.xls] oxygenates

ATTACHMENT A

Blaine Groundwater Monitoring Report and Field Notes

BLAINE
TECH SERVICES, INC.

1680 ROGERS AVENUE
SAN JOSE, CA 95112-1105
(408) 573-7771 FAX
(408) 573-0555 PHONE
CONTRACTOR'S LICENSE #746684
www.blainetech.com

June 10, 2003

Karen Petryna
Shell Oil Products US
P.O. Box 7869
Burbank, CA 91510-7869

Second Quarter 2003 Groundwater Monitoring at
Shell-branded Service Station
29 Wildwood Avenue
Piedmont, CA

Monitoring performed on April 30, 2003

Groundwater Monitoring Report **030430-BA-2**

This report covers the routine monitoring of groundwater wells at this Shell-branded facility. In accordance with standard procedures that conform to Regional Water Quality Control Board requirements, routine field data collection includes depth to water, total well depth, thickness of any separate immiscible layer, water column volume, calculated purge volume (if applicable), elapsed evacuation time (if applicable), total volume of water removed (if applicable), and standard water parameter instrument readings. Sample material is collected, contained, stored, and transported to the laboratory in conformance with EPA standards. Purgewater (if applicable) is, likewise, collected and transported to the Martinez Refining Company.

Basic field information is presented alongside analytical values excerpted from the laboratory report in the cumulative table of **WELL CONCENTRATIONS**. The full analytical report for the most recent samples and the field data sheets are attached to this report.

At a minimum, Blaine Tech Services, Inc. field personnel are certified on completion of a forty-hour Hazardous Materials and Emergency Response training course per 29 CFR 1910.120. Field personnel are also enrolled in annual eight-hour refresher courses.

Blaine Tech Services, Inc. conducts sampling and documentation assignments of this type as an independent third party. Our activities at this site consisted of objective data and sample collection only. No interpretation of analytical results, defining of hydrological conditions or formulation of recommendations was performed.

Please call if you have any questions.

Yours truly,

Leon Gearhart
Project Coordinator

LG/jt

attachments: Cumulative Table of WELL CONCENTRATIONS
Certified Analytical Report
Field Data Sheets

cc: Anni Kreml
Cambria Environmental Technology, Inc.
5900 Hollis Street, Suite A
Oakland, CA 94608

WELL CONCENTRATIONS
Shell-branded Service Station
29 Wildwood Avenue
Piedmont, CA

Well ID	Date	TPPH (ug/L)	B (ug/L)	T (ug/L)	E (ug/L)	X (ug/L)	MTBE 8020 (ug/L)	MTBE 8260 (ug/L)	TOC (MSL)	Depth to Water (ft.)	GW Elevation (MSL)	DO Reading (ppm)
MW-1	07/12/1989	<50	<0.5	<1	<1	<3	NA	NA	37.96	2.76	35.20	NA
MW-1	01/30/1990	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	37.96	3.10	34.86	NA
MW-1	04/27/1990	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	37.96	3.24	34.72	NA
MW-1	07/31/1990	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	37.96	4.26	33.70	NA
MW-1	10/30/1990	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	37.96	4.25	33.71	NA
MW-1	01/31/1991	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	37.96	3.66	34.30	NA
MW-1	04/30/1991	<50	0.8	<0.5	0.6	1.2	NA	NA	37.96	3.46	34.50	NA
MW-1	07/30/1991	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	37.96	4.14	33.82	NA
MW-1	10/29/1991	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	37.96	3.96	34.00	NA
MW-1	01/20/1992	<30	<0.3	<0.3	<0.3	<0.3	NA	NA	37.96	3.59	34.37	NA
MW-1	04/14/1992	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	37.96	3.18	31.71	NA
MW-1	07/21/1992	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	37.96	4.17	33.79	NA
MW-1	10/02/1992	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	37.96	4.29	33.67	NA
MW-1	01/20/1993	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	37.96	2.32	35.64	NA
MW-1	05/03/1993	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	37.96	3.50	34.46	1.9
MW-1	06/28/1993	NA	NA	NA	NA	NA	NA	NA	37.96	3.76	34.20	NA
MW-1	07/21/1993	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	37.96	4.09	33.87	4.6
MW-1	10/19/1993	50	<0.5	<0.5	<0.5	<0.5	NA	NA	37.96	3.58	34.38	4.3
MW-1	01/20/1994	Well inaccessible		NA	NA	NA	NA	NA	37.96	NA	NA	NA
MW-1	04/12/1994	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	37.96	3.60	34.36	7.5
MW-1	07/20/1994	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	37.96	4.10	33.86	3.2
MW-1	10/06/1994	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	37.96	4.30	33.66	3.2
MW-1	01/20/1995	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	37.96	2.94	35.02	10.6
MW-1	07/06/1995	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	37.96	3.68	34.28	NA
MW-1	01/24/1996	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	37.96	2.12	35.84	NA
MW-1	07/12/1996	<50	<0.5	<0.5	<0.5	<0.5	<2.5	NA	37.96	3.58	34.38	2.7

WELL CONCENTRATIONS
Shell-branded Service Station
29 Wildwood Avenue
Piedmont, CA

Well ID	Date	TPPH (ug/L)	B (ug/L)	T (ug/L)	E (ug/L)	X (ug/L)	MTBE 8020 (ug/L)	MTBE 8260 (ug/L)	TOC (MSL)	Depth to Water (ft.)	GW Elevation (MSL)	DO Reading (ppm)
MW-1	01/16/1997	120	14	10	3.6	14	<2.5	NA	37.96	2.30	35.66	3
MW-1	10/24/1997	<50	<0.50	<0.50	<0.50	<0.50	8.6	NA	37.96	3.66	34.30	4.5
MW-1	05/13/1998	<50	<0.50	<0.50	<0.50	<0.50	<2.5	NA	37.96	2.81	35.15	5.1
MW-1	10/01/1998	<50	<0.50c	<0.50c	<0.50c	<0.50c	<2.5c	NA	37.96	3.75	34.21	5.0
MW-1	04/29/1999	<50	<0.50	<0.50	<0.50	<0.50	<2.5	NA	37.96	3.52	34.44	4.1
MW-1	11/01/1999	<50.0	<0.500	<0.500	<0.500	<0.500	5.03	NA	37.96	4.05	33.91	3.6
MW-1	04/05/2000	<50.0	<0.500	<0.500	<0.500	<0.500	3.22	NA	37.96	3.74	34.22	4.2
MW-1	10/30/2000	<50.0	<0.500	<0.500	<0.500	<0.500	<2.50	NA	37.96	2.19	35.77	4.1
MW-1	04/27/2001	<50.0	<0.500	<0.500	<0.500	<0.500	<2.50	NA	37.96	4.43	33.53	1.9
MW-1	10/31/2001	<50	<0.50	<0.50	<0.50	<0.50	NA	<5.0	37.96	4.34	33.62	2.4
MW-1	05/09/2002	Well inaccessible		NA	NA	NA	NA	NA	37.96	NA	NA	NA
MW-1	07/25/2002	<50	<0.50	<0.50	<0.50	<0.50	NA	<5.0	37.96	3.53	34.43	1.2
MW-1	10/23/2002	<50	<0.50	<0.50	<0.50	<0.50	NA	<0.50	40.94	3.68	37.26	3.5
MW-1	01/22/2003	Well inaccessible		NA	NA	NA	NA	NA	40.94	NA	NA	NA
MW-1	01/29/2003	<50	<0.50	<0.50	<0.50	<0.50	NA	<5.0	40.94	3.25	37.69	3.7
MW-1	**04/30/2003**	**<50**	**<0.50**	**<0.50**	**<0.50**	**<1.0**	**NA**	**<5.0**	**40.94**	**2.76**	**38.18**	**3.6**
MW-2	07/12/1989	60	2.7	<1	<1	<3	NA	NA	34.89	3.66	31.23	NA
MW-2	01/30/1990	<50	6.6	<0.5	0.54	0.93	NA	NA	34.89	3.49	31.40	NA
MW-2	04/27/1990	60	2.1	<0.5	<0.5	<0.5	NA	NA	34.89	3.79	31.10	NA
MW-2	07/31/1990	70	1.5	<0.5	<0.5	<0.5	NA	NA	34.89	4.03	30.86	NA
MW-2	10/30/1990	70	<0.5	0.7	<0.5	1.6	NA	NA	34.89	4.21	30.68	NA
MW-2	01/31/1991	80	<0.5	<0.5	0.9	1.9	NA	NA	34.89	4.09	30.80	NA
MW-2	04/30/1991	100	5.9	0.6	0.7	2	NA	NA	34.89	3.95	30.94	NA
MW-2	07/30/1991	<50	<0.5	<0.7	<0.5	<0.5	NA	NA	34.89	4.07	30.82	NA
MW-2	10/29/1991	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	34.89	4.11	30.78	NA
MW-2	01/20/1992	<30	0.84	<0.3	<0.41	<0.48	NA	NA	34.89	3.86	31.03	NA

WELL CONCENTRATIONS
Shell-branded Service Station
29 Wildwood Avenue
Piedmont, CA

Well ID	Date	TPPH (ug/L)	B (ug/L)	T (ug/L)	E (ug/L)	X (ug/L)	MTBE 8020 (ug/L)	MTBE 8260 (ug/L)	TOC (MSL)	Depth to Water (ft.)	GW Elevation (MSL)	DO Reading (ppm)
MW-2	04/14/1992	70	16	<0.5	3.1	2.1	NA	NA	34.89	3.66	34.30	NA
MW-2	07/21/1992	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	34.89	3.92	30.97	NA
MW-2	10/02/1992	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	34.89	4.45	30.44	NA
MW-2	01/20/1993	<50	3.8	<0.5	0.52	<0.5	NA	NA	34.89	3.74	31.15	NA
MW-2	05/03/1993	680a	2.8	<0.5	<0.5	<0.5	NA	NA	34.89	3.77	31.12	0.9
MW-2	06/28/1993	NA	NA	NA	NA	NA	NA	NA	34.89	3.96	30.93	NA
MW-2	07/21/1993	<50	8	1.2	1.8	7.9	NA	NA	34.89	4.39	30.50	5.9
MW-2	10/19/1993	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	34.89	3.92	30.97	5.7
MW-2	01/20/1994	<50	1.5	<0.5	<0.5	<0.5	NA	NA	34.89	4.45	30.44	3.2
MW-2	04/12/1994	<50	2.9	<0.5	<0.5	<0.5	NA	NA	34.89	4.72	30.17	11.4
MW-2	07/20/1994	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	34.89	5.32	29.57	2.4
MW-2	10/06/1994	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	34.89	4.03	30.86	2.9
MW-2	01/20/1995	290	28	<0.5	<0.5	<0.5	NA	NA	34.89	3.89	31.00	4.6
MW-2	07/06/1995	120	3	<0.5	<0.5	<0.5	NA	NA	34.89	8.84	26.05	NA
MW-2	01/24/1996	70	3.1	<0.5	0.8	1.5	NA	NA	34.89	3.80	31.09	NA
MW-2 (D)	01/24/1996	70	3.2	0.5	0.7	1.5	NA	NA	34.89	NA	NA	NA
MW-2	07/12/1996	<50	0.68	<0.5	<0.5	<0.5	270	NA	34.89	3.85	31.04	3.8
MW-2	01/16/1997	230	34	1.6	1.6	4.2	460	NA	34.89	3.84	31.05	NA
MW-2	10/24/1997	<50	<0.50	<0.50	<0.50	<0.50	54	NA	34.89	3.75	31.14	2.9
MW-2	05/13/1998	NA	NA	NA	NA	NA	NA	NA	34.89	3.78	31.11	NA
MW-2	10/01/1998	<50	<0.50c	<0.50c	<0.50c	<0.50c	100	NA	34.89	4.90	29.99	3.0
MW-2	04/29/1999	NA	NA	NA	NA	NA	NA	NA	34.89	4.69	30.20	NA
MW-2	11/01/1999	<50.0	<0.500	1.29	0.669	4.52	7.21	NA	34.89	5.24	29.65	2.9
MW-2	04/05/2000	376d	68.1d	3.10d	2.88d	5.35d	729d	NA	34.89	3.43	31.46	3.6
MW-2	10/30/2000	5,790	59.2	315	162	1320	346	NA	34.89	2.35	32.54	2.8
MW-2	04/27/2001	2,720	90.8	22.8	18.1	165	512	578	34.89	4.67	30.22	0.9
MW-2	10/31/2001	<10,000	<100	<100	<100	<100	NA	<100	34.89	3.68	31.21	1.3

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Well ID	Date	TPPH (ug/L)	B (ug/L)	T (ug/L)	E (ug/L)	X (ug/L)	MTBE 8020 (ug/L)	MTBE 8260 (ug/L)	TOC (MSL)	Depth to Water (ft.)	GW Elevation (MSL)	DO Reading (ppm)
MW-2	05/09/2002	490	1.5	7.8	2.1	14	NA	200	34.89	3.18	31.71	1.1
MW-2	07/25/2002	1,200	1.0	3.3	1.3	8.3	NA	45	34.89	3.30	31.59	0.4
MW-2	10/23/2002	1,100	0.85	3.8	1.3	7.9	NA	140	37.87	3.87	34.00	0.8
MW-2	01/22/2003	730	<0.50	100	0.96	5.4	NA	230	37.87	2.68	35.19	1.5
MW-2	**04/30/2003**	**<500**	**<5.0**	**23**	**<5.0**	**<10**	**NA**	**410**	**37.87**	**3.42**	**34.45**	**0.1**
MW-3	07/12/1989	3,900	380	41	99	30	NA	NA	35.00	3.83	31.17	NA
MW-3	01/30/1990	5,500	440	35	79	130	NA	NA	35.00	3.24	31.76	NA
MW-3	04/27/1990	4,500	310	26	37	110	NA	NA	35.00	4.02	30.98	NA
MW-3	07/31/1990	3,500	210	17	8.4	62	NA	NA	35.00	4.31	30.69	NA
MW-3	10/30/1990	2,300	610	<0.5	<0.5	28	NA	NA	35.00	4.52	30.48	NA
MW-3	01/31/1991	4,100	300	20	19	81	NA	NA	35.00	4.33	30.67	NA
MW-3	04/30/1991	3,800	370	19	8.6	60	NA	NA	35.00	3.79	31.21	NA
MW-3	07/30/1991	3,300	160	13	15	87	NA	NA	35.00	4.37	30.63	NA
MW-3	10/29/1991	1,000	35	2.8	2.9	8.1	NA	NA	35.00	4.00	31.00	NA
MW-3	01/20/1992	6,900	380	18	47	48	NA	NA	35.00	3.87	31.13	NA
MW-3	04/14/1992	6,000	480	38	41	55	NA	NA	35.00	3.15	31.85	NA
MW-3	07/21/1992	3,700	330	13	30	23	NA	NA	35.00	4.17	30.83	NA
MW-3	10/02/1992	4,200	260	10	13	12	NA	NA	35.00	4.43	30.57	NA
MW-3	01/20/1993	4,200	360	15	32	26	NA	NA	35.00	2.20	32.80	NA
MW-3 (D)	01/20/1993	3,900	370	15	32	26	NA	NA	35.00	NA	NA	NA
MW-3	05/03/1993	12,000	290	520	120	620	NA	NA	35.00	3.50	31.50	0.6
MW-3	06/28/1993	NA	NA	NA	NA	NA	NA	NA	35.00	4.08	30.92	NA
MW-3	07/21/1993	2,000	170	12	<10	11	NA	NA	35.00	4.12	30.88	4.3
MW-3 (D)	07/21/1993	2,000	170	10	<10	14	NA	NA	35.00	NA	NA	NA
MW-3	10/19/1993	2,000	240	<0.5	<0.5	<0.5	NA	NA	35.00	4.20	30.80	5.7
MW-3	01/20/1994	4,200	280	<10	<10	<10	NA	NA	35.00	4.08	30.92	4.1

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MW-3 (D)	01/20/1994	3,800	250	<10	<10	<10	NA	NA	35.00	NA	NA	4.1
MW-3	04/12/1994	4,700	380	<10	<10	<10	NA	NA	35.00	3.70	31.30	10.6
MW-3 (D)	04/12/1994	3,400	370	<25	<25	<25	NA	NA	35.00	NA	NA	NA
MW-3	07/20/1994	5,100	320	77	15	34	NA	NA	35.00	4.26	30.74	2.3
MW-3 (D)	07/20/1994	4,400	250	14	13	32	NA	NA	35.00	NA	NA	NA
MW-3	10/06/1994	4,300	280	9.7	4	15	NA	NA	35.00	4.31	30.69	2.3
MW-3	01/20/1995	4,600	180	18	16	10	NA	NA	35.00	3.00	32.00	11.1
MW-3 (D)	01/20/1995	4,300	170	12	15	7.2	NA	NA	35.00	NA	NA	NA
MW-3	07/06/1995	3,900	310	<0.5	7.6	13	NA	NA	35.00	3.75	31.25	NA
MW-3 (D)	07/06/1995	4,100	330	<0.5	7.9	2.4	NA	NA	35.00	NA	NA	NA
MW-3	01/24/1996	5,000	210	14	14	12	NA	NA	35.00	3.26	31.74	NA
MW-3	07/12/1996	2,700	210	<0.5	<0.5	<0.5	3,600	NA	35.00	3.77	31.23	2.4
MW-3 (D)	07/12/1996	2,800	210	<0.5	<0.5	<0.5	3,400	NA	35.00	NA	NA	2.4
MW-3	01/16/1997	4,200	130	19	10	34	4,400	4,600	35.00	2.38	32.62	2.3
MW-3	10/24/1997	4,100	270	9	5.1	8.8	2,000	NA	35.00	4.12	30.88	1.9
MW-3 (D)	10/24/1997	1,700	220	<5.0	<5.0	<5.0	1,500	NA	35.00	NA	NA	1.9
MW-3	05/13/1998	NA	NA	NA	NA	NA	NA	NA	35.00	3.22	31.78	NA
MW-3	10/01/1998	1,400	84c	<5.0c	<5.0c	<5.0c	2,300	NA	35.00	4.15	30.85	2.0
MW-3 (D)	10/01/1998	2,100	100c	<10c	<10c	<10c	2,600	NA	35.00	NA	NA	2.0
MW-3	04/29/1999	NA	NA	NA	NA	NA	NA	NA	35.00	4.27	30.73	NA
MW-3	11/01/1999	1,850	94.3	6.09	<5.00	6.67	4,140	NA	35.00	4.65	30.35	2.2
MW-3	04/05/2000	3,070	96.9	12.1	<10.0	<10.0	1,050	NA	35.00	3.50	31.50	2.7
MW-3	10/30/2000	1,570	56.8	1.91	1.39	3.06	572	524	35.00	3.40	31.60	3.1
MW-3	04/27/2001	2,420	103	12.6	<5.00	15.6	314	NA	35.00	3.67	31.33	0.9
MW-3	10/31/2001	<50	0.71	<0.50	<0.50	<0.50	NA	31	35.00	3.79	31.21	1.6
MW-3	05/09/2002	2,000	52	<10	<10	<10	NA	4,100	35.00	3.76	31.24	0.9
MW-3	07/25/2002	1,800	50	<5.0	<5.0	<5.0	NA	1,900	35.00	4.17	30.83	3.7

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MW-3	10/23/2002	1,700	27	<5.0	<5.0	<5.0	NA	1,400	37.97	4.36	33.61	1.6
MW-3	01/22/2003	1,800	38	2.4	1.5	2.4	NA	390	37.97	3.09	34.88	1.3
MW-3	**04/30/2003**	**3,300**	**56**	**5.2**	**<5.0**	**<10**	**NA**	**540**	**37.97**	**3.39**	**34.58**	**1.5**
MW-4	01/30/1990	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	33.73	4.50	29.23	NA
MW-4	04/27/1990	130a	<0.5	<0.5	<0.5	<0.5	NA	NA	33.73	3.62	30.11	NA
MW-4	07/31/1990	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	33.73	4.19	29.54	NA
MW-4	10/30/1990	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	33.73	4.19	29.54	NA
MW-4	01/31/1991	50a	<0.5	<0.5	<0.5	<0.5	NA	NA	33.73	4.49	29.24	NA
MW-4	04/30/1991	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	33.73	4.02	29.71	NA
MW-4	07/30/1991	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	33.73	4.39	29.34	NA
MW-4	10/29/1991	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	33.73	3.75	29.98	NA
MW-4	01/20/1992	<30	<0.3	<0.3	<0.3	<0.3	NA	NA	33.73	3.94	29.79	NA
MW-4	04/14/1992	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	33.73	3.71	30.02	NA
MW-4	07/21/1992	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	33.73	4.02	29.71	NA
MW-4	10/02/1992	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	33.73	4.13	29.60	NA
MW-4	01/20/1993	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	33.73	3.10	30.63	NA
MW-4	05/03/1993	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	33.73	3.70	30.03	1.7
MW-4	06/28/1993	NA	NA	NA	NA	NA	NA	NA	33.73	3.81	29.92	NA
MW-4	07/21/1993	<50	0.56	<0.5	<0.5	<0.5	NA	NA	33.73	3.81	29.92	4.5
MW-4	10/19/1993	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	33.73	3.94	29.79	5.8
MW-4	01/20/1994	<50	0.71	<0.5	<0.5	<0.5	NA	NA	33.73	4.00	29.73	4.4
MW-4	04/12/1994	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	33.73	4.01	29.72	7.3
MW-4	07/20/1994	160	<0.5	<0.5	<0.5	<0.5	NA	NA	33.73	3.91	29.82	6.4
MW-4	10/06/1994	410	<0.5	<0.5	<0.5	<0.5	NA	NA	33.73	3.99	29.74	5.0
MW-4	01/20/1995	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	33.73	3.56	30.17	4.9
MW-4	07/06/1995	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	33.73	3.85	29.88	NA

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MW-4	01/24/1996	<50	<0.5	<0.5	0.6	1.8	NA	NA	33.73	2.56	31.17	NA
MW-4	07/12/1996	<50	<0.5	<0.5	<0.5	<0.5	b	NA	33.73	3.36	30.37	2.7
MW-4	01/16/1997	Well inaccessible		NA	NA	NA	NA	NA	33.73	NA	NA	NA
MW-4	10/24/1997	Well inaccessible		NA	NA	NA	NA	NA	33.73	NA	NA	NA
MW-4	05/13/1998	Well inaccessible		NA	NA	NA	NA	NA	33.73	NA	NA	NA
MW-4	10/01/1998	<50	<0.50c	<0.50c	<0.50c	0.74c	8.1	NA	33.73	3.90	29.83	2.5
MW-4	04/29/1999	<50	<0.50	<0.50	<0.50	<0.50	5.7	NA	33.73	3.97	29.76	2.1
MW-4	11/01/1999	Well inaccessible		NA	NA	NA	NA	NA	33.73	NA	NA	NA
MW-4	04/05/2000	<50.0	<0.500	<0.500	<0.500	<0.500	3.64	NA	33.73	3.63	30.10	2.1
MW-4	10/30/2000	<50.0	<0.500	<0.500	<0.500	<0.500	<2.50	NA	33.73	3.33	30.40	3.0
MW-4	04/27/2001	<50.0	<0.500	<0.500	<0.500	<0.500	<2.50	NA	33.73	3.48	30.25	2.2
MW-4	10/31/2001	<50	<0.50	<0.50	<0.50	<0.50	NA	<5.0	33.73	3.58	30.15	2.8
MW-4	05/09/2002	<50	<0.50	<0.50	<0.50	<0.50	NA	<5.0	33.73	3.74	29.99	2.0
MW-4	07/25/2002	<50	<0.50	<0.50	<0.50	<0.50	NA	<5.0	33.73	3.71	30.02	1.3
MW-4	10/23/2002	<50	<0.50	<0.50	<0.50	<0.50	NA	<0.50	36.72	3.93	32.79	2.6
MW-4	01/22/2003	<50	<0.50	<0.50	<0.50	<0.50	NA	<5.0	36.72	3.67	33.05	3.1
MW-4	**04/30/2003**	**<50**	**<0.50**	**<0.50**	**<0.50**	**<1.0**	**NA**	**<5.0**	**36.72**	**3.46**	**33.26**	**2.8**
MW-5	01/30/1990	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	31.38	7.12	24.26	NA
MW-5	04/27/1990	210a	<0.5	<0.5	<0.5	<0.5	NA	NA	31.38	4.19	27.19	NA
MW-5	07/31/1990	90	<0.5	<0.5	<0.5	<0.5	NA	NA	31.38	4.09	27.29	NA
MW-5	10/30/1990	100	0.8	0.7	0.6	1.4	NA	NA	31.38	4.39	26.99	NA
MW-5	01/31/1991	80a	<0.5	<0.5	<0.5	<0.5	NA	NA	31.38	4.49	26.89	NA
MW-5	04/30/1991	90	<0.5	<0.5	<0.5	<0.5	NA	NA	31.38	4.27	27.11	NA
MW-5	07/30/1991	90	<0.5	<0.5	<0.5	<0.5	NA	NA	31.38	4.32	27.06	NA
MW-5	10/29/1991	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	31.38	3.79	27.59	NA
MW-5	01/20/1992	<30	<0.3	<0.3	<0.3	<0.3	NA	NA	31.38	4.09	27.29	NA

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MW-5	04/14/1992	<50a	<0.5	<0.5	<0.5	<0.5	NA	NA	31.38	4.12	27.26	NA
MW-5	07/21/1992	74a	<0.5	<0.5	<0.5	<0.5	NA	NA	31.38	4.13	27.25	NA
MW-5	10/02/1992	76a	<0.5	<0.5	<0.5	<0.5	NA	NA	31.38	4.30	27.08	NA
MW-5	01/20/1993	72a	<0.5	<0.5	<0.5	<0.5	NA	NA	31.38	3.12	28.26	NA
MW-5	05/03/1993	70a	<0.5	<0.5	<0.5	<0.5	NA	NA	31.38	4.07	27.31	1.6
MW-5 (D)	05/04/1993	80a	<0.5	<0.5	<0.5	<0.5	NA	NA	31.38	NA	NA	NA
MW-5	06/28/1993	NA	NA	NA	NA	NA	NA	NA	31.38	4.08	27.30	NA
MW-5	07/21/1993	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	31.38	4.05	27.33	3.5
MW-5	10/19/1993	51	<0.5	<0.5	<0.5	<0.5	NA	NA	31.38	4.20	27.18	3.8
MW-5	01/20/1994	90	<0.5	<0.5	<0.5	<0.5	NA	NA	31.38	4.40	26.98	4.2
MW-5	04/12/1994	67	<0.5	<0.5	<0.5	<0.5	NA	NA	31.38	4.18	27.20	NA
MW-5	07/20/1994	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	31.38	4.06	27.32	3.2
MW-5	10/06/1994	80	<0.5	<0.5	<0.5	<0.5	NA	NA	31.38	4.01	27.37	2.1
MW-5 (D)	10/06/1994	60	<0.5	<0.5	<0.5	<0.5	NA	NA	31.38	NA	NA	NA
MW-5	01/20/1995	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	31.38	3.49	27.89	3.2
MW-5	07/06/1995	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	31.38	4.06	27.32	NA
MW-5	01/24/1996	70	<0.5	<0.5	0.8	2.9	NA	NA	31.38	2.90	28.48	NA
MW-5	07/12/1996	62	<0.5	<0.5	<0.5	<0.5	b	NA	31.38	4.02	27.36	1.9
MW-5	01/16/1997	66	0.91	0.89	<0.50	1.7	<2.5	NA	31.38	2.59	28.79	2.2
MW-5 (D)	01/16/1997	<50	0.7	0.78	<0.50	1.3	<2.5	NA	31.38	NA	NA	2.2
MW-5	10/24/1997	59	<0.50	<0.50	<0.50	<0.50	17	NA	31.38	4.15	27.23	4.6
MW-5	05/13/1998	72	<0.50	<0.50	<0.50	<0.50	<2.5	NA	31.38	3.64	27.74	2.1
MW-5 (D)	05/13/1998	70	<0.50	<0.50	<0.50	<0.50	<2.5	NA	31.38	NA	NA	2.1
MW-5	10/01/1998	57	<0.50c	<0.50c	<0.50c	0.62c	20	NA	31.38	4.25	27.13	2.2
MW-5	04/29/1999	<50	<0.50	<0.50	<0.50	<0.50	16	NA	31.38	4.56	26.82	2.0
MW-5	11/01/1999	<50.0	<0.500	<0.500	<0.500	<0.500	3.06	NA	31.38	4.19	27.19	2.2
MW-5	04/05/2000	<50.0	<0.500	<0.500	<0.500	<0.500	22.5	NA	31.38	4.34	27.04	2.2

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MW-5	10/30/2000	<50.0	<0.500	<0.500	<0.500	<0.500	19.3	NA	31.38	3.25	28.13	4.0
MW-5	04/27/2001	51.5	<0.500	<0.500	<0.500	<0.500	4.29	NA	31.38	4.07	27.31	1.0
MW-5	10/31/2001	210	<0.50	<0.50	<0.50	<0.50	NA	<5.0	31.38	4.02	27.36	1.5
MW-5	05/09/2002	280	0.71	<0.50	<0.50	<0.50	NA	<5.0	31.38	4.31	27.07	1.7
MW-5	07/25/2002	410	<0.50	<0.50	<0.50	<0.50	NA	<5.0	31.38	4.32	27.06	0.7
MW-5	10/23/2002	290	<0.50	<0.50	<0.50	<0.50	NA	<0.50	34.36	4.37	29.99	2.3
MW-5	01/22/2003	260	<0.50	<0.50	<0.50	<0.50	NA	<5.0	34.36	4.12	30.24	2.4
MW-5	**04/30/2003**	**90 e**	**<0.50**	**<0.50**	**<0.50**	**<1.0**	**NA**	**<5.0**	**34.36**	**3.88**	**30.48**	**1.5**
E-4	07/12/1989	<50	<0.5	<1	<1	<3	NA	NA	34.63	NA	>39.13	NA
E-4	01/30/1990	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	34.63	NA	>34.63	NA
E-4	04/27/1990	120a	<0.5	<0.5	<0.5	<0.5	NA	NA	34.63	NA	>34.63	NA
E-4	07/31/1990	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	34.63	NA	>34.63	NA
E-4	10/30/1990	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	34.63	NA	>34.63	NA
E-4	01/31/1991	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	34.63	NA	>34.63	NA
E-4	04/30/1991	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	34.63	NA	>34.63	NA
E-4	07/30/1991	<50	<0.5	0.6	<0.5	<0.5	NA	NA	34.63	NA	>34.63	NA
E-4	10/29/1991	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	34.63	NA	>34.63	NA
E-4	01/20/1992	<30	<0.3	<0.3	<0.3	<0.3	NA	NA	34.63	NA	>34.63	NA
E-4	04/14/1992	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	34.63	NA	>34.63	NA
E-4	07/21/1992	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	34.63	NA	>34.63	NA
E-4	10/02/1992	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	34.63	NA	>34.63	NA
E-4	01/20/1993	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	34.63	NA	>34.63	NA
E-4	05/03/1993	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	34.63	NA	>34.63	0.6
E-4	06/28/1993	NA	NA	NA	NA	NA	NA	NA	34.63	NA	>34.63	NA
E-4	07/21/1993	<50	5.4	0.72	1	4.4	NA	NA	34.63	NA	>34.63	5.4
E-4	10/19/1993	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	34.63	NA	>34.63	5.6

WELL CONCENTRATIONS
Shell-branded Service Station
29 Wildwood Avenue
Piedmont, CA

Well ID	Date	TPPH (ug/L)	B (ug/L)	T (ug/L)	E (ug/L)	X (ug/L)	MTBE 8020 (ug/L)	MTBE 8260 (ug/L)	TOC (MSL)	Depth to Water (ft.)	GW Elevation (MSL)	DO Reading (ppm)
E-4	01/20/1994	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	34.63	NA	>34.63	NA
E-4	04/12/1994	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	34.63	NA	>34.63	9.4
E-4	07/20/1994	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	34.63	NA	>34.63	2.0
E-4	10/06/1994	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	34.63	NA	>34.63	1.3
E-4	01/20/1995	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	34.63	NA	>34.63	3.7
E-4	05/16/1995	Well abandoned		NA	NA	NA	NA	NA	NA	NA	NA	NA

Abbreviations:

TPPH = Total petroleum hydrocarbons as gasoline by EPA Method 8260B; prior to October 31, 2001, analyzed by EPA Method 8015.

BTEX = Benzene, toluene, ethylbenzene, xylenes by EPA Method 8260B; prior to October 31, 2001, analyzed by EPA Method 8020.

MTBE = Methyl-tertiary-butyl ether

TOC = Top of Casing Elevation

SPH = Separate-Phase Hydrocarbons

GW = Groundwater

DO = Dissolved Oxygen

ug/L = Parts per billion

ppm = Parts per million

MSL = Mean sea level

ft = Feet

<n = Below detection limit

D = Duplicate sample

NA = Not applicable

WELL CONCENTRATIONS
Shell-branded Service Station
29 Wildwood Avenue
Piedmont, CA

Well ID	Date	TPPH (ug/L)	B (ug/L)	T (ug/L)	E (ug/L)	X (ug/L)	MTBE 8020 (ug/L)	MTBE 8260 (ug/L)	TOC (MSL)	Depth to Water (ft.)	GW Elevation (MSL)	DO Reading (ppm)

Notes:

a = Chromatogram pattern indicated an unidentified hydrocarbon.

b = Due to coelution with early eluters, no result could be determined for MTBE

c = Laboratory reported 1.3 ug/L benzene, 11 ug/L toluene, 0.98 ug/L ethyl benzene, and 6.5 ug/L total xylenes in the equipment blank.

d = Result reported was generated out of hold time.

e = Hydrocarbon reported in the gasoline range does not match STL's gasoline standard.

Well E-4 is a flowing artesian well; potentiometric surface above top-of-casing elevation.

Site surveyed March 5, 2002, by Virgil Chavez Land Surveying of Vallejo, California.

SEVERN TRENT STL

Submission#: 2003-05-0044

Blaine Tech Services, Inc.

May 15, 2003

1680 Rogers Avenue
San Jose, CA 95112-1105

Attn.: Leon Gearhart

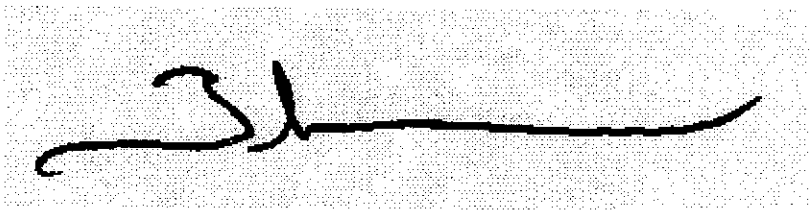
Project#: 030430-BA2
Project: 98995822
Site: 29 Wildwood Ave., Piedmont

Dear Mr.Gearhart,

Attached is our report for your samples received on 05/01/2003 15:20
This report has been reviewed and approved for release. Reproduction of this report is permitted only in its entirety.

Please note that any unused portion of the samples will be discarded after 06/15/2003 unless you have requested otherwise.
We appreciate the opportunity to be of service to you. If you have any questions, please call me at (925) 484-1919.
You can also contact me via email. My email address is: tgranicher@stl-inc.com

Sincerely,



Tod Granicher
Project Manager

SEVERN TRENT STL

Submission #: 2003-05-0044

Gas/BTEX/MTBE by 8260B (C6-C12)

Blaine Tech Services, Inc.
Attn.: Leon Gearhart

1680 Rogers Avenue
San Jose, CA 95112-1105
Phone: (408) 573-0555 Fax: (408) 573-7771

Project: 030430-BA2
98995822

Received: 05/01/2003 15:20

Site: 29 Wildwood Ave., Piedmont

Samples Reported

Sample Name	Date Sampled	Matrix	Lab #
MW-1	04/30/2003 14:45	Water	1
MW-2	04/30/2003 15:30	Water	2
MW-3	04/30/2003 15:00	Water	3
MW-4	04/30/2003 13:20	Water	4
MW-5	04/30/2003 13:45	Water	5

Gas/BTEX/MTBE by 8260B (C6-C12)

Blaine Tech Services, Inc.

Attn.: Leon Gearhart

1680 Rogers Avenue
San Jose, CA 95112-1105
Phone: (408) 573-0555 Fax: (408) 573-7771

Project: 030430-BA2
98995822

Received: 05/01/2003 15:20

Site: 29 Wildwood Ave., Piedmont

Prep(s):	5030B	Test(s):	8260FAB
Sample ID:	**MW-1**	Lab ID:	2003-05-0044 - 1
Sampled:	04/30/2003 14:45	Extracted:	5/12/2003 20:23
Matrix:	Water	QC Batch#:	2003/05/12-1c.65

Compound	Conc.	RL	Unit	Dilution	Analyzed	Flag
Gasoline	ND	50	ug/L	1.00	05/12/2003 20:23	
Benzene	ND	0.50	ug/L	1.00	05/12/2003 20:23	
Toluene	ND	0.50	ug/L	1.00	05/12/2003 20:23	
Ethylbenzene	ND	0.50	ug/L	1.00	05/12/2003 20:23	
Total xylenes	ND	1.0	ug/L	1.00	05/12/2003 20:23	
Methyl tert-butyl ether (MTBE)	ND	5.0	ug/L	1.00	05/12/2003 20:23	
Surrogates(s)						
1,2-Dichloroethane-d4	107.6	76-114	%	1.00	05/12/2003 20:23	
Toluene-d8	96.2	88-110	%	1.00	05/12/2003 20:23	

Gas/BTEX/MTBE by 8260B (C6-C12)

Blaine Tech Services, Inc.

Attn.: Leon Gearhart

1680 Rogers Avenue
San Jose, CA 95112-1105
Phone: (408) 573-0555 Fax: (408) 573-7771

Project: 030430-BA2
98995822

Received: 05/01/2003 15:20

Site: 29 Wildwood Ave., Piedmont

Prep(s): 5030B
Test(s): 8260FAB
Sample ID: **MW-2**
Lab ID: 2003-05-0044 - 2
Sampled: 04/30/2003 15:30
Extracted: 5/14/2003 19:38
Matrix: Water
QC Batch#: 2003/05/14-1b.65
Analysis Flag: o (See Legend and Note Section)

Compound	Conc.	RL	Unit	Dilution	Analyzed	Flag
Gasoline	ND	500	ug/L	10.00	05/14/2003 19:38	
Benzene	ND	5.0	ug/L	10.00	05/14/2003 19:38	
Toluene	23	5.0	ug/L	10.00	05/14/2003 19:38	
Ethylbenzene	ND	5.0	ug/L	10.00	05/14/2003 19:38	
Total xylenes	ND	10	ug/L	10.00	05/14/2003 19:38	
Methyl tert-butyl ether (MTBE)	410	50	ug/L	10.00	05/14/2003 19:38	
Surrogates(s)						
1,2-Dichloroethane-d4	108.4	76-114	%	10.00	05/14/2003 19:38	
Toluene-d8	101.1	88-110	%	10.00	05/14/2003 19:38	

Gas/BTEX/MTBE by 8260B (C6-C12)

Blaine Tech Services, Inc.

Attn.: Leon Gearhart

1680 Rogers Avenue
San Jose, CA 95112-1105
Phone: (408) 573-0555 Fax: (408) 573-7771

Project: 030430-BA2
98995822

Received: 05/01/2003 15:20

Site: 29 Wildwood Ave., Piedmont

Prep(s):	5030B	Test(s):	8260FAB
Sample ID:	**MW-3**	Lab ID:	2003-05-0044 - 3
Sampled:	04/30/2003 15:00	Extracted:	5/13/2003 11:16
Matrix:	Water	QC Batch#:	2003/05/13-1a.65

Analysis Flag: o (See Legend and Note Section)

Compound	Conc.	RL	Unit	Dilution	Analyzed	Flag
Gasoline	3300	500	ug/L	10.00	05/13/2003 11:16	
Benzene	56	5.0	ug/L	10.00	05/13/2003 11:16	
Toluene	5.2	5.0	ug/L	10.00	05/13/2003 11:16	
Ethylbenzene	ND	5.0	ug/L	10.00	05/13/2003 11:16	
Total xylenes	ND	10	ug/L	10.00	05/13/2003 11:16	
Methyl tert-butyl ether (MTBE)	540	50	ug/L	10.00	05/13/2003 11:16	
Surrogates(s)						
1,2-Dichloroethane-d4	112.5	76-114	%	10.00	05/13/2003 11:16	
Toluene-d8	99.2	88-110	%	10.00	05/13/2003 11:16	

Gas/BTEX/MTBE by 8260B (C6-C12)

Blaine Tech Services, Inc.
Attn.: Leon Gearhart

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Phone: (408) 573-0555 Fax: (408) 573-7771

Project: 030430-BA2
98995822

Received: 05/01/2003 15:20

Site: 29 Wildwood Ave., Piedmont

Prep(s):	5030B	Test(s):	8260FAB
Sample ID:	**MW-4**	Lab ID:	2003-05-0044 - 4
Sampled:	04/30/2003 13:20	Extracted:	5/12/2003 22:36
Matrix:	Water	QC Batch#:	2003/05/12-02.65

Compound	Conc.	RL	Unit	Dilution	Analyzed	Flag
Gasoline	ND	50	ug/L	1.00	05/12/2003 22:36	
Benzene	ND	0.50	ug/L	1.00	05/12/2003 22:36	
Toluene	ND	0.50	ug/L	1.00	05/12/2003 22:36	
Ethylbenzene	ND	0.50	ug/L	1.00	05/12/2003 22:36	
Total xylenes	ND	1.0	ug/L	1.00	05/12/2003 22:36	
Methyl tert-butyl ether (MTBE)	ND	5.0	ug/L	1.00	05/12/2003 22:36	
Surrogates(s)						
1,2-Dichloroethane-d4	103.0	76-114	%	1.00	05/12/2003 22:36	
Toluene-d8	94.1	88-110	%	1.00	05/12/2003 22:36	

Gas/BTEX/MTBE by 8260B (C6-C12)

Blaine Tech Services, Inc.

Attn.: Leon Gearhart

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Phone: (408) 573-0555 Fax: (408) 573-7771

Project: 030430-BA2
98995822

Received: 05/01/2003 15:20

Site: 29 Wildwood Ave., Piedmont

Prep(s):	5030B	Test(s):	8260FAB
Sample ID:	**MW-5**	Lab ID:	2003-05-0044 - 5
Sampled:	04/30/2003 13:45	Extracted:	5/12/2003 22:58
Matrix:	Water	QC Batch#:	2003/05/12-02.65

Compound	Conc.	RL	Unit	Dilution	Analyzed	Flag
Gasoline	90	50	ug/L	1.00	05/12/2003 22:58	g
Benzene	ND	0.50	ug/L	1.00	05/12/2003 22:58	
Toluene	ND	0.50	ug/L	1.00	05/12/2003 22:58	
Ethylbenzene	ND	0.50	ug/L	1.00	05/12/2003 22:58	
Total xylenes	ND	1.0	ug/L	1.00	05/12/2003 22:58	
Methyl tert-butyl ether (MTBE)	ND	5.0	ug/L	1.00	05/12/2003 22:58	
Surrogates(s)						
1,2-Dichloroethane-d4	108.5	76-114	%	1.00	05/12/2003 22:58	
Toluene-d8	95.8	88-110	%	1.00	05/12/2003 22:58	

Gas/BTEX/MTBE by 8260B (C6-C12)

Blaine Tech Services, Inc.

Attn.: Leon Gearhart

1680 Rogers Avenue
San Jose, CA 95112-1105
Phone: (408) 573-0555 Fax: (408) 573-7771

Project: 030430-BA2
98995822

Received: 05/01/2003 15:20

Site: 29 Wildwood Ave., Piedmont

Batch QC Report

Prep(s): 5030B — **Water** — Test(s): 8260FAB

Method Blank — **QC Batch # 2003/05/12-02.65**

MB: 2003/05/12-02.65-064 — Date Extracted: 05/12/2003 22:14

Compound	Conc.	RL	Unit	Analyzed	Flag
Gasoline	ND	50	ug/L	05/12/2003 22:14	
Benzene	ND	0.5	ug/L	05/12/2003 22:14	
Toluene	ND	0.5	ug/L	05/12/2003 22:14	
Ethylbenzene	ND	0.5	ug/L	05/12/2003 22:14	
Total xylenes	ND	1.0	ug/L	05/12/2003 22:14	
Methyl tert-butyl ether (MTBE)	ND	5.0	ug/L	05/12/2003 22:14	
Surrogates(s)					
1,2-Dichloroethane-d4	103.4	76-130	%	05/12/2003 22:14	
Toluene-d8	99.2	78-115	%	05/12/2003 22:14	

Gas/BTEX/MTBE by 8260B (C6-C12)

Blaine Tech Services, Inc.

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Project: 030430-BA2
98995822

Received: 05/01/2003 15:20

Site: 29 Wildwood Ave., Piedmont

Batch QC Report

Prep(s): 5030B — Test(s): 8260FAB

Method Blank — **Water** — **QC Batch # 2003/05/12-1c.65**

MB: 2003/05/12-1c.65-003 — Date Extracted: 05/12/2003 11:00

Compound	Conc.	RL	Unit	Analyzed	Flag
Gasoline	ND	50	ug/L	05/12/2003 11:00	
Benzene	ND	0.5	ug/L	05/12/2003 11:00	
Toluene	ND	0.5	ug/L	05/12/2003 11:00	
Ethylbenzene	ND	0.5	ug/L	05/12/2003 11:00	
Total xylenes	ND	1.0	ug/L	05/12/2003 11:00	
Methyl tert-butyl ether (MTBE)	ND	5.0	ug/L	05/12/2003 11:00	
Surrogates(s)					
1,2-Dichloroethane-d4	99.2	76-130	%	05/12/2003 11:00	
Toluene-d8	98.4	78-115	%	05/12/2003 11:00	

Gas/BTEX/MTBE by 8260B (C6-C12)

Blaine Tech Services, Inc.
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Project: 030430-BA2
98995822

Received: 05/01/2003 15:20

Site: 29 Wildwood Ave., Piedmont

Batch QC Report

Prep(s): 5030B — Test(s): 8260FAB

Method Blank — **Water** — **QC Batch # 2003/05/13-1a.65**

MB: 2003/05/13-1a.65-044 — Date Extracted: 05/13/2003 10:32

Compound	Conc.	RL	Unit	Analyzed	Flag
Gasoline	ND	50	ug/L	05/13/2003 10:32	
Benzene	ND	0.5	ug/L	05/13/2003 10:32	
Toluene	ND	0.5	ug/L	05/13/2003 10:32	
Ethylbenzene	ND	0.5	ug/L	05/13/2003 10:32	
Total xylenes	ND	1.0	ug/L	05/13/2003 10:32	
Methyl tert-butyl ether (MTBE)	ND	5.0	ug/L	05/13/2003 10:32	
Surrogates(s)					
1,2-Dichloroethane-d4	101.2	76-130	%	05/13/2003 10:32	
Toluene-d8	100.2	78-115	%	05/13/2003 10:32	

Gas/BTEX/MTBE by 8260B (C6-C12)

Blaine Tech Services, Inc.

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Project: 030430-BA2
98995822

Received: 05/01/2003 15:20

Site: 29 Wildwood Ave., Piedmont

Batch QC Report

Prep(s): 5030B — Test(s): 8260FAB

Method Blank — **Water** — **QC Batch # 2003/05/14-1b.65**

MB: 2003/05/14-1b.65-001 — Date Extracted: 05/14/2003 11:24

Compound	Conc.	RL	Unit	Analyzed	Flag
Gasoline	ND	50	ug/L	05/14/2003 11:24	
Benzene	ND	0.5	ug/L	05/14/2003 11:24	
Toluene	ND	0.5	ug/L	05/14/2003 11:24	
Ethylbenzene	ND	0.5	ug/L	05/14/2003 11:24	
Total xylenes	ND	1.0	ug/L	05/14/2003 11:24	
Methyl tert-butyl ether (MTBE)	ND	5.0	ug/L	05/14/2003 11:24	
Surrogates(s)					
1,2-Dichloroethane-d4	98.2	76-130	%	05/14/2003 11:24	
Toluene-d8	94.8	78-115	%	05/14/2003 11:24	

Gas/BTEX/MTBE by 8260B (C6-C12)

Blaine Tech Services, Inc.

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San Jose, CA 95112-1105
Phone: (408) 573-0555 Fax: (408) 573-7771

Project: 030430-BA2
98995822

Received: 05/01/2003 15:20

Site: 29 Wildwood Ave., Piedmont

Batch QC Report

Prep(s): 5030B

Test(s): 8260FAB

Laboratory Control Spike **Water** **QC Batch # 2003/05/12-02.65**

LCS 2003/05/12-02.65-063 Extracted: 05/12/2003 Analyzed: 05/12/2003 21:29

LCSD 2003/05/12-02.65-002 Extracted: 05/12/2003 Analyzed: 05/12/2003 21:52

Compound	Conc. ug/L		Exp.Conc.	Recovery		RPD	Ctrl.Limits %		Flags	
	LCS	LCSD		LCS	LCSD	%	Rec.	RPD	LCS	LCSD
Benzene	24.7	23.8	25.0	98.8	95.2	3.7	69-129	20		
Toluene	23.4	24.3	25.0	93.6	97.2	3.8	70-130	20		
Methyl tert-butyl ether (MTBE)	31.6	31.3	25.0	126.4	125.2	1.0	65-165	20		
Surrogates(s)										
1,2-Dichloroethane-d4	507	509	500	101.4	101.8		76-130	0		
Toluene-d8	483	512	500	96.6	102.4		78-115	0		

Gas/BTEX/MTBE by 8260B (C6-C12)

Blaine Tech Services, Inc.

Attn.: Leon Gearhart

1680 Rogers Avenue
San Jose, CA 95112-1105
Phone: (408) 573-0555 Fax: (408) 573-7771

Project: 030430-BA2
98995822

Received: 05/01/2003 15:20

Site: 29 Wildwood Ave., Piedmont

Batch QC Report

Prep(s): 5030B — Test(s): 8260FAB

Laboratory Control Spike — **Water** — **QC Batch # 2003/05/12-1c.65**

LCS 2003/05/12-1c.65-002 — Extracted: 05/12/2003 — Analyzed: 05/12/2003 10:16

LCSD 2003/05/12-1c.65-001 — Extracted: 05/12/2003 — Analyzed: 05/12/2003 10:38

Compound	Conc. ug/L		Exp.Conc.	Recovery		RPD	Ctrl.Limits %		Flags	
	LCS	LCSD		LCS	LCSD	%	Rec.	RPD	LCS	LCSD
Benzene	25.4	24.6	25	101.6	98.4	3.2	69-129	20		
Toluene	24.5	23.9	25	98.0	95.6	2.5	70-130	20		
Methyl tert-butyl ether (MTBE)	31.8	33.7	25	127.2	134.8	5.8	65-165	20		
Surrogates(s)										
1,2-Dichloroethane-d4	480	518	500	96.0	103.6		76-130			
Toluene-d8	495	502	500	99.0	100.4		78-115			

Gas/BTEX/MTBE by 8260B (C6-C12)

Blaine Tech Services, Inc.

Attn.: Leon Gearhart

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San Jose, CA 95112-1105
Phone: (408) 573-0555 Fax: (408) 573-7771

Project: 030430-BA2
98995822

Received: 05/01/2003 15:20

Site: 29 Wildwood Ave., Piedmont

Batch QC Report

Prep(s): 5030B — Test(s): 8260FAB

Laboratory Control Spike — **Water** — **QC Batch # 2003/05/13-1a.65**

LCS 2003/05/13-1a.65-043 — Extracted: 05/13/2003 — Analyzed: 05/13/2003 09:25

LCSD 2003/05/13-1a.65-001 — Extracted: 05/14/2003 — Analyzed: 05/14/2003 11:02

Compound	Conc. ug/L		Exp.Conc.	Recovery		RPD	Ctrl.Limits %		Flags	
	LCS	LCSD		LCS	LCSD	%	Rec.	RPD	LCS	LCSD
Benzene	24.8	25.2	25	99.2	100.8	1.6	69-129	20		
Toluene	24.3	24.3	25	97.2	97.2	0.0	70-130	20		
Methyl tert-butyl ether (MTBE)	30.1	34.3	25	120.4	137.2	13.0	65-165	20		
Surrogates(s)										
1,2-Dichloroethane-d4	480	510	500	96.0	102.0		76-130			
Toluene-d8	485	497	500	97.0	99.4		78-115			

Gas/BTEX/MTBE by 8260B (C6-C12)

Blaine Tech Services, Inc.

Attn.: Leon Gearhart

1680 Rogers Avenue
San Jose, CA 95112-1105
Phone: (408) 573-0555 Fax: (408) 573-7771

Project: 030430-BA2
98995822

Received: 05/01/2003 15:20

Site: 29 Wildwood Ave., Piedmont

Batch QC Report

Prep(s): 5030B

Test(s): 8260FAB

Laboratory Control Spike | **Water** | **QC Batch # 2003/05/14-1b.65**

LCS 2003/05/14-1b.65-002 Extracted: 05/14/2003 Analyzed: 05/14/2003 10:40

LCSD 2003/05/14-1b.65-003 Extracted: 05/14/2003 Analyzed: 05/14/2003 11:02

Compound	Conc. ug/L		Exp.Conc.	Recovery		RPD	Ctrl.Limits %		Flags	
	LCS	LCSD		LCS	LCSD	%	Rec.	RPD	LCS	LCSD
Benzene	25.2	25.2	25	100.8	100.8	0.0	69-129	20		
Toluene	24.5	24.3	25	98.0	97.2	0.8	70-130	20		
Methyl tert-butyl ether (MTBE)	33.3	34.3	25	133.2	137.2	3.0	65-165	20		
Surrogates(s)										
1,2-Dichloroethane-d4	501	510	500	100.2	102.0		76-130			
Toluene-d8	497	497	500	99.4	99.4		78-115			

Gas/BTEX/MTBE by 8260B (C6-C12)

Blaine Tech Services, Inc.

Attn.: Leon Gearhart

1680 Rogers Avenue
San Jose, CA 95112-1105
Phone: (408) 573-0555 Fax: (408) 573-7771

Project: 030430-BA2
98995822

Received: 05/01/2003 15:20

Site: 29 Wildwood Ave., Piedmont

Legend and Notes

Analysis Flag

o

Reporting limits were raised due to high level of analyte present in the sample.

Result Flag

g

Hydrocarbon reported in the gasoline range does not match our gasoline standard.

SHELL Chain Of Custody Record

12814

Lab Identification (if necessary):
Address:
City, State, Zip:

Shell Project Manager to be invoiced:

- [x] SCIENCE & ENGINEERING
- [ ] TECHNICAL SERVICES
- [ ] CRMT HOUSTON

Karen Petryna

2003-05-0044

INCIDENT NUMBER (S&E ONLY): 9 8 9 9 5 8 2 2

SAP or CRMT NUMBER (TS/CRMT):

DATE: 4/30/03

PAGE: 1 of 1

SAMPLING COMPANY	LOG CODE	SITE ADDRESS (Street and City):	GLOBAL ID NO.
Blaine Tech Services	BTSS	29 Wildwood Avenue, Piedmont	T0600101246

ADDRESS: 1680 Rogers Avenue, San Jose, CA 95112

EDF DELIVERABLE TO (Responsible Party or Designee): Anni Kreml

PHONE NO.: 510-420-3335

E-MAIL: ShellOaklandEDF@cambria-env.com

CONSULTANT PROJECT NO.: 030430-BA2

BTS #:

PROJECT CONTACT (Hardcopy or PDF Report to): Leon Gearhart

SAMPLER NAME(S) (Print): BRIAN ALCORN

LAB USE ONLY

TELEPHONE: 408-573-0555 FAX: 408-573-7771 E-MAIL: lgearhart@blainetech.com

TURNAROUND TIME (BUSINESS DAYS): [x] 10 DAYS [ ] 5 DAYS [ ] 72 HOURS [ ] 48 HOURS [ ] 24 HOURS [ ] LESS THAN 24 HOURS

[ ] LA - RWQCB REPORT FORMAT [ ] UST AGENCY: ______

GC/MS MTBE CONFIRMATION: HIGHEST ______ HIGHEST per BORING ______ ALL ______

SPECIAL INSTRUCTIONS OR NOTES: CHECK BOX IF EDD IS NOT NEEDED [ ]

REQUESTED ANALYSIS

LAB USE ONLY	Field Sample Identification	SAMPLING DATE	SAMPLING TIME	MATRIX	NO. OF CONT.	TPH - Gas, Purgeable	BTEX	MTBE (8021B - 5ppb RL)	MTBE (8260B - 0.5ppb RL)	Oxygenates (5) by (8260B)	Ethanol (8260B)	Methanol	1,2-DCA (8260B)	EDB (8260B)		TPH - Diesel, Extractable (8015m)	FIELD NOTES: Container/Preservative or PID Readings or Laboratory Notes
	MW-1	4/30	1445	W	3	X	X	X									
	MW-2	↓	1650	↓	↓	X	X	X									
	MW-3		1500			X	X	X									
	MW-4		1320			X	X	X									
	MW-5		1345			X	X	X									

TEMPERATURE ON RECEIPT C°: 2.0°C

Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:
[signature]	[signature]	5/1/03	1520
[signature] 1650 5/1/03			
	Nouna K.	5-1-03	1650

DISTRIBUTION: White with final report, Green to File, Yellow and Pink to Client.

10/16/00 Revision

Q&Q Graphic (714) 650-9702

WELL GAUGING DATA

Project # 030430-BA2 Date 4/30/03 Client SHELL

Site 29 WILDWOOD AVE, PIEDMONT

Well ID	Well Size (in.)	Sheen / Odor	Depth to Immiscible Liquid (ft.)	Thickness of Immiscible Liquid (ft.)	Volume of Immiscibles Removed (ml)	Depth to water (ft.)	Depth to well bottom (ft.)	Survey Point: TOB or TOC	
MW-1	4					2.76	13.07	TOC	
MW-2	4					3.42	11.40		ORCs
MW-3	4					3.39	8.95		ORCs
MW-4	4					3.96	13.03		
MW-5	4					3.88	15.98		

SHELL WELL MONITORING DATA SHEET

BTS #: 030430-BA2	Site: 29 Wildwood Ave, Piedmont
Sampler: Brian Algorn	Date: 4/30/03
Well I.D.: MW-1	Well Diameter: 2 3 (4) 6 8 ____
Total Well Depth (TD): 13.07	Depth to Water (DTW): 2.76
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: (PVC) Grade	D.O. Meter (if req'd): (YSI) HACH
DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]: 4.32	

Purge Method: Bailer, Disposable Bailer, Middleburg, Electric Submersible, Waterra, Peristaltic, Extraction Pump, Other_____

Sampling Method: (Bailer), Disposable Bailer, Extraction Port, Dedicated Tubing, Other:_____

7.0 (Gals.) X	3	=	21.0 Gals.
Case Volume	Specified Volumes		Calculated Volume

Well Diameter	Multiplier	Well Diameter	Multiplier
1"	0.04	4"	0.65
2"	0.16	6"	1.47
3"	0.37	Other	radius² * 0.163

Time	Temp (°F)	pH	Cond. (mS or (µS))	Turbidity (NTUs)	Gals. Removed	Observations
1403	64.4	7.2	761	44	7.0	clear w/ black debris
1404	63.9	7.1	773	95	14.0	"
1405	64.5	7.1	774	62	21.0	" DTW 9.34

Did well dewater? Yes (No) Gallons actually evacuated: 21

Sampling Date: 4/30/03 Sampling Time: 1445 Depth to Water: 2.82

Sample I.D.: MW-1 Laboratory: Kiff SPL Other STL San Francisco

Analyzed for: (TPH-G BTEX MTBE) TPH-D Other:

@ Time

EB I.D. (if applicable): Duplicate I.D. (if applicable):

Analyzed for: TPH-G BTEX MTBE TPH-D Other:

D.O. (if req'd):	Pre-purge:	mg/L	(Post-purge:)	3.6	mg/L
O.R.P. (if req'd):	Pre-purge:	mV	Post-purge:		mV

SHELL WELL MONITORING DATA SHEET

BTS #: 030430-BA2	Site: 29 Wildwood Ave, Piedmont
Sampler: Brian Alcorn	Date: 4/30/03
Well I.D.: MW-2	Well Diameter: 2 3 (4) 6 8 ___
Total Well Depth (TD): 11.40	Depth to Water (DTW): 3.42
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: (PVC) Grade	D.O. Meter (if req'd): (YSI) HACH
DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]: 5.02	

Purge Method: Bailer, Disposable Bailer, Middleburg, (Electric Submersible), Waterra, Peristaltic, Extraction Pump, Other_____

Sampling Method: (Bailer), Disposable Bailer, Extraction Port, Dedicated Tubing, Other:_____

5.5 (Gals.) X 3 = 16.5 Gals.
Case Volume | Specified Volumes | Calculated Volume

Well Diameter	Multiplier	Well Diameter	Multiplier
1"	0.04	4"	0.65
2"	0.16	6"	1.47
3"	0.37	Other	radius² * 0.163

Time	Temp (°F)	pH	Cond. (mS or (uS))	Turbidity (NTUs)	Gals. Removed	Observations
1418	66.9	6.6	1,056	>1,000	5.5	very dark strong light cloudy, gray odor, sheen
1419	66.9	6.3	712	>1,000	11.0	"
1420	67.5	6.4	775	>1,000	16.5	" DTW 9.98
REPLACED ORC'S						

Did well dewater? Yes (No) Gallons actually evacuated: 16.5

Sampling Date: 4/30/03 Sampling Time: 1550 Depth to Water: 5.02

Sample I.D.: MW-2 Laboratory: Kiff SPL Other STL San Francisco

Analyzed for: (TPH-G) (BTEX) (MTBE) TPH-D Other:

EB I.D. (if applicable): @ Time Duplicate I.D. (if applicable):

Analyzed for: TPH-G BTEX MTBE TPH-D Other:

D.O. (if req'd):	Pre-purge:	mg/L	(Post-purge:)	0.1	mg/L
O.R.P. (if req'd):	Pre-purge:	mV	Post-purge:		mV

SHELL WELL MONITORING DATA SHEET

BTS #: 030430-BA2	Site: 29 Wildwood Ave, Piedmont
Sampler: Brian Alcorn	Date: 4/30/03
Well I.D.: MW-3	Well Diameter: 2 3 (4) 6 8 ___
Total Well Depth (TD): 8.95	Depth to Water (DTW): 3.39
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: (PVC) Grade	D.O. Meter (if req'd): (YSI) HACH
DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]: 4.50	

Purge Method: Bailer, Disposable Bailer, Middleburg, (Electric Submersible), Waterra, Peristaltic, Extraction Pump, Other ___

Sampling Method: (Bailer), Disposable Bailer, Extraction Port, Dedicated Tubing, Other: ___

Well Diameter	Multiplier	Well Diameter	Multiplier
1"	0.04	4"	0.65
2"	0.16	6"	1.47
3"	0.37	Other	radius² * 0.163

4.0 (Gals.) X 3 = 12.0 Gals.
Case Volume | Specified Volumes | Calculated Volume

Time	Temp (°F)	pH	Cond. (mS or (µS))	Turbidity (NTUs)	Gals. Removed	Observations
1431	67.9	6.9	955	96	4.0	clear, mild odor
1432	67.3	7.5	972	27	8.0	" more odor
1433	67.1	7.4	948	15	12.0	" more odor
REPLACED ORCS						

DTW @ 3.73

Did well dewater? Yes (No) Gallons actually evacuated: 12

Sampling Date: 4/30/03 Sampling Time: 1500 Depth to Water: 3.30

Sample I.D.: MW-3 Laboratory: Kiff SPL Other STL San Francisco

Analyzed for: (TPH-G BTEX MTBE) TPH-D Other:

EB I.D. (if applicable): @ Time Duplicate I.D. (if applicable):

Analyzed for: TPH-G BTEX MTBE TPH-D Other:

D.O. (if req'd):	Pre-purge:		mg/L	(Post-purge:)	1.5 mg/L
O.R.P. (if req'd):	Pre-purge:		mV	Post-purge:	mV

SHELL WELL MONITORING DATA SHEET

BTS #: 030430-BA2	Site: 29 Wildwood Ave, Piedmont
Sampler: Brian Aldorn	Date: 4/30/03
Well I.D.: MW-4	Well Diameter: 2 3 (4) 6 8 ___
Total Well Depth (TD): 13.08	Depth to Water (DTW): 3.46
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: (PVC) Grade	D.O. Meter (if req'd): (YSI) HACH
DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]: 5.38	

Purge Method: Bailer, Disposable Bailer, Middleburg, (Electric Submersible), Waterra, Peristaltic, Extraction Pump, Other ___

Sampling Method: (Bailer), Disposable Bailer, Extraction Port, Dedicated Tubing, Other: ___

6.5 (Gals.) X 3 = 19.5 Gals.
1 Case Volume | Specified Volumes | Calculated Volume

Well Diameter	Multiplier	Well Diameter	Multiplier
1"	0.04	4"	0.65
2"	0.16	6"	1.47
3"	0.37	Other	radius² * 0.163

Time	Temp (°F)	pH	Cond. (mS or (µS))	Turbidity (NTUs)	Gals. Removed	Observations
1315	68.1	7.7	459	176	6.5	cloudy gray, odor
1316	65.3	7.4	447	135	13.0	"
1317	Well Dewatered @				17.0	DTW
1320	66.4	7.4	442	101	—	cloudy gray, odor

Did well dewater? (Yes) No Gallons actually evacuated: 17

Sampling Date: 4/30/03 Sampling Time: 1320 Depth to Water:

Sample I.D.: MW-4 Laboratory: Kiff SPL Other STL San Francisco

Analyzed for: (TPH-G) BTEX (MTBE) TPH-D Other:

EB I.D. (if applicable): @ Time Duplicate I.D. (if applicable):

Analyzed for: TPH-G BTEX MTBE TPH-D Other:

D.O. (if req'd):	Pre-purge:	mg/L	(Post-purge:)	2.8	mg/L
O.R.P. (if req'd):	Pre-purge:	mV	Post-purge:		mV

SHELL WELL MONITORING DATA SHEET

STS #: 030430-BA2	Site: 29 Wildwood Ave, Piedmont
Sampler: Brian Algorn	Date: 4/30/03
Well I.D.: MW-5	Well Diameter: 2 3 (4) 6 8 ___
Total Well Depth (TD): 15.98	Depth to Water (DTW): 3.38
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: (PVC) Grade	D.O. Meter (if req'd): (YSI) HACH
DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]: 6.30	

Purge Method: Bailer; Disposable Bailer; Middleburg; (Electric Submersible); Waterra; Peristaltic; Extraction Pump; Other ____

Sampling Method: (Bailer); Disposable Bailer; Extraction Port; Dedicated Tubing; Other: ____

Well Diameter	Multiplier	Well Diameter	Multiplier
1"	0.04	4"	0.65
2"	0.16	6"	1.47
3"	0.37	Other	radius² * 0.163

8.0 (Gals.) X 3 = 24.0 Gals.
Case Volume | Specified Volumes | Calculated Volume

Time	Temp (°F)	pH	Cond. (mS or (µS))	Turbidity (NTUs)	Gals. Removed	Observations
1341	65.5	7.4	756	26	8.0	clear
1342	64.7	7.3	747	13	16.0	"
1343	64.7	7.3	716	6	24.0	" DTW 7.90

Did well dewater? Yes (No) Gallons actually evacuated: 24

Sampling Date: 4/30/03 Sampling Time: 1345 Depth to Water: 7.90 Due to traffic

Sample I.D.: MW-5 Laboratory: Kiff SPL Other STL San Francisco

Analyzed for: (TPH-G) (BTEX) (MTBE) TPH-D Other:

EB I.D. (if applicable): @ Time Duplicate I.D. (if applicable):

Analyzed for: TPH-G BTEX MTBE TPH-D Other:

D.O. (if req'd):	Pre-purge:	mg/L	(Post-purge:)	1.5	mg/L
O.R.P. (if req'd):	Pre-purge:	mV	Post-purge:		mV

ATTACHMENT B

Cambria's January 30, 2003 *Conduit Study Report*

CAMBRIA

COPY

January 30, 2003

Karen E. Petryna
Shell Oil Company US
P.O. Box 7869
Burbank, California 91510-7869

Re: Conduit Study Report
Shell-branded Service Station
29 Wildwood Avenue
Piedmont, California
Incident # 98995822
Cambria Project # 245-0687-006

Dear Ms. Petryna:

Cambria Environmental Technology, Inc. (Cambria) is submitting this *Conduit Study Report* on behalf of Shell Oil Products US (Shell) for the referenced site (Figure 1). The conduit study was requested by Karen Petryna of Shell to assess the potential for migration of chemicals of concern in groundwater along preferential pathways.

BACKGROUND

This Shell-branded station is located at the intersection of Wildwood and Grand Avenue, in Piedmont, California (Figure 1). Three underground storage tanks (USTs) and one 550-gallon waste oil UST are located at the site. Three groundwater monitoring wells are located onsite, and two downgradient wells are located in Grand Avenue (Figure 2). The site lies at the confluence of two topographic valleys. Five groundwater monitoring wells have been installed at the site (MW-1, MW-2, MW-3, MW-4, and MW-5). One monitoring well (E-1) was installed and later abandoned due to flowing artesian groundwater conditions.

Soil Lithology: The materials underlying the site consist primarily of low to moderate estimated permeability sandy silts, clayey silts, silty clays, and clays interbedded with higher permeability layers or lenses of silty sands and silty gravels to the total explored depth of 35 feet below grade (fbg).

Groundwater Depth, Elevation and Flow Direction: Monitoring wells MW-1 through MW-5 have well screens that begin from 3.5 to 6.5 fbg and end from 9.5 to 16.5 fbg. Former well E-4 was screened from 23 to 35 fbg. Historical depth to water ranges from 2.1 fbg to 8.8 fbg and

Oakland, CA
San Ramon, CA
Sonoma, CA

Cambria Environmental Technology, Inc.

1144 65th Street
Suite B
Oakland, CA 94608
Tel (510) 420-0700
Fax (510) 420-9170

current depth to water in the fourth quarter of 2002 ranges from 3.3 fbg to 4.3 fbg. The groundwater elevation in wells MW-1 through MW-5 has ranged from 24.26 feet above sea level (msl) to 35.8 ft msl. Groundwater in well E-4 was reported to be under artesian conditions, with the water level rising above the top of the well casing. The shallow groundwater flow direction is generally southwest, with a gradient of approximately 0.02 to 0.04 ft/ft. A rose diagram is included on Figure 2.

CONDUIT STUDY RESULTS

A conduit study was performed to determine the location of potential preferential pathways for groundwater migration in the site vicinity. Natural conduits, such as former stream channels, as well as manmade conduits, were investigated. Utility conduit trenches are often backfilled with materials more permeable than the surrounding native soils, and therefore may provide a path of least resistance for groundwater flow and petroleum hydrocarbon and oxygenate migration.

The utility survey consisted of site reconnaissance and mapping of site landmarks, and reviewing maps and plans acquired from the City of Piedmont, East Bay Municipal Utility District, Pacific Gas and Electric (PG&E) Company Mapping Department, and the *Creeks and Watershed Map of Oakland and Berkeley* (Janet M. Sowers, 2000) published by the Oakland Museum of California (Attachments A, B, C and D, respectively). Where determined, conduit locations, depths and diameters, and the location of historical underground creeks within the San Antonio watershed basin are mapped on Figure 2.

The City of Piedmont utility map identified depths and pipe diameters of sanitary sewers, but only pipe diameters of storm drains. Depths of the water lines operated by East Bay Municipal Utility District were not obtained; however, typical installation of water lines requires a minimum of 36 inches of fill above the top of the pipe.

Historical Creeks: According to the *Creeks and Watershed Map of Oakland and Berkeley* (Janet M. Sowers, 2000) published by the Oakland Museum of California, two creeks (Pleasant Valley Creek, which follows the path of Grand Avenue, and Bushy Dell Creek, which joins the former Pleasant Valley Creek from Wildwood Avenue) have been routed into underground piping (storm drains, discussed below). From the site, the former Pleasant Valley Creek flowed towards Lake Merritt. Although the headwaters of the creeks and street runoff are now routed through storm drain piping which generally follows the original creek channels, the creeks' original channels likely act as natural conduits for subsurface water flow. This may explain the artesian groundwater conditions encountered in deep well E-4, prior to its abandonment.

Sanitary Sewers: City of Piedmont maps identified several sanitary sewers near the site. West of the site, a 21-inch diameter sewer runs southeasterly down the center of Grand Avenue and is buried between 6.2 to 7.4 fbg. At a manhole, this 21-inch sewer branches into a 12-inch diameter sewer and 10-inch diameter sewer at the Wildwood Avenue intersection. These sewers then run parallel to one another along Grand Avenue. Downstream of the site, these smaller sewers are buried approximately 7.3 and 3.3 fbg respectively. Another 6-inch sewer parallels the 21-inch sewer along the western side of Grand Avenue before joining it at the same manhole mentioned above. An 8-inch sewer intersects the 12-inch sewer at the intersection of Jean Street and Grand Avenue south of the site.

To the southeast of the site, along Wildwood Avenue, an 18-inch diameter sewer runs down the south side of the street toward Grand Avenue, where it intersects the 10-inch sewer mentioned above. The sewer flows to the southwest and is buried between 3.3 to 6.4 fbg. In addition, a smaller 10-inch sewer buried between 4 to 7.3 fbg parallels the 18-inch sewer on the north side of Wildwood Avenue and intersects the 21-inch sewer at the manhole mentioned above.

Storm Drains: City of Piedmont maps identified several storm drains near the site. Along Grand Avenue north of the site, 8.5-foot by 2.5-foot storm drain runs south down the west side of the street. It turns southeast to join a 48-inch diameter storm drain which runs along the southwest property line on Wildwood Avenue. From their intersection, a 60-inch diameter storm drain flows southwesterly along the east side of Grand Avenue. This 60-inch storm drain is intersected by a 15-inch storm drain at the intersection of Jean Street and Grand Avenue south of the site. A 48-inch storm drain, with its origin at the intersection of Jean Street and Grand Avenue, flows east initially before turning south down Grand Avenue. Cambria could not obtain any information from the City of Piedmont on the burial depths or elevations of these storm drains.

Water Lines: East Bay Municipal Utility District water maps identified several water mains near the site. A 24-inch and two 6-inch water mains run nearly parallel down Grand Avenue. Southeast of the site, a 6-inch water pipe runs along the southeast side of Wildwood Avenue and intersects the easterly 6-inch water pipe in Grand Avenue. The East Bay Municipal Utility District is not able to provide accurate water line depths. However, typical burial depths for water lines can range from 3 to 10 fbg.

Gas & Electric Utilities: PG&E maps identified several gas and electric utility pipes near the site. An 8-inch diameter gas main runs along Grand Avenue approximately 24 feet from the eastern property boundary of the site. A 3-inch gas main parallels Grand Avenue in the sidewalk opposite the site. Along Wildwood Avenue, a 6-inch gas main is located 20 feet from the site property boundary. A 2-inch gas main is located across Wildwood Avenue from the site. The 3-inch and 2-inch gas mains intersect the 8-inch gas main at the intersection of Grand and

Wildwood Avenue. PG&E is not able to provide burial depths for gas utilities. However, gas piping is typically buried a minimum of 3 fbg.

Privately maintained electrical lines are mapped by PG&E, but the size and depth of these lines are not available. West of the site, multiple electrical conduits are located in Grand Avenue. A 4-foot by 5-foot underground electrical transformer is located in the sidewalk adjacent to the southwestern corner of the site. One electrical line runs along the southeastern side of Wildwood Avenue. PG&E is not able to provide burial depths for electrical conduits. However, electrical conduits are typically buried from 3 to 8 fbg.

Conduit Elevations Relative to Groundwater Elevations: Groundwater elevations in the shallow water-bearing zone were calculated using surveyed top of well casing elevations and depths to groundwater measured since 1989. Groundwater elevations have ranged from approximately 24.3 to 35.8 feet msl. Since accurate depth information could not be obtained for the water mains, electrical conduits and gas piping, their locations relative to the water table cannot be established with certainty. However, since typical burial depths for these utilities is at least 3 fbg, and groundwater depths have been as shallow as 2.1 feet below top of casing, it is very likely that the water, electric and gas pipes and their trenches have intersected the water table. In that event, these utility trenches would likely act as preferential pathways for groundwater flow.

The identified storm drains in the area include a rectangular 8.5-foot by 2.5 foot drain, a 48-inch diameter drain, and a 60-inch diameter drain. Although their depths and elevations are not specified on the maps obtained, their overall dimensions, and the typical burial depths indicate that the bottom of the piping and their trenches are very likely to intersect groundwater frequently. Consequently, these utility trenches likely act as preferential pathways for groundwater flow.

The identified sanitary sewers provided elevation information from which piping depths could be inferred. Depending on location, the depths to the bottoms of the sanitary sewers ranged from 3.3 fbg to 8 fbg. Comparison of piping elevations to groundwater elevations indicates that some sanitary sewers are nearly always below the water table. . Consequently, these utility trenches likely act as preferential pathways for groundwater flow.

The former creek channels were likely to have been filled to construct the existing streets, and the creeks were routed into storm drains. The now buried, former creek channels are likely to act as natural barriers and conduits for groundwater flow. It is likely that any shallow or deep groundwater leaving the site will be contained within the confines of the former creek channels. From this, groundwater is expected to flow towards Lake Merritt, which is consistent with groundwater monitoring results.

CLOSING

We appreciate the opportunity to work with you on this project. Please call Matt Derby at (510) 420-3332 if you have any questions or comments.

Sincerely,
Cambria Environmental Technology, Inc

Anni Kreml
Senior Staff Scientist

Matthew W. Derby, P.E.
Senior Project Engineer

REGISTERED PROFESSIONAL ENGINEER
MATTHEW W. DERBY
No. C055475
Exp. 12/31/04
CIVIL
STATE OF CALIFORNIA

Figures: 1 - Vicinity Map
2 - Utility Location Map

Attachments: A - City of Piedmont Utility Map
B - East Bay Municipal Utility District Water Map
C - PG&E Gas and Electrical Maps
D - Excerpt of the *Creeks and Watershed Map of Oakland and Berkeley* (Janet M. Sowers, 2000, Oakland Museum of California)

G:\Piedmont 29 Wildwood\2002 Conduit Study\Conduit Study Jan 03.doc

12/30/02

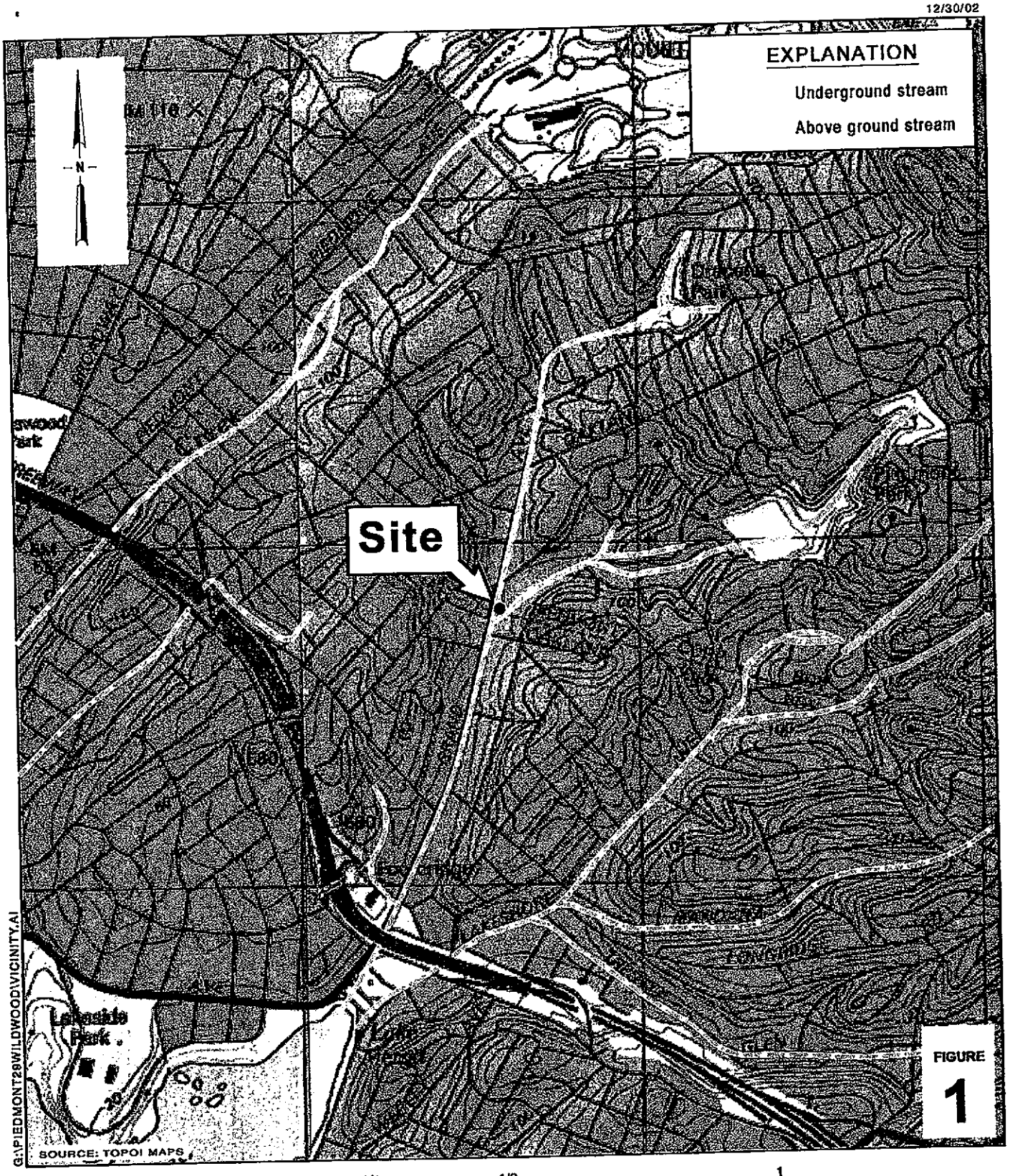


FIGURE
1

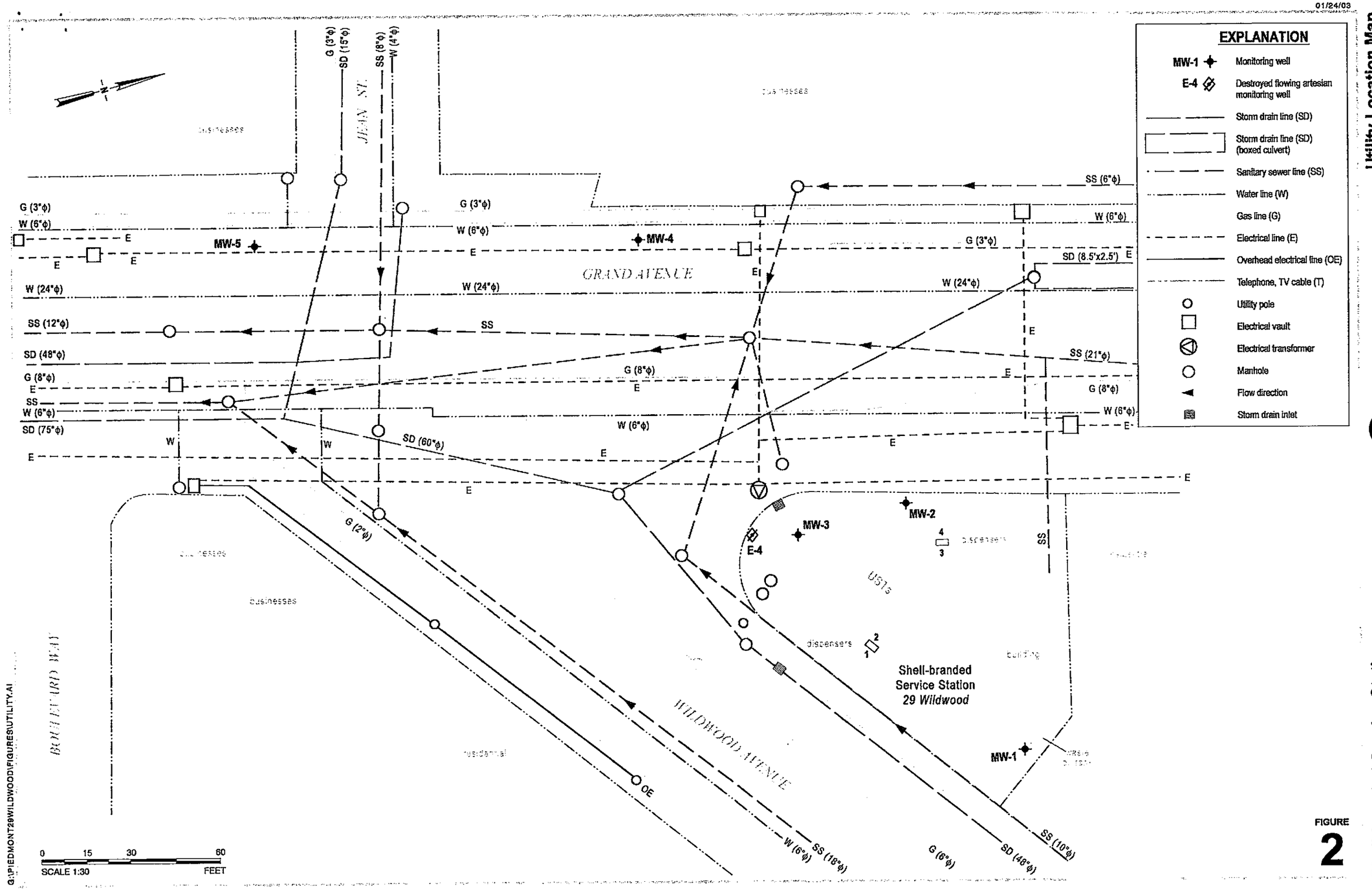
Vicinity Map

Shell-branded Service Station
29 Wildwood Avenue
Piedmont, California
Incident #98995822

CAMBRIA

01/24/03

Utility Location Map



EXPLANATION

- MW-1 — Monitoring well
- E-4 — Destroyed flowing artesian monitoring well
- Storm drain line (SD)
- Storm drain line (SD) (boxed culvert)
- Sanitary sewer line (SS)
- Water line (W)
- Gas line (G)
- Electrical line (E)
- Overhead electrical line (OE)
- Telephone, TV cable (T)
- Utility pole
- Electrical vault
- Electrical transformer
- Manhole
- Flow direction
- Storm drain inlet

CAMBRIA

Shell-branded Service Station
29 Wildwood Avenue
Piedmont, California
Incident #98995822

FIGURE **2**

G:\PIEDMONT\29WILDWOOD\FIGURES\UTILITY.AI

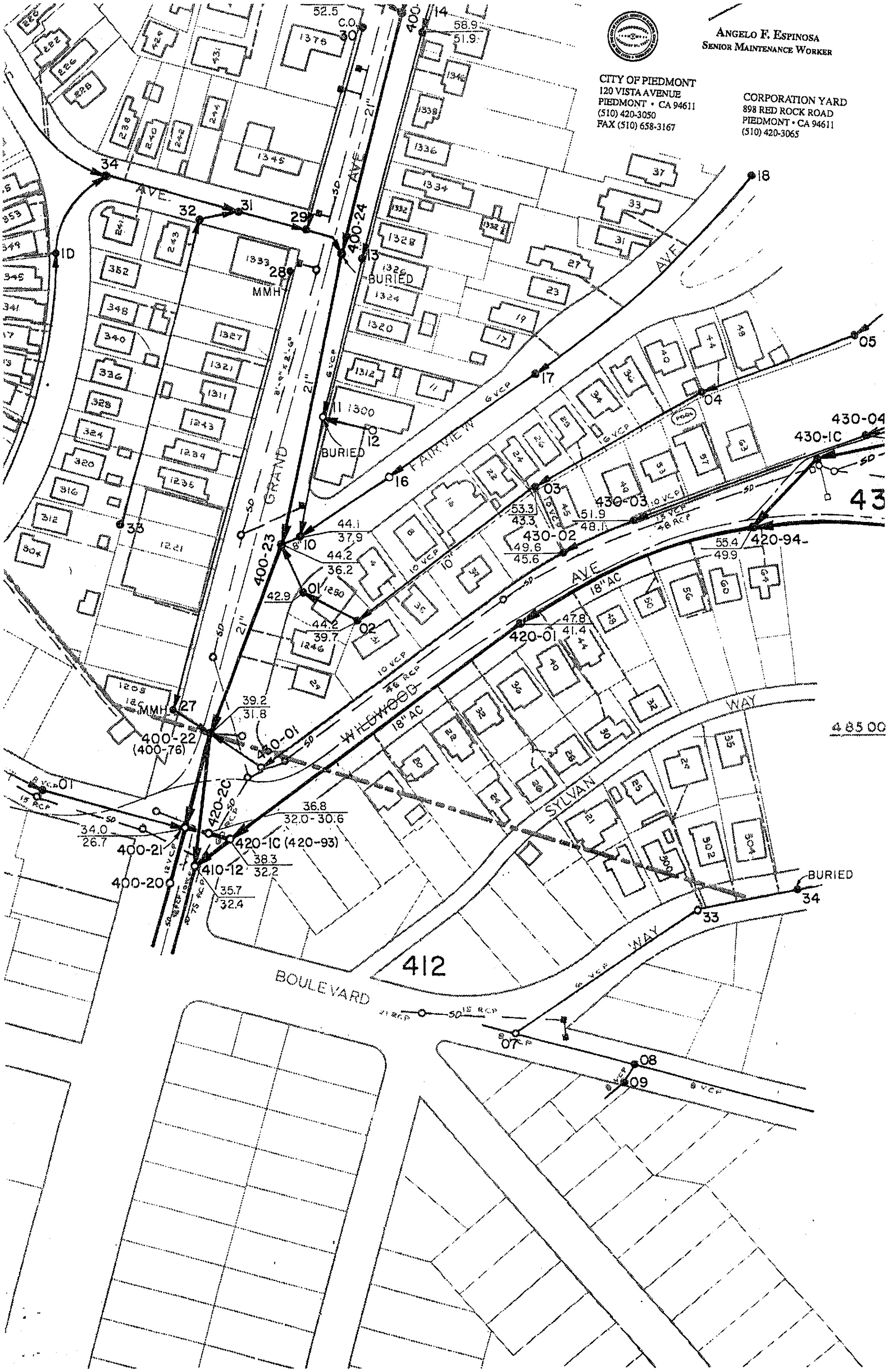
ATTACHMENT A

City of Piedmont Utility Map

ANGELO F. ESPINOSA
SENIOR MAINTENANCE WORKER

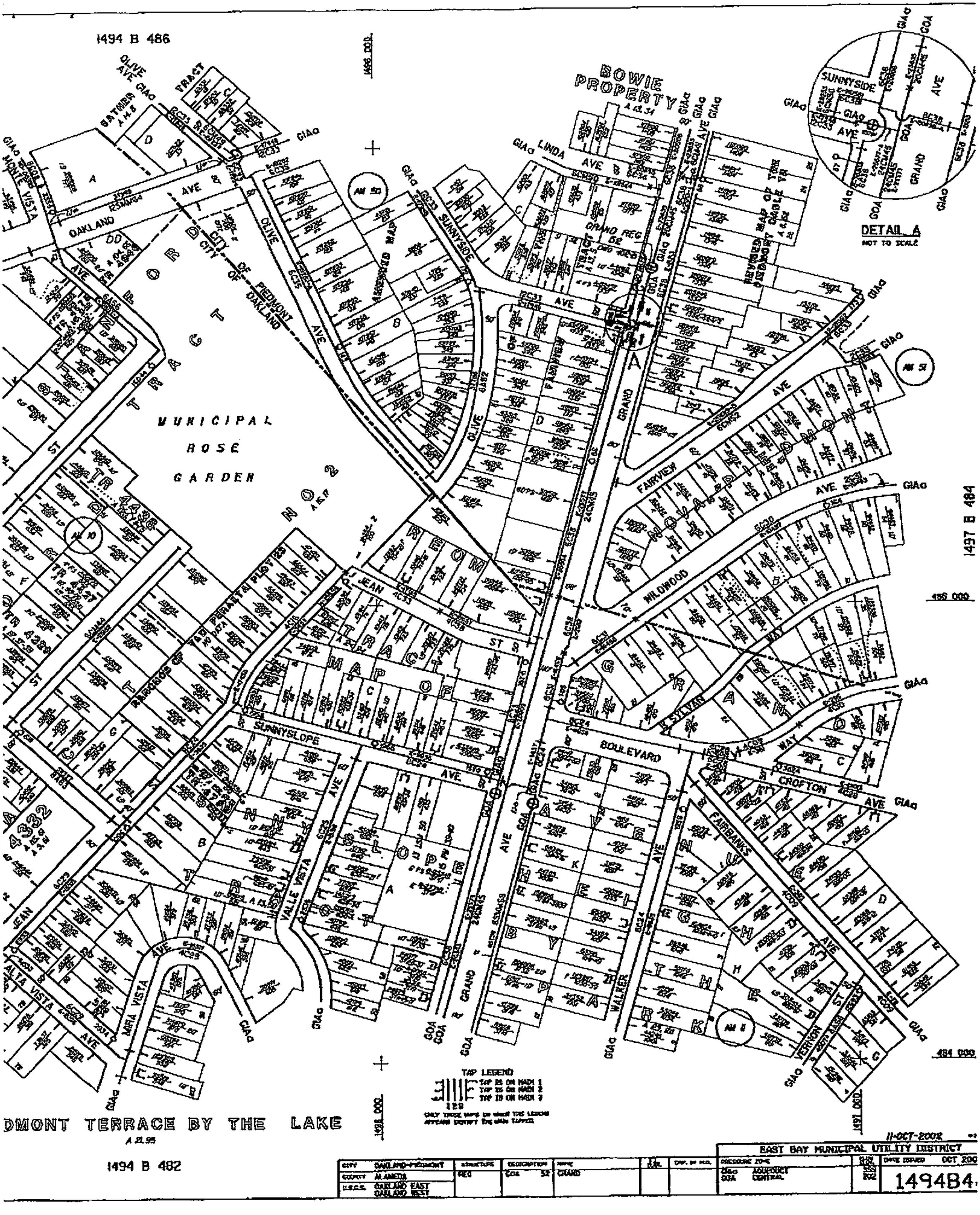
CITY OF PIEDMONT
120 VISTA AVENUE
PIEDMONT • CA 94611
(510) 420-3050
FAX (510) 658-3167

CORPORATION YARD
898 RED ROCK ROAD
PIEDMONT • CA 94611
(510) 420-3065



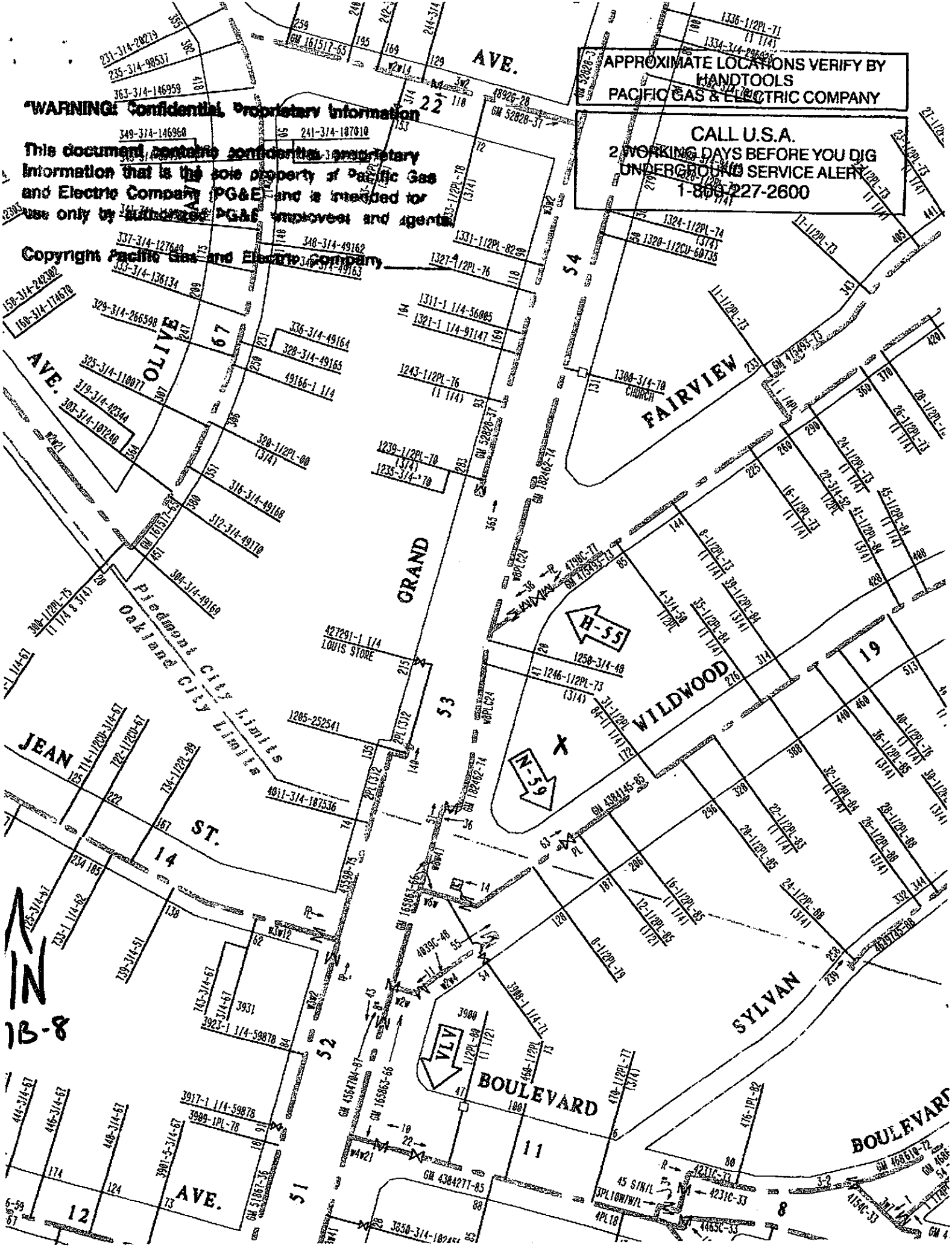
ATTACHMENT B

East Bay Municipal Utility District Water Map


1494 B 486
BOWIE PROPERTY
DETAIL A
NOT TO SCALE
SUNNYSIDE AVE
GRAND AVE
OAKLAND AVE
OLIVE AVE
LINDA AVE
MUNICIPAL ROSE GARDEN
TRACT NO 2
CITY OF PIEDMONT
CITY OF OAKLAND
FAIRVIEW AVE
WILDWOOD AVE
JEAN ST
SUNNYSLOPE AVE
BOULEVARD WAY
CROFTON AVE
FAIRBANKS AVE
WALKER AVE
VALLE VISTA AVE
MIRA VISTA AVE
ALTA VISTA AVE
VERNON ST
1497 B 484
TAP LEGEND
DMONT TERRACE BY THE LAKE
1494 B 482
11-OCT-2002
EAST BAY MUNICIPAL UTILITY DISTRICT
OAKLAND-PIEDMONT
ALAMEDA
OAKLAND EAST
OAKLAND WEST
AQUEDUCT
CENTRAL
1494B4

ATTACHMENT C

PG&E Gas and Electrical Maps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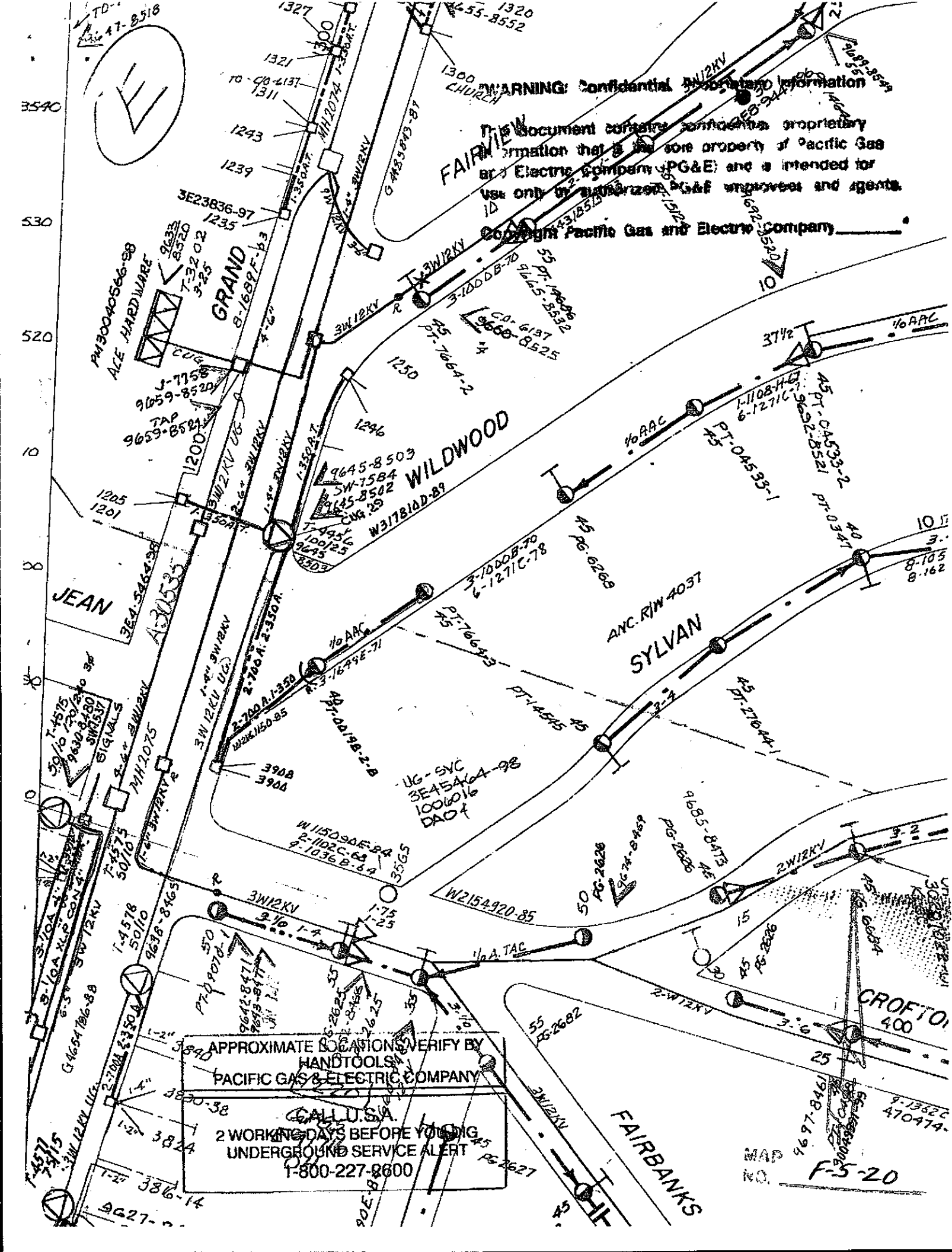
GRAND
FAIRVIEW
WILDWOOD
JEAN ST.
SYLVAN
BOULEVARD
Piedmont City Limits
Oakland City Limits
H-55
N-59
VLV
IN
IB-8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CROFTON
ANC. R/W 4037
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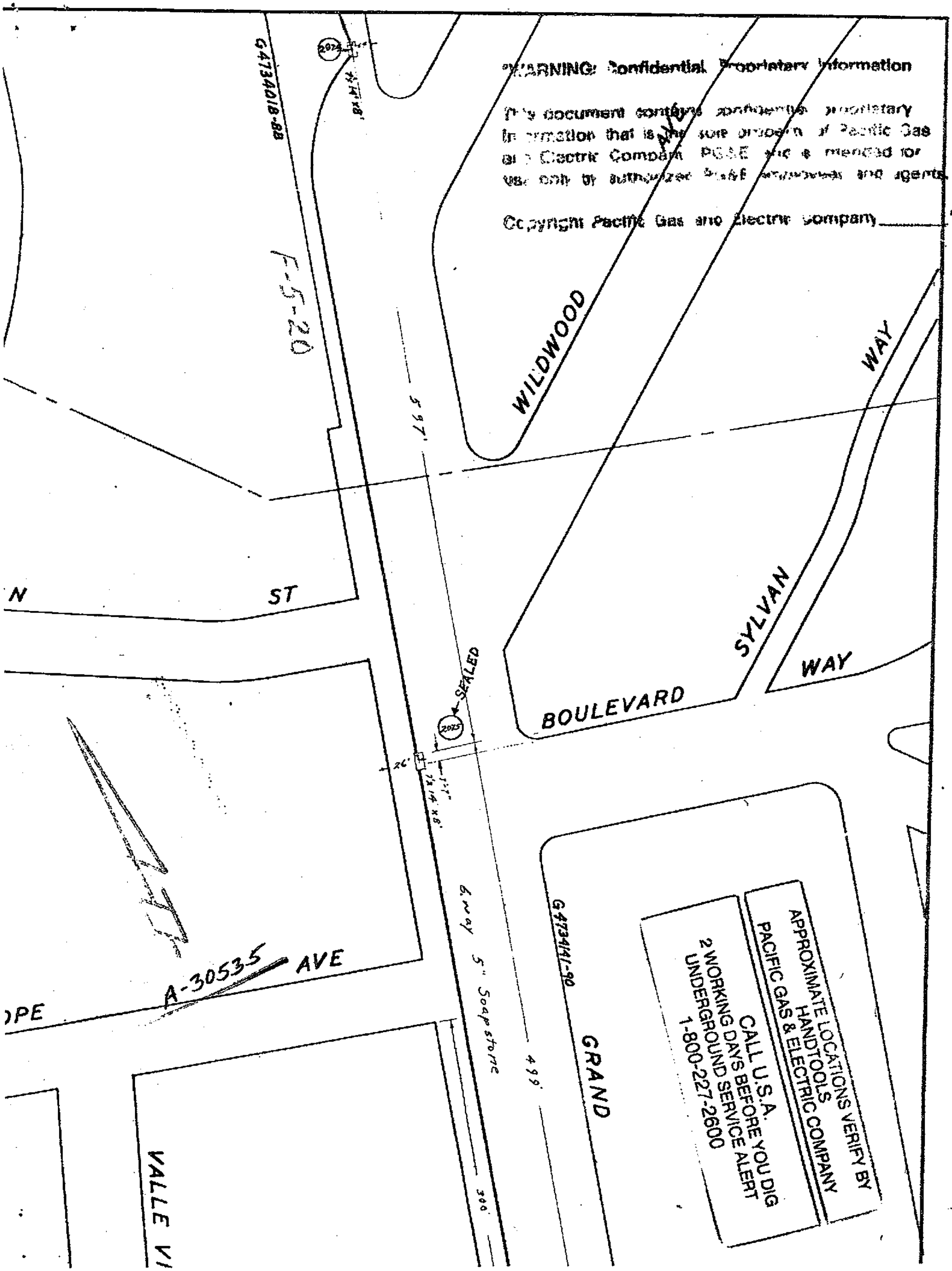
MAP NO. F-5-20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G4734018-88
F-5-20
597'
WILDWOOD
AVE
WAY
SYLVAN
WAY
BOULEVARD
SEALED
2025
26'
7 1/2 14 x 8'
ST
N
A-30535
AVE
OPE
6 way 5" Soapstone
499'
300'
GRAND
G4734141-90
VALLE VI
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ATTACHMENT D

Excerpt of *Creeks and Watershed Map of Oakland and Berkeley*
(Janet M. Sowers, 2000, Oakland Museum of California)

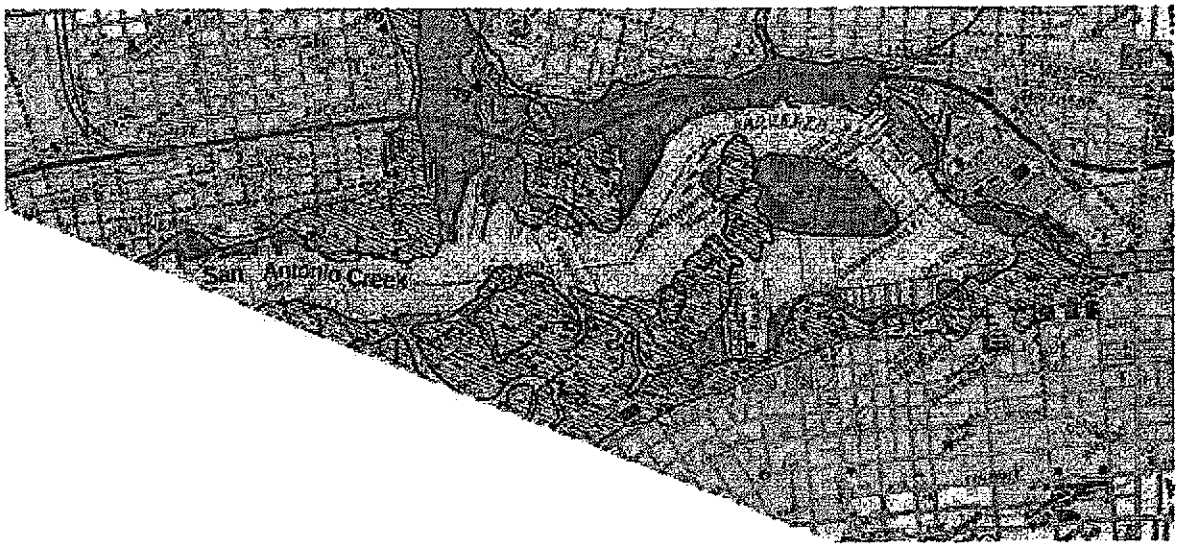
Guide to San Francisco Bay Area Creeks

San Antonio Creek Watershed Map

San Antonio Creek is, these days, more commonly called Oakland Estuary, or just the Oakland Inner Harbor, but it includes Lake Merritt. The Glen Echo Creek sub-watershed is shown in green; the Lakeshore Arm sub-watershed is in pink.

Click here or map to enlarge (455k)

Click here for legend



Portion of *Creek & Watershed Map of Oakland & Berkeley* -- Purchase Printed Map

CREEK GUIDE HOME

Top of Page

San Antonio Creek Information

OAKLAND MUSEUM of CA