URS

RO-494

November 17, 2004

Mr. Robert Schultz
Alameda County Environmental Health
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502

Alameda County
NOV 24 2004
Environmental Health

Re: Offsite Well Installation Work Plan
ARCO Service Station #2111
1156 Davis Street
San Leandro, California
URS Project #38486713

Dear Mr. Schultz:

On behalf of Atlantic Richfield Company, Remediation Management (RM - a BP affiliated company), URS Corporation (URS) is submitting this *Well Installation Work Plan* for ARCO Service Station #2111(Site), located at 1156 Davis Street, San Leandro, California. This work plan was prepared in response to a May 14, 2004 Alameda County Environmental Health (ACEH) correspondence (Appendix A) after completing the review of the *Additional Subsurface Investigation Report*, May 2004. The site background, proposed scope of work, and schedule are presented in this work plan.

1.0 SITE DESCRIPTION

The site is an active ARCO service station located at 1156 Davis Street in San Leandro, California (Figure 1). It is located at the northwest corner of the intersection of Preda Street and Davis Street. The majority of the property is concrete and asphalt paved. Current site structures include two double-walled fiberglass gasoline underground storage tanks (USTs), two pump islands with dispensers, and a convenience store. URS is currently designing and permitting a dual-phase extraction remediation system for the Site.

1.1 SURROUNDING AREA

The area surrounding the Site consists primarily of commercial and residential properties. First Christian Church and Community Center is located on the adjacent property to the west with single-family residences located to the north. Preda and Davis Streets are located adjacent to the property to the east and south, respectively.

EMCON reviewed information provided by the County of Alameda Public Works Agency regarding water wells located within the site vicinity (EMCON 1996). Wells that are located down gradient of the site include several irrigation, monitoring, and industrial wells. The nearest domestic supply well (#2S/3W 27R-7) is located approximately 650 feet west-southwest of the site. EMCON reported that wells located hydraulically down gradient of the site are not impacted by the ARCO facility (EMCON 1996). This proposed investigation will aid in assessing if this down gradient well has been impacted by the ARCO facility.

URS Corporation
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Tel: 510.893.3600
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1.2 HYDROGEOLOGY

Regionally, the site lies within the hydrogeologic feature known as the East Bay Plains Groundwater Basin. Deep groundwater occurs in mostly confined aquifers consisting of unconsolidated Tertiary to Quaternary age deposits. Some unconfined shallow water bearing deposits of Quaternary age exist within this basin, including under the subject property. The consolidated basement rocks underlying the Quaternary and Tertiary age deposits are considered to be non-water bearing due to their poor yields.

The water bearing deposits are composed of coalescing alluvial fans sloping westward from the Diablo Range to the east. These alluvial deposits are collectively known as the San Leandro Cone, a sub basin of the East Bay Plains Groundwater Basin. These water-bearing deposits are interfingered with tideland deposits that resulted from accumulations of flood stage silts and clays caused by marine inundations. Where these deposits are laterally extensive and/or thick enough, they can form confining layers that are impervious to the groundwater flow. These aquifers do not correlate at depths over any appreciable distance. They are analogous to the more studied Newark, Centerville, and Fremont aquifers located farther south in the adjacent Niles Cone Basin.

The subsurface of the Site consists of unconsolidated alluvial sediments predominantly composed of clays to silty clays, which are underlain locally by clayey sands to sandy gravels to the total explored depth of 40 feet below ground surface (ft bgs). The typical stratigraphic relationships of the sediments are depicted on geologic cross sections located in Appendix B.

Groundwater beneath the Site is typically measured at 10 to 20 ft bgs. The historic groundwater flow direction beneath the site is generally westward but has ranged from the northwest to the southwest. The gradient has historically ranged from 0.002 to 0.009 ft/ft. Regionally, the groundwater in the East Bay Plain tends to flow toward the San Francisco Bay to the west and southwest. Groundwater elevation, flow direction and gradient for the site are summarized in Tables 1 and 3.

2.0 PROPOSED SCOPE OF WORK

In March 2004, URS advanced hydropunch borings H-1 through H-5 to further delineate the extent of petroleum hydrocarbons downgradient of the Site (Figure 2). This investigation concluded that the lateral extent of petroleum hydrocarbons was not adequately delineated to the southwest of the Site, requiring further investigation. Analytical results from the March 2004 hydropunch samples and the third quarter 2004 groundwater monitoring results are included on Figure 2. Groundwater monitoring data is included in Tables 1 and 2.

Based on the results of hydropunches H-1 through H-5, URS proposes the installation of two offsite monitoring wells to the south west of the Site, in the parking lot of 1252-1260 Davis Street, San Leandro, California (Figure 2). The purpose of the offsite monitoring wells is to further delineate the lateral extent of petroleum hydrocarbons. Originally, URS had proposed installing two-offsite monitoring wells near borings H-2 and H-4 (Figure 2) but after conferring with Ms. eva chu of ACEH (Appendix A), it was decided to move the wells farther downgradient.

Prior to initiating field activities, URS will obtain the necessary access agreement, permits, prepare a Site Health and Safety Plan (HASP) for the proposed work, conduct a subsurface utility clearance, and complete the URS borehole checklist (Appendix C). The utility clearance will include notifying Underground Service Alert (USA) of the pending work a minimum of 48 hours prior to initiating the field investigation, and securing the services of a private utility locating company to confirm the absence of underground utilities at each boring location. A California certified (C-57) drilling contractor will be scheduled to perform the monitoring well installation.

2.1 SOIL SAMPLING

Two soil borings will be advanced by air knife and a drill rig equipped with hollow-stem augers, under the supervision of a URS field geologist, to a depth of approximately 30 ft bgs. Soil samples will be collected every five feet and logged by URS field geologists for lithological characteristics using the Unified Soil Classification System (USCS). Typical observations include color, moisture content, competency, and other observable distinguishing characteristics (for example, rootlets or odor). Soil samples for analysis will be collected every five feet in six inch brass tubes, capped with Teflon™, labeled, and placed in a cooler with ice. Further samples may be collected based on lithological changes or field observation of petroleum hydrocarbons. For every soil sample collected for analysis, an extra soil sample will be collected and placed in a Ziploc bag for field screening. These soil samples collected for field screening will be allowed to volatilize and later analyzed using a field portable photoionization detector (PID) for the presence of volatile petroleum compounds. Soil samples will be transported under chain-of-custody to a California certified laboratory and analyzed for Gasoline Range Organics (GRO), benzene, toluene, ethylbenzene, and xylenes (BTEX), and methyl tertiary butyl ether (MTBE) by EPA Method 8260B.

2.2 MONITORING WELL INSTALLATION

The two boreholes will be converted to 4-inch monitoring wells. A typical monitoring well construction diagram is located in Appendix D. The exact depth and length of screen of the new wells will be determined based on lithology of the boring and by an experienced URS field geologist. The wells will be installed using Schedule 40 PVC 0.010-inch slotted well screen and #2/12 sand filter pack one to two feet above the top of the well screen. The filter pack will be overlain by one to two feet of bentonite and portland cement grout to the surface. A traffic rated well box will be installed to grade. After installation, the wells will be developed in accordance of ACEH standards. The wells will be surveyed as part of a site wide re-surveying project, which will included finding the top of casing elevation with respect to mean sea level, and for lateral position using latitude and longitude.

9.0 REPORTING

A well installation report will be prepared and submitted to the regulatory agency within 60 days of completion of well installation activities.
If you have any questions regarding this submission, please call (510) 874-3280.
Sincerely,

URS CORPORATION

Scott Robinson
Project Manager

Robert Horwath, R.G. #5925
Portfolio Manager

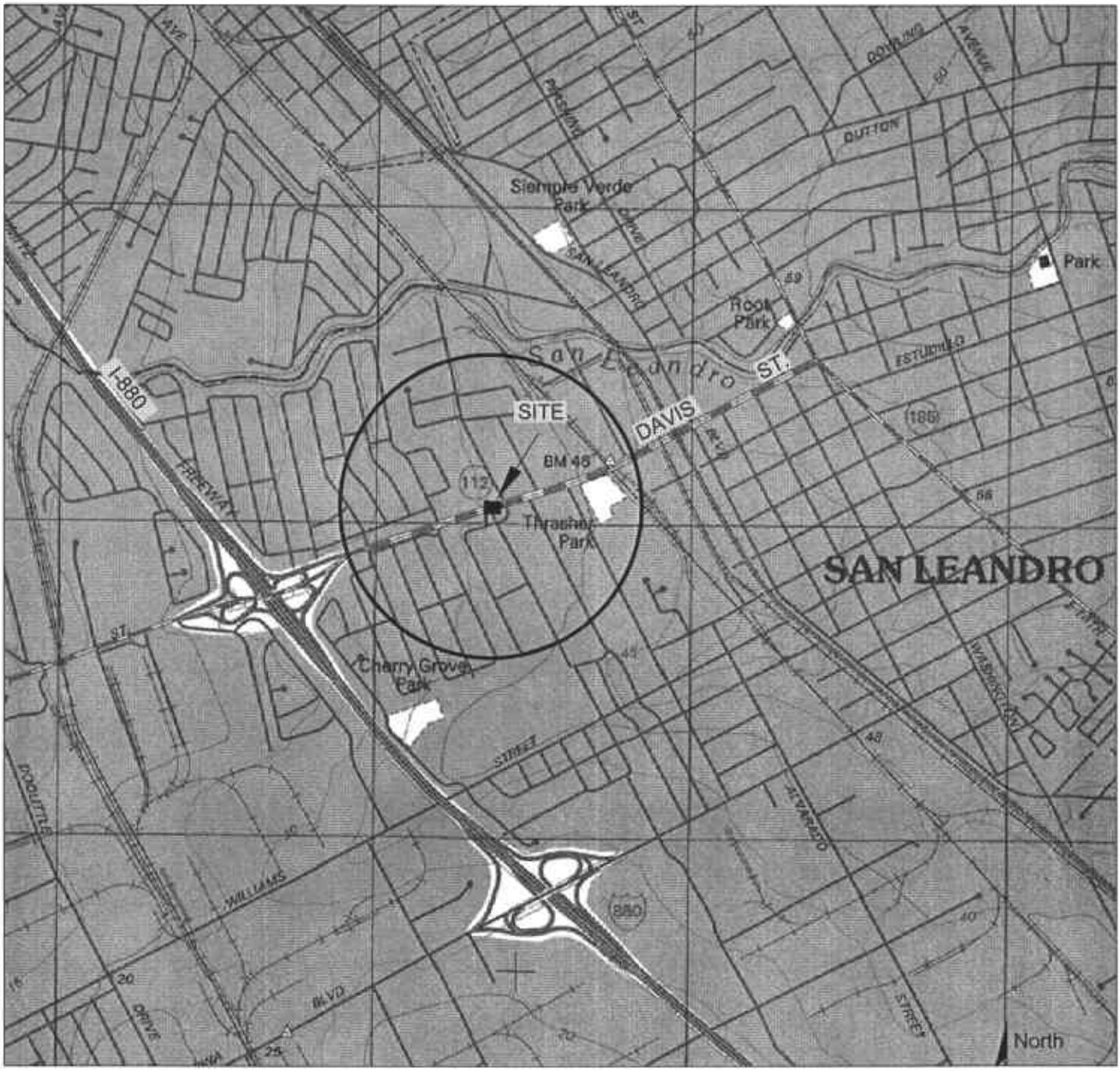
REGISTERED GEOLOGIST
ROBERT M. HORWATH
NO. 5925
4/05
STATE OF CALIFORNIA

cc: Mr. Paul Supple, Atlantic Richfield Company (RM), electronic copy uploaded to ENFOS

Figures
1. Site Vicinity Map
2. Proposed Well Locations Map

Tables
1. Groundwater Elevation and Analytical Data
2. Fuel Additives Analytical Data
3. Groundwater Gradient Data

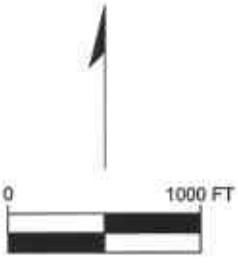
Appendices
A. Regulator Correspondence
B. Geologic Cross Sections
C. URS Borehole Checklist
D. Well Construction Diagram



REFERENCE:
BASE MAP FROM TOPO MAP
NORTH REGION 7

7.5 MINUTE TOPOGRAPHIC
PHOTOREVISED 1998

QUADRANGLE LOCATION



APPROXIMATE SCALE

URS	Project No. 38486896 Arco Service Station #2111 1156 Davis Street San Leandro, California	SITE LOCATION MAP	FIGURE 1

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NORTH

0 40 80

SCALE IN FEET

GRASS

CONCRETE PAD

BUILDING

H-4-27
ND<50
ND<0.5
ND<0.5
ND<0.5
0.72
ND<0.5

H-5-40
53
ND<0.5
ND<0.5
ND<0.5
ND<0.5
ND<0.5

SB-1

PARKING

MW-1
ND<1,000
ND<10
ND<10
ND<10
ND<10
730

~ RESIDENCES ~

MW-3
120
ND<0.5
ND<0.5
ND<0.5
ND<0.5
35

MW-4
77
ND<0.5
ND<0.5
ND<0.5
ND<0.5
77

PREDA STREET

ENCLOSURE

FORMER W.O. TANK

B-1

B-2

ARCO SERVICE STATION

ELECTRICAL PULL BOX

V-4

FORMER USTs

V-1

V-2

V-3

EXISTING UST BASIN

SB-2

FIRST CHRISTIAN CHURCH/ COMMUNITY CENTER

PAY PHONE

MASTER WATER

SIGN

VAULT

PAC BELL

PG&E

MW-6
ND<50
ND<0.5
ND<0.5
ND<0.5
ND<0.5

MW-8
ND<1,000
ND<10
ND<10
ND<10
ND<10
760

H-3
ND<50
ND<0.5
ND<0.5
ND<0.5
ND<0.5
ND<0.5

GRASS

CEMENT WALL

LIBERTY FITNESS

CEDAR GROVE APARTMENTS

H-2
260,000
ND<500
ND<500
5,800
11,000
7,600

BBQ

GATE

METERS

POSTAL AVENUE

LEE'S DONUTS

GATE

PLANTER

SIDEWALK

STORM DRAIN

MW-5
ND<5,000
ND<50
ND<50
ND<50
ND<50
4,000

H-1
820
ND<50
ND<50
ND<50
ND<50
550

DAVIS STREET

MW-2
59,000
380
ND<50
2,100
7,900
5,800

MW-7
ND<100,000
ND<1,000
ND<1,000
ND<1,000
ND<1,000
56,000

LEGEND

- PROPOSED MONITORING WELL
- MONITORING WELL
- VAPOR EXTRACTION WELL
- SOIL BORING LOCATION
- HYDROPUNCH LOCATION
- DESTROYED WELL
- PREDOMINANT GROUNDWATER FLOW DIRECTION

Well	SAMPLE
GRO	GASOLINE RANGE ORGANICS
B	BENZENE
T	TOLUENE
E	ETHYLBENZENE
X	XYLENE
MTBE	METHYL TERTIARY BUTYL ETHER

GROUNDWATER CONCENTRATIONS SHOWN IN µg/L

NOTES: GROUNDWATER FROM SOIL BORINGS SAMPLED ON 3/20/04 - 3/21/04.
GROUNDWATER FROM MONITORING WELLS SAMPLED ON 7/13/04.
SITE MAP ADAPTED FROM DELTA ENVIRONMENTAL FIGURES.
SITE DIMESIONS AND FACILITY LOCATIONS NOT VERIFIED.

URS	Project No. 38486896 Arco Service Station #2111 1156 Davis Street San Leandro, California	EXTENDED SITE PLAN	FIGURE 2

Nov 17, 2004 - 9:03am
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Table 1

Groundwater Elevation and Analytical Data

ARCO Station #2111

1156 Davis St, San Leandro, CA

Well No.	Date	P/ NP	Notes	TOC (feet)	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)	DTW (feet)	Product Thickness (feet)	GWE (feet)	GRO/ TPH-g (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	MTBE (µg/L)	DO (mg/L)	pH
MW-1	6/26/2000	--		39.6	--	--	16.46	--	23.14	NA	NA	NA	NA	NA	--	NA	NA
	7/20/2000	--		39.6	--	--	16.89	--	22.71	360	110	<0.5	<0.5	2.7	2,100	NA	NA
	9/19/2000	--		39.6	--	--	17.62	--	21.98	290	76	<0.5	<0.5	2.3	1,500	NA	NA
	12/21/2000	--		39.6	--	--	17.39	--	22.21	257	64	2.89	1.31	4.57	1,080/1,060	NA	NA
	3/13/2001	--		39.6	--	--	15.70	--	23.90	<500	52.5	<5.0	<5.0	<5.0	1,430/1,370	NA	NA
	9/18/2001	--		39.6	--	--	18.24	--	21.36	<500	64	7.3	<5.0	52	810/1,100	NA	NA
	12/28/2001	--		39.6	--	--	15.95	--	23.65	<500	<5.0	<5.0	5	22	1,200/1,100	NA	NA
	3/14/2002	--		39.6	--	--	16.01	--	23.59	<50	<0.5	<0.5	<0.5	<0.5	34/40	NA	NA
	4/23/2002	--		39.6	--	--	15.43	--	24.17	<50	<0.5	<0.5	<0.5	<0.5	30	NA	NA
	7/17/2002	NP		39.6	--	--	17.50	--	22.10	<50	1.2	<0.50	<0.50	<0.50	29	6.9	6.9
	10/9/2002	--		39.6	--	--	18.27	--	21.33	240 c	4.9	<1.0	4.1	7.0	290	6.5	6.5
	1/13/2003	--		39.6	--	--	15.37	--	24.23	760 c	34	11	17	56	300	6.8	6.8
	04/07/03 n	--		39.6	--	--	16.61	--	22.99	<50	<0.50	<0.50	<0.50	<0.50	22	6.8	6.8
	7/9/2003	--		39.6	--	--	17.27	--	22.33	<2,500	<25	<25	<25	<25	690	6.7	6.7
	02/05/2004	NP	q	39.49	12.50	26.20	16.28	--	23.21	2,800	31	<25	<25	<25	1,100	0.9	6.5
	04/05/2004	NP	odor	39.49	12.50	26.20	16.25	--	23.24	5,800	46	<25	<25	<25	1,700	1.0	--
	07/13/2004	**NP**		**39.49**	**12.50**	**26.20**	**17.57**	**--**	**21.92**	**<1,000**	**<10**	**<10**	**<10**	**<10**	**730**	**0.5**	**6.6**
MW-2	6/26/2000	--		37.99	--	--	14.60	--	0.99	NA	NA	NA	NA	NA	--	NA	NA
	7/20/2000	--		37.99	--	--	15.14	--	22.85	95,000	2,300	18,000	2,500	19,000	13,000	NA	NA
	9/19/2000	--		37.99	--	--	15.95	--	22.04	63,000	1,200	6,300	2,000	14,000	19,000	NA	NA
	12/21/00 b	--	Not Sampled	37.99	--	--	--	--	NC	5,010	360	189	213	626	54,300/89,200	NA	NA
	12/21/2000	--		37.99	--	--	15.60	--	22.39	45,900	--	2,130	1,160	9,460	22,400/24,700	NA	NA
	3/13/2001	--		37.99	--	--	13.77	--	23.90	3,650	98.1	<5.0	<5.0	6.42	3,590/3,260	NA	NA
	3/13/2001b	--	Not Sampled	37.99	--	--	--	--	NC	<20,000	525	466	408	1,460	91,700/76,000	NA	NA
	9/18/2001a	--		37.99	--	--	16.86	--	21.13	NS	NS	NS	NS	NS	--	NA	NA
	12/28/2001	--		37.99	--	--	14.28	--	23.71	31,000	1,500	3,800	1,300	4,800	9,300/8,800	NA	NA
	3/14/2002	--		37.99	--	--	14.15	--	23.84	1,800	25	43	43	270	990/960	NA	NA
	4/23/2002	--		37.99	--	--	13.60	--	24.39	9,000	220	110	470	2,500	8,500	NA	NA
	7/17/2002	NP	SHEEN	37.99	--	--	15.75	--	--	74,000 c	280	290	820	10,000	19,000/0.4	6.8	6.8
	10/9/02 g	NP		37.99	--	--	16.69	--	--	NS	NS	NS	NS	NS	--	NM	NM

Table 1

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Well No.	Date	P/ NP	Notes	TOC (feet)	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)	DTW (feet)	Product Thickness (feet)	GWE (feet)	GRO/ TPH-g (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	MTBE (µg/L)	DO (mg/L)	pH
MW-2	1/13/03 g	--	FREE PRODUCT	37.99	--	--	13.59	--	24.61h	NS	NS	NS	NS	NS	--	NM	NM
	04/07/03 g	--	FREE PRODUCT	37.99	--	--	14.70	--	23.69h	NS	NS	NS	NS	NS	--	NM	NM
	07/09/03 g	--	FREE PRODUCT	37.99	--	--	15.48	--	22.57h	NS	NS	NS	NS	NS	--	NM	NM
	02/05/2004	NP	g,q,r	37.86	12.00	26.20	14.43	0.13	23.53	--	--	--	--	--	--	--	--
	04/05/2004	NP	odor	37.86	12.00	26.20	14.35	--	23.51	2,300	33	<5.0	<5.0	200	750	0.6	--
	07/13/2004	**NP**		**37.86**	**12.00**	**26.20**	**15.79**	**--**	**22.07**	**59,000**	**380**	**<50**	**2,100**	**7,900**	**5,800**	**0.3**	**6.4**
	08/31/2004	--		**37.86**	**12.00**	**26.20**	**15.89**	**--**	**21.97**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**
MW-3	6/26/2000	--		39.32	--	--	15.96	--	23.36	NA	NA	NA	NA	NA	--	NA	NA
	7/20/2000	--		39.32	--	--	16.42	--	22.90	<50	<0.5	<0.5	<0.5	<1.0	130	NA	NA
	9/19/2000	--		39.32	--	--	17.18	--	22.14	190	17	<0.5	1.4	2.4	160	NA	NA
	12/21/2000	--		39.32	--	--	16.97	--	22.35	187	17.8	<0.5	2.47	2.5	143/125	NA	NA
	3/13/2001	--		39.32	--	--	15.17	--	24.15	72.4	2.83	<0.5	<0.5	<0.5	126/122	NA	NA
	9/18/2001	--		39.32	--	--	17.81	--	21.51	140	6.4	<0.5	3.5	1.6	110/75	NA	NA
	12/28/2001	--		39.32	--	--	15.44	--	23.88	130	5.9	<0.5	0.99	0.55	90/63	NA	NA
	3/14/2002	--		39.32	--	--	15.50	--	23.82	<50	<0.5	<0.5	<0.5	<0.5	100/88	NA	NA
	4/23/2002	--		39.32	--	--	14.96	--	24.36	<50	<0.5	<0.5	<0.5	<0.5	77	NA	NA
	7/17/2002	NP		39.32	--	--	17.09	--	22.23	<50	<0.50	<0.50	<0.50	<0.50	47	7.2	7.2
	10/9/2002	NP		39.32	--	--	17.87	--	21.45	<50	<0.50	<0.50	<0.50	<0.50	26/29	7.2	7.2
	1/13/2003	NP		39.32	--	--	14.78	--	24.54	<50	<0.50	<0.50 l	<0.50	<0.50	59 l	6.8	6.8
	04/07/03 n	NP		39.32	--	--	16.15	--	23.17	88	<0.50	<0.50	<0.50	<0.50	75	7.0	7.0
	7/9/2003	--		39.32	--	--	16.79	--	22.53	100	<0.50	<0.50	<0.50	<0.50	52	6.5	6.5
	02/05/2004	NP	q	39.19	11.90	26.20	15.66	--	23.53	240	<0.50	<0.50	<0.50	<0.50	37	0.5	--
	04/05/2004	NP		39.19	11.90	26.20	15.78	--	23.41	140	<0.50	<0.50	<0.50	0.60	53	1.0	6.6
	07/13/2004	**NP**		**39.19**	**11.90**	**26.20**	**17.20**	**--**	**21.99**	**120**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**35**	**0.8**	**6.7**
MW-4	6/26/2000	--		38.1	--	--	14.59	--	23.51	NA	NA	NA	NA	NA	--	NA	NA
	7/20/2000	--		38.1	--	--	15.04	--	23.06	97	7.9	<0.5	<0.5	1.1	51	NA	NA
	9/19/2000	--		38.1	--	--	15.83	--	22.27	110	7	<0.5	<0.5	<1.0	60	NA	NA
	12/21/2000	--		38.1	--	--	15.59	--	22.51	120	5.6	<0.5	1.72	<0.5	46.3/48.6	NA	NA
	3/13/2001	--		38.1	--	--	13.73	--	24.37	76	0.796	<0.5	<0.5	<0.5	53.7/50	NA	NA
	9/18/2001	--		38.1	--	--	16.50	--	21.60	<50	<0.5	<0.5	<0.5	<0.5	25/26	NA	NA

Table 1

Groundwater Elevation and Analytical Data

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MW-4	12/28/2001	--		38.1	--	--	14.03	--	24.07	<50	<0.5	<0.5	<0.5	<0.5	15/11	NA	NA
	3/14/2002	--		38.1	--	--	14.10	--	24.00	<50	<0.5	<0.5	<0.5	<0.5	31/28	NA	NA
	4/23/2002	--		38.1	--	--	13.57	--	24.53	<50	2.8	<0.5	<0.5	<0.5	42	NA	NA
	7/17/2002	NP		38.1	--	--	15.76	--	22.34	<50	<0.50	<0.50	<0.50	<0.50	16	7.1	7.1
	10/9/2002	NP		38.1	--	--	16.59	--	21.51	<50	2.2	<0.50	<0.50	<0.50	20/23	7.1	7.1
	1/13/2003	NP		38.1	--	--	13.43	--	24.67	52 d	<0.50	1.6	<0.50	<0.50	22	6.6	6.6
	04/07/03 n	NP		38.1	--	--	14.74	--	23.36	65	<0.50	<0.50	<0.50	<0.50	24	6.6	6.6
	7/9/2003	--		38.1	--	--	15.44	--	22.66	120	<0.50	<0.50	<0.50	<0.50	34	6.6	6.6
	02/05/2004	NP	q	37.99	10.00	24.00	14.39	--	23.60	120	<0.50	<0.50	<0.50	<0.50	22	0.5	6.6
	04/05/2004	NP		37.99	10.00	24.00	14.37	--	23.62	110	<0.50	<0.50	<0.50	<0.50	27	1.1	6.5
	07/13/2004	**NP**		**37.99**	**10.00**	**24.00**	**15.96**	**--**	**22.03**	**77**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**27**	**0.6**	**6.6**
MW-5	6/26/2000	--		37.21	--	--	14.27	--	22.94	NA	NA	NA	NA	NA	--	NA	NA
	7/20/2000	--		37.21	--	--	14.69	--	22.52	55	<0.5	<0.5	<0.5	<1.0	14,000	NA	NA
	9/19/2000	--		37.21	--	--	15.36	--	21.85	54	<0.5	<0.5	<0.5	<1.0	13,000	NA	NA
	12/21/2000	--		37.21	--	--	15.15	--	22.06	72.9	2.51	<0.5	<0.5	0.961	19,200/21,200	NA	NA
	3/13/2001	--		37.21	--	--	13.50	--	23.71	<500	<5	<5	<5	<5	15,900/20,000	NA	NA
	9/18/2001	--		37.21	--	--	15.94	--	21.27	<10,000	<100	<100	<100	<1,000	22,000/20,000	NA	NA
	12/28/2001	--		37.21	--	--	13.45	--	23.76	<10,000	<100	<100	<100	<100	10,000/10,000	NA	NA
	3/14/2002	--		37.21	--	--	13.82	--	23.39	<5,000	<50	<50	<50	<50	7,100/7,700	NA	NA
	4/23/2002	--		37.21	--	--	13.25	--	23.96	<5,000	<50	<50	<50	<50	8,900	NA	NA
	7/17/2002	NP		37.21	--	--	15.27	--	21.94	7,900 d	<50	<50	<50	<50	13,000	7.5	7.5
	10/9/2002	NP		37.21	--	--	16.02	--	21.19	2,400e	<20	<20	<20	<20	7,300/7,500	6.7	6.7
	1/13/2003	NP		37.21	--	--	13.20	--	24.01	6,400 e	<50 j	<50	<50	<50 j	8,900 k	6.8	6.8
	04/07/03 n	NP		37.21	--	--	14.42	--	22.79	<10,000	<100	<100	<100	<100	3,700	6.8	6.8
	7/9/2003	--		37.21	--	--	15.01	--	22.20	11,000	<50	<50	<50	<50	6,500	6.9	6.9
	02/05/2004	NP	q	37.12	9.40	23.40	14.10	--	23.02	8,100	<50	<50	<50	<50	7,900	1.5	--
	04/05/2004	NP		37.12	9.40	23.40	14.14	--	22.98	4,000	<25	<25	<25	<25	2,000	1.0	6.6
	07/13/2004	**NP**		**37.12**	**9.40**	**23.40**	**15.37**	**--**	**21.75**	**<5,000**	**<50**	**<50**	**<50**	**<50**	**4,000**	**0.8**	**6.7**
MW-6	6/26/2000	--		37.11	--	--	13.46	--	23.65	NA	NA	NA	NA	NA	--	NA	NA
	7/20/2000	--		37.11	--	--	13.94	--	23.17	<50	<0.5	<0.5	<0.5	<1.0	<3.0	NA	NA

Table 1

Groundwater Elevation and Analytical Data

ARCO Station #2111

1156 Davis St, San Leandro, CA

Well No.	Date	P/ NP	Notes	TOC (feet)	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)	DTW (feet)	Product Thickness (feet)	GWE (feet)	GRO/ TPH-g (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	MTBE (µg/L)	DO (mg/L)	pH
MW-6	9/19/2000	--		37.11	--	--	14.41	--	22.70	<50	<0.5	<0.5	<0.5	<1.0	<3.0	NA	NA
	12/21/2000	--		37.11	--	--	14.53	--	22.58	<50	<0.5	<0.5	<0.5	<0.5	<2.5	NA	NA
	3/13/2001	--		37.11	--	--	12.67	--	24.44	<50	<0.5	<0.5	<0.5	<0.5	<2.5	NA	NA
	9/18/2001	--		37.11	--	--	15.42	--	21.69	<50	<0.5	<0.5	<0.5	<0.5	<2.5/<2.0	NA	NA
	12/28/2001	--		37.11	--	--	12.96	--	24.15	<50	<0.5	<0.5	<0.5	<0.5	12/<0.5	NA	NA
	3/14/2002	--		37.11	--	--	12.98	--	24.13	<50	<0.5	<0.5	<0.5	<0.5	<2.5	NA	NA
	4/23/2002	--		37.11	--	--	12.44	--	24.67	<50	<0.5	<0.5	<0.5	<0.5	3.1	NA	NA
	7/17/2002	NP		37.11	--	--	14.65	--	22.46	<50	<0.50	<0.50	<0.50	<0.50	<2.5	7.3	7.3
	10/9/2002	NP		37.11	--	--	15.51	--	21.60	<50	<0.50	<0.50	<0.50	<0.50	<2.5	7.1	7.1
	1/13/2003	NP		37.11	--	--	12.27	--	24.84	<50	<0.50	<0.50	<0.50	<0.50	<2.5	6.8	6.8
	04/07/03 n	NP		37.11	--	--	13.61	--	23.50	<50	<0.50	<0.50	<0.50	<0.50	<0.50	6.6	6.6
	7/9/2003	--		37.11	--	--	14.34	--	22.77	<50	<0.50	<0.50	<0.50	<0.50	<0.50	7	7.0
	02/05/2004	--	q	37.11	10.00	25.00	13.38	--	23.73	--	--	--	--	--	--	--	--
	04/05/2004	--		37.11	10.00	25.00	13.31	--	23.80	--	--	--	--	--	--	--	--
	07/13/2004	**NP**		**37.11**	**10.00**	**25.00**	**14.65**	**--**	**22.46**	**<50**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**2.7**	**6.8**
MW-7	6/26/2000	--		38.68	--	--	14.34	--	24.34	NA	NA	NA	NA	NA	--	NA	NA
	7/20/2000	--		38.68	--	--	15.26	--	23.42	14,000	5.4	<0.5	2.8	5.9	71,000	NA	NA
	9/19/2000	--		38.68	--	--	15.70	--	22.98	8,400	420	38	470	220	5,600	NA	NA
	12/21/2000	--		38.68	--	--	16.02	--	22.66	NS	NS	NS	NS	NS	--	NA	NA
	3/13/2001	--		38.68	--	--	14.18	--	24.50	<2,000	154	63	46.3	127	175,000/160,000	NA	NA
	9/18/2001	--		38.68	--	--	17.02	--	21.66	<100,000	1,900	<1,000	<1,000	2,800	190,000/370,000	NA	NA
	12/28/2001	--		38.68	--	--	14.81	--	23.87	<20,000	<200	<200	<200	<200	84,000/72,000	NA	NA
	3/14/2002	--		38.68	--	--	14.60	--	24.08	<50,000	<500	<500	<500	<500	85,000/85,000	NA	NA
	4/23/2002	--		38.68	--	--	13.94	--	24.74	<20,000	530	200	220	800	67,000	NA	NA
	7/17/2002	NP		38.68	--	--	16.27	--	22.41	26,000 d	720	<250	<250	860	120,000	6.9	6.9
	10/9/2002	NP		38.68	--	--	17.16	--	21.52	110,000d	1,500	4,400	820	5,400	97,000/120,000	6.8	6.8
	1/13/2003	NP		38.68	--	--	13.82	--	24.86	<50,000 f	<500 f	<500 f	<500 f	2,200 f	33,000 f	6.6	6.6
	04/07/03 n	NP		38.68	--	--	14.52	--	24.16	<2,500	30	<25	<25	<25	710	7.0	7.0
	7/9/2003	--		38.68	--	--	15.97	--	22.71	66,000	<500	<500	<500	<500	36,000	6.7	6.7
	02/05/2004	NP	q	38.54	12.00	27.00	14.75	--	23.79	55,000	300	<250	<250	<250	34,000	1.0	6.7

Table 1

Groundwater Elevation and Analytical Data

ARCO Station #2111

1156 Davis St, San Leandro, CA

Well No.	Date	P/ NP	Notes	TOC (feet)	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)	DTW (feet)	Product Thickness (feet)	GWE (feet)	GRO/ TPH-g (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	MTBE (µg/L)	DO (mg/L)	pH
MW-7	04/05/2004	NP	odor	38.54	12.00	27.00	14.63	--	23.91	62,000	520	<250	<250	380	37,000	1.0	6.7
	07/13/2004	**NP**		**38.54**	**12.00**	**27.00**	**16.31**	--	**22.23**	**<100,000**	**<1,000**	**<1,000**	**<1,000**	**<1,000**	**56,000**	**0.7**	**6.7**
MW-8	02/05/2004	P	q	38.91	--	--	15.61	--	23.30	3,600	<25	<25	<25	<25	1,900	6.9	6.8
	04/05/2004	P		38.91	--	--	15.64	--	23.27	1,900	<10	<10	<10	<10	1,200	3.2	6.7
	07/13/2004	**P**		**38.91**	--	--	**17.22**	--	**21.69**	**<1,000**	**<10**	**<10**	**<10**	**<10**	**760**	**1.6**	**6.7**

Table 1

Groundwater Elevation and Analytical Data

ARCO Station #2111
1156 Davis St, San Leandro, CA

Abbreviations
GRO = Gasoline Range Organics, range C4-C12
TPH-g = Total Petroleum Hydrocarbons analyzed by EPA method 8260B. (Prior to 04/07/03, analyzed by EPA method 8015 modified.)
MTBE = Methyl tertiary butyl ether analyzed by EPA Methods 8260B. (Prior to 04/07/03, analyzed by EPA methods 8020/ 8260B)
ug/L = Micrograms per liter
mg/L = Milligrams per liter
NA = Not available
NM = Not measured
NC = Not calculated
P/NP = Purged/ Not purged before sampling
GWE = Groundwater elevation measured in feet above mean sea level
TOC = Top of casing
DTW = Depth to water measured in feet below ground surface (ft bgs)
< = Not detected at or above specified laboratory method detection limit

Source : The data within this table collected prior to July 2002 was provided to URS by RM and their previous consultants. URS has not verified the accuracy of this information.

Notes:
a = Product sheen noted
b = Well was sampled after batch extraction event.
c = Chromatogram Pattern: Gasoline C6-C10
d = Hydrocarbon pattern is present in the requested fuel quantitation range but does not resemble the pattern of the requested fuel
e = Discrete peak @C6-C7
f = This sample was analyzed beyond the EPA recommended holding time. The results may still be useful for their intended purpose.
g = Well not sampled due to the detection of free product.
h = Groundwater elevation adjusted for free product: (thickness of free product x 0.8) + measured groundwater elevation
j = The closing calibration was outside acceptance limits by 1%. This should be considered in evaluating the result. The average % difference for all analytes met the 15% requirement and the QC suggests that calibration linearity is not a factor.
k = The closing calibration was outside acceptance limits by 6%. This should be considered in evaluating the result. The average % difference for all analytes met the 15% requirement and the QC suggests that calibration linearity is not a factor.
l = This analyse was not confirmed using a secondary column in accordance to client contract.
n = TPH-g, BTEX, and MTBE analyzed by EPA method 8260B beginning on the second quarter 2003 sampling event (04/07/03).
o =Dissolved Oxygen and pH levels are field measurements.
p = Please note that beginning in the Fourth Quarter 2003, the laboratory modified the reported analyte list. Total Petroleum Hydrocarbons as Gasoline (TPH-g) has been changed to Gasoline Range Organics (GRO). The resulting data may be impacted by the potential inclusion of non-TPHg analytes within the requested fuel range resulting in a higher concentration being reported.
q = TOC elevations re-surveyed to NAVD '88 on February 23, 2004.
r = Data collected during batch extraction activities.

1. Beginning in the Second Quarter 2004, the carbon range for the GRO has been changed from C6-C10 to C-4 to C-12. The carbon range for DRO has been changed from C10-C28 to C10-C36. EPA 8015B has been modified to bettter meet the requirements of California regulatory agencies.

Table 2

Fuel Additives Analytical Data

ARCO Station #2111

1156 Davis St, San Leandro, CA

Well Number	Date Sampled	Ethanol (µg/L)	TBA (µg/L)	MtBE (µg/L)	DIPE (µg/L)	EtBE (µg/L)	TAME (µg/L)	1,2-DCA (µg/L)	EDB (µg/L)	Comments
MW-1	4/7/2003	<100	<20	1,100	<0.50	<0.50	<0.50	--	--	
	7/9/2003	<5,000	<1,000	690	<25	<25	<25	--	--	
	02/05/2004	<5,000	<1,000	1,100	<25	<25	32	<25	<25	
	04/05/2004	<5,000	<1,000	1,700	<25	<25	38	<25	<25	a
	07/13/2004	**<2,000**	**780**	**730**	**<10**	**<10**	**19**	**<10**	**<10**	a
MW-2	04/05/2004	<1,000	<200	750	<5.0	<5.0	<5.0	<5.0	<5.0	
	07/13/2004	**<10,000**	**12,000**	**5,800**	**<50**	**<50**	**<50**	**<50**	**<50**	a
MW-3	4/7/2003	<100	<20	75	<0.50	<0.50	6.5	--	--	
	7/9/2003	<100	<20	52	<0.50	<0.50	4.2	--	--	
	02/05/2004	<100	<20	37	<0.50	<0.50	3.1	<0.50	<0.50	
	04/05/2004	<100	<20	53	<0.50	<0.50	3.7	<0.50	<0.50	a
	07/13/2004	**<100**	**44**	**35**	**<0.50**	**<0.50**	**3.2**	**<0.50**	**<0.50**	
MW-4	4/7/2003	<100	<20	24	<0.50	<0.50	7.3	--	--	
	7/9/2003	<100	<20	34	<0.50	<0.50	9.8	--	--	
	02/05/2004	<100	<20	22	<0.50	<0.50	6.2	<0.50	<0.50	
	04/05/2004	<100	<20	27	<0.50	<0.50	7.2	<0.50	<0.50	a
	07/13/2004	**<100**	**26**	**27**	**<0.50**	**<0.50**	**7.4**	**<0.50**	**<0.50**	a
MW-5	4/7/2003	<20,000	<4,000	3,700	<100	<100	<100	--	--	
	7/9/2003	<10,000	<2,000	6,500	<50	<50	<50	--	--	
	02/05/2004	<10,000	<2,000	7,900	<50	<50	<50	<50	<50	a
	04/05/2004	<5,000	<1,000	2,000	<25	<25	<25	<25	<25	a
	07/13/2004	**<10,000**	**3,200**	**4,000**	**<50**	**<50**	**<50**	**<50**	**<50**	a
MW-6	4/7/2003	<100	<20	<0.50	<0.50	<0.50	<0.50	--	--	
	7/9/2003	<100	<20	<0.50	<0.50	<0.50	<0.50	--	--	
	07/13/2004	**<100**	**<20**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	a
MW-7	4/7/2003	<5,000	<1,000	710	<25	<25	<25	--	--	
	7/9/2003	<100,000	<20,000	36,000	<500	<500	<500	--	--	
	02/05/2004	<50,000	<10,000	34,000	<250	<250	<250	<250	<250	
	04/05/2004	<50,000	<10,000	37,000	<250	<250	<250	<250	<250	
	07/13/2004	**<200,000**	**<40,000**	**56,000**	**<1,000**	**<1,000**	**1,300**	**<1,000**	**<1,000**	
MW-8	02/05/2004	<5,000	<1,000	1,900	<25	<25	<25	<25	<25	

Table 2

Fuel Additives Analytical Data

ARCO Station #2111
1156 Davis St, San Leandro, CA

Well Number	Date Sampled	Ethanol (µg/L)	TBA (µg/L)	MtBE (µg/L)	DIPE (µg/L)	EtBE (µg/L)	TAME (µg/L)	1,2-DCA (µg/L)	EDB (µg/L)	Comments
MW-8	04/05/2004	<2,000	<400	1,200	<10	<10	12	<10	<10	a
	07/13/2004	**<2,000**	**770**	**760**	**<10**	**<10**	**<10**	**<10**	**<10**	**a**

Table 2

Fuel Additives Analytical Data

ARCO Station #2111
1156 Davis St, San Leandro, CA

Abbreviations:
TBA = tert-Butyl alcohol
MTBE = Methyl tert-butyl ether
DIPE = Di-isopropyl ether
ETBE = Ethyl tert butyl ether
TAME = tert-Amyl methyl ether
ug/L = micrograms per liter
< = Not detected at or above the laboratory reporting limit
NA = Data not available, not analyzed, or not applicable
NS = Not Sampled

Notes:
a = The continuing calibration verification was outside of client contractual acceptance limits. However, it was within method aceptance limits. The data should still be useful for its intended purpose.

Table 3

Groundwater Gradient Data

ARCO Station #2111
1156 Davis St, San Leandro, CA

Date Sampled	Approximate Flow Direction	Approximate Hydraulic Gradient
7/20/2000	West-Northwest	0.006
9/19/2000	West-Northwest	0.004
12/21/2000	West-Northwest	0.004
3/13/2001	West-Northwest	0.005
5/30/2001	West-Northwest	0.004
9/18/2001	West-Northwest	0.003
12/28/2001	West-Northwest	0.003
3/14/2002	West	0.004
4/23/2002	West	0.006
7/17/2002	West	0.003
10/9/2002	West	0.002
1/13/2003	Southwest	0.0043
4/7/2003	West-Northwest	0.009-0.011
7/9/2003	West-Northwest	0.004
10/1/2003	West	0.002
2/5/2004	West	0.004
4/5/2004	West-Southwest	0.004
7/13/2004	**West-Southwest**	**0.003**

Note: The data within this table collected prior to July 2002 was provided to URS by RM and their previous consultants. URS has not verified the accuracy of this information.

Appendix A
Regulatory Correspondence

"Chu, Eva, Env. Health"
<eva.chu@acgov.org>

06/02/2004 03:20 PM

To: "'Scott_Robinson@URSCorp.com'" <Scott_Robinson@urscorp.com>
cc:
Subject: RE: ARCO #2111 at 1156 Davis Street, San Leandro

Hi Scott,

At last, a reply. Why don't you take a good look to see where you can install wells that will adequately characterize the lateral extent of the plume, and send your proposal as a work plan. Please send the work plan to Donna Drogos, as I am no long working with the LOP team. Donna will assign it to the proper case worker.

It was a pleasure working with you.

eva

-----Original Message-----
From: Scott_Robinson@URSCorp.com [mailto:Scott_Robinson@URSCorp.com]
Sent: Wednesday, June 02, 2004 3:17 PM
To: Chu, Eva, Env. Health
Subject: Re: ARCO #2111 at 1156 Davis Street, San Leandro

eva:

I apologize for the slow reply to your e-mail. I will have someone scout out the area to the west of the site to see where we might be able to install downgradient offsite monitoring wells. The number and location of the wells will depend on access availability. One thought is that if we are going to install wells farther downgradient do we really need to install MW-9? Well MW-5 is close by (a little south). I'll put together a map with possible locations for the wells farther downgradient.

Scott

Scott Robinson
Project Manager / Senior Geologist
URS Corporation
1333 Broadway, Suite 800 (NEW ADDRESS)
Oakland, CA 94612
510-874-3280 Direct / 510-874-3268 Fax

"Chu, Eva, Env. Health" <eva.chu@acgov.org> 05/14/2004 03:38 PM

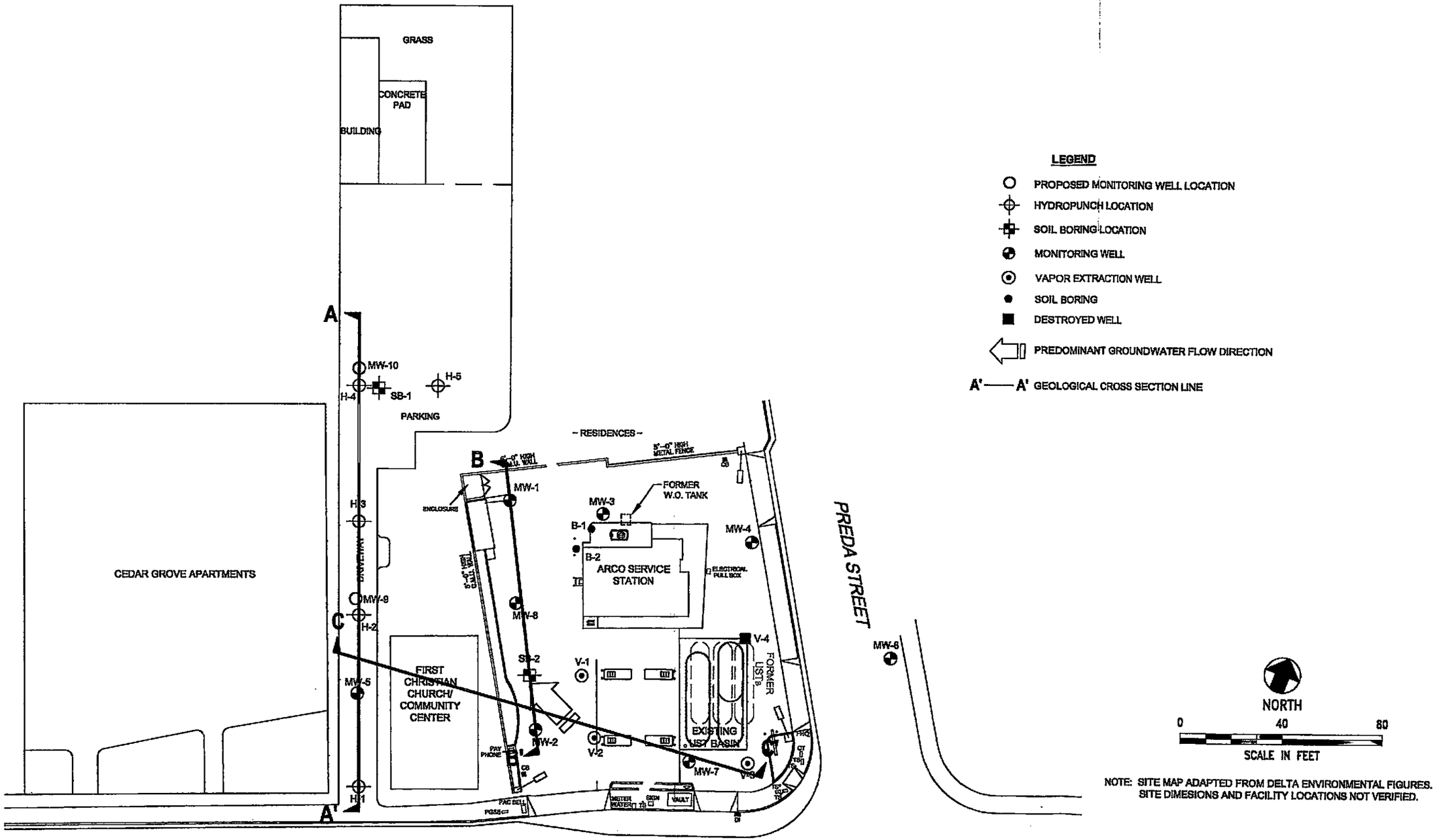
To: "Paul Supple (E-mail)" <supplpv@bp.com>, "Scott_Robinson (E-mail)" <Scott_Robinson@URSCorp.com>
cc:
Subject: ARCO #2111 at 1156 Davis Street, San Leandro

Hi Paul, Scott,

I completed review of URS' May 6 2004 Additional Subsurface Investigation Report prepared for the above referenced site. Soil borings were advanced in March 2004 in an attempt to better characterize the vertical and horizontal extent of the contaminant plume. Data from this investigation prompted the recommendation to install two downgradient offsite wells (MW-9 and MW-10). It is my opinion that three additional offsite wells be installed downgradient and beyond proposed well MW-9 (onto the Cedar Grove Apartments complex) since the horizontal extent of the plume has not been delineated. And, I'm not sure if MW-10 will provide much pertinent groundwater data. Let me know your thoughts on this. Thanks

eva chu
Alameda County Environmental Health
Sr Environmental Health Specialist
1131 Harbor Bay Parkway
Alameda, CA 94502
(510) 567-6762
(510) 337-9234 (fax)

Appendix B
Geologic Cross Sections



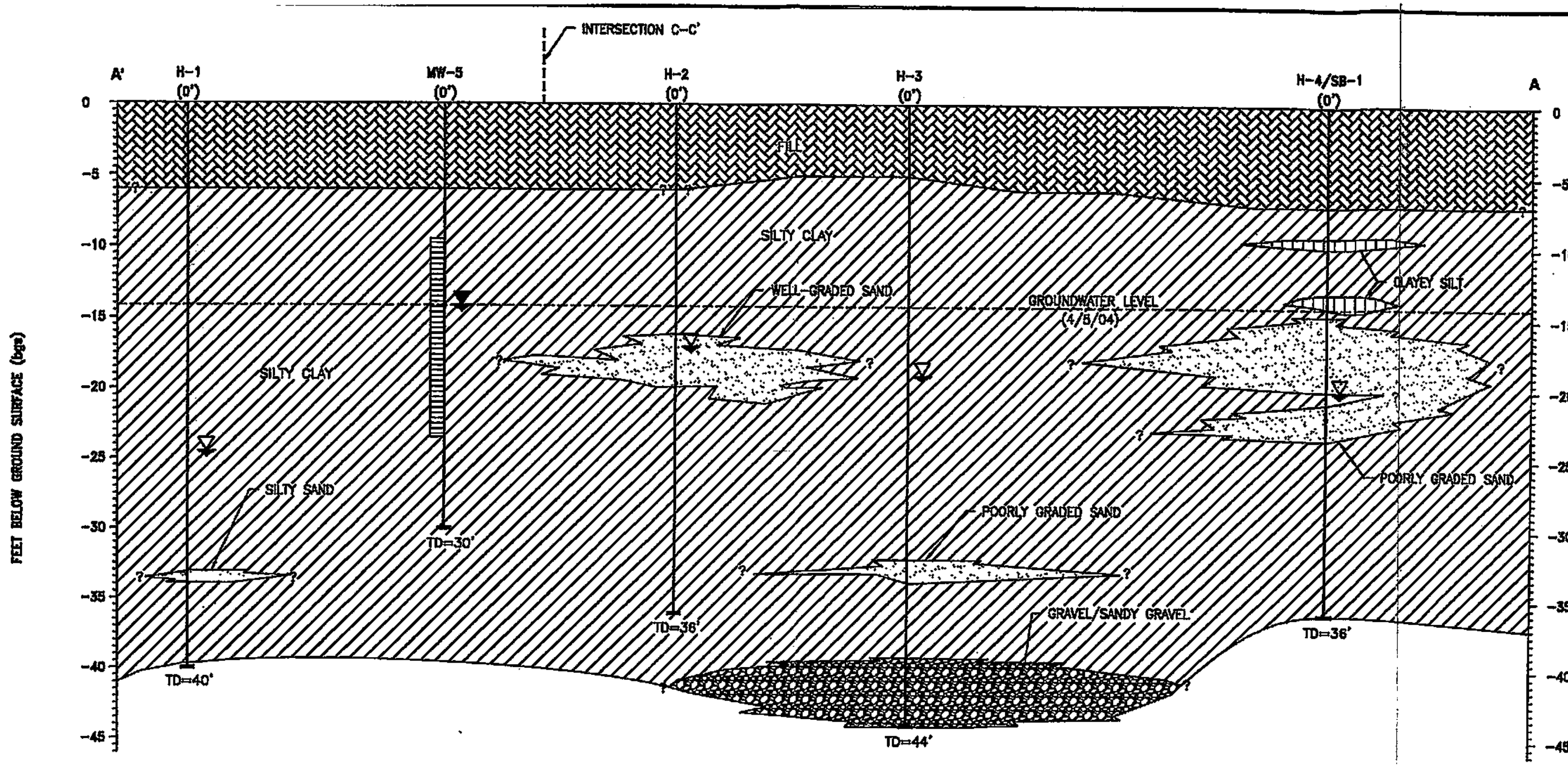
LEGEND

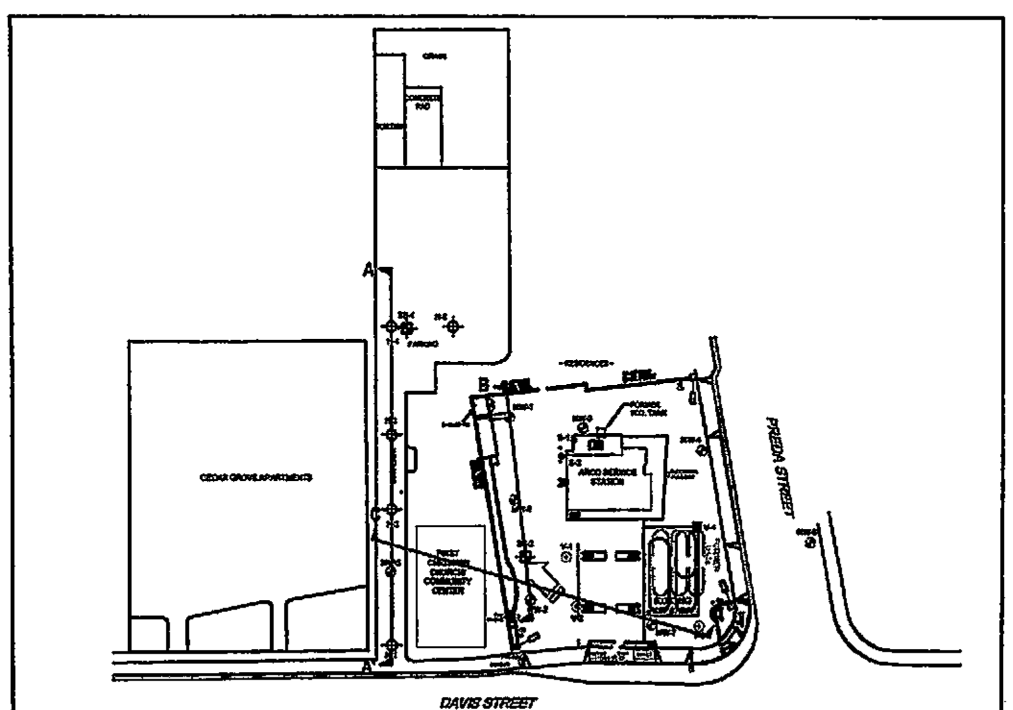
- PROPOSED MONITORING WELL LOCATION
- HYDROPUNCH LOCATION
- SOIL BORING LOCATION
- MONITORING WELL
- VAPOR EXTRACTION WELL
- SOIL BORING
- DESTROYED WELL
- PREDOMINANT GROUNDWATER FLOW DIRECTION
- A' —— A' GEOLOGICAL CROSS SECTION LINE

NOTE: SITE MAP ADAPTED FROM DELTA ENVIRONMENTAL FIGURES. SITE DIMESIONS AND FACILITY LOCATIONS NOT VERIFIED.

URS	Project No. 38486896 Arco Service Station #2111 1156 Davis Street San Leandro, California	SITE PLAN	FIGURE 1

May 04, 2004 - 11:36am
K:\x_cad_wcad\ESP (GDS)\
ro Bobbeson\Pcad Sample\2111SP_Fig_1.dwg





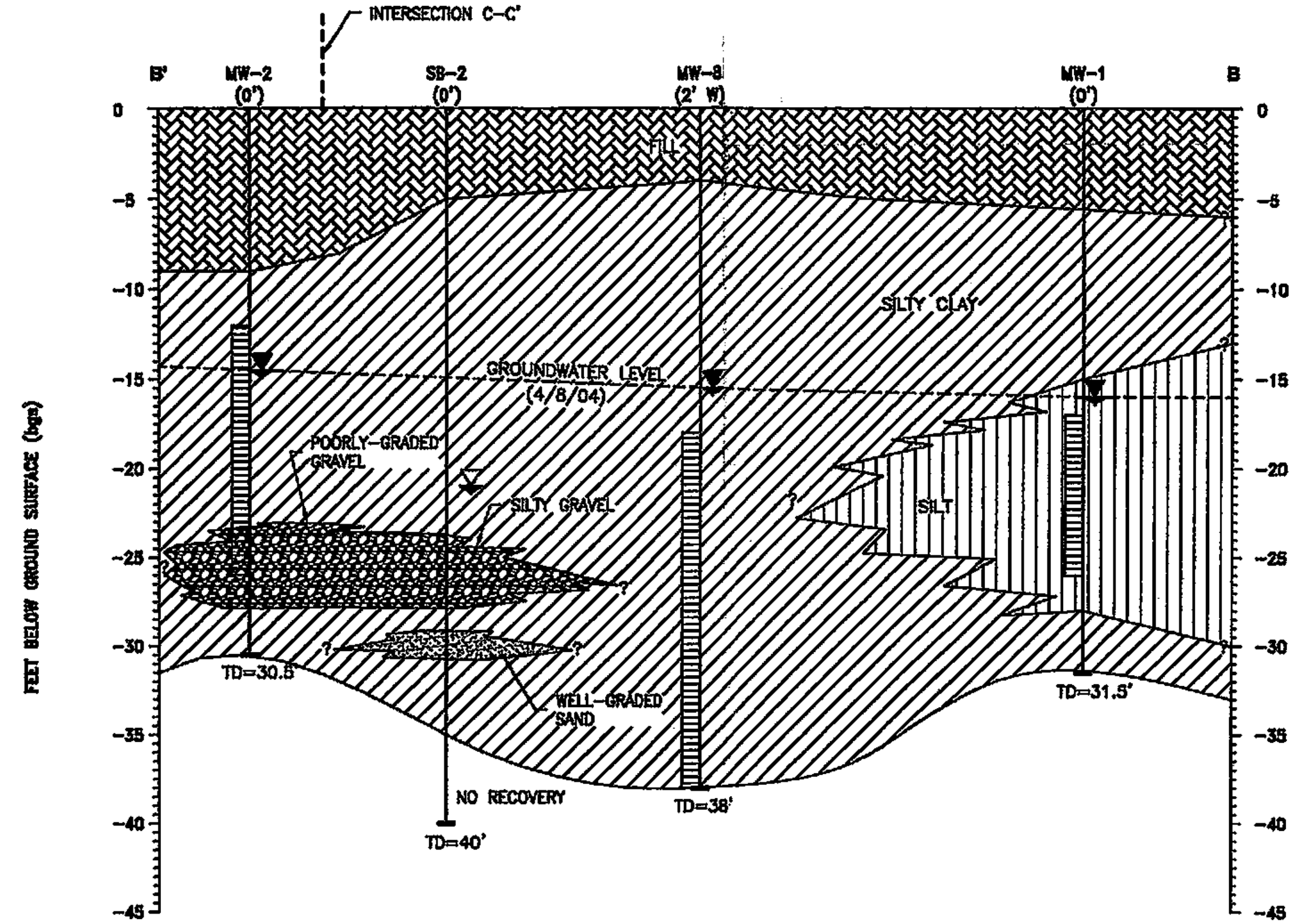
<u>LEGEND:</u>

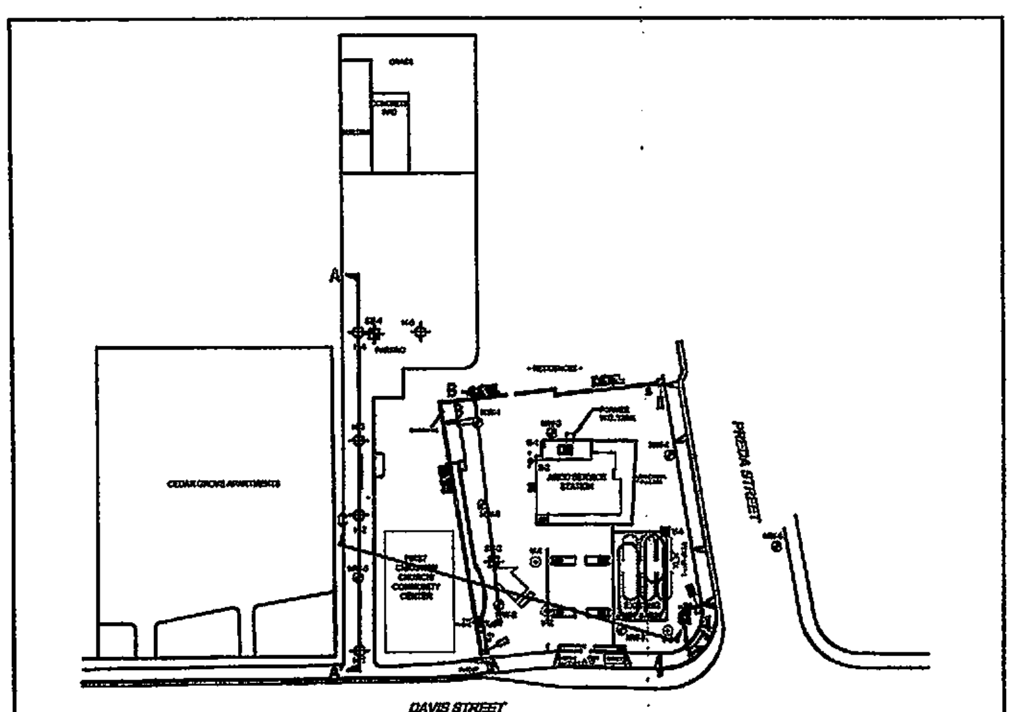
▽	FIRST ENCOUNTER GROUNDWATER (3/20/04–3/21/04)
▼	STATIC WATER LEVEL (4/5/04)
	FILL
	GRAVEL/SILTY GRAVEL/SANDY GRAVEL (GM/GP)
	SAND/SILTY SAND/GRAVELLY SAND (SP/SM/SP/SW)
	SILT/CLAYEY SILT (ML)
	SILTY CLAY (CL)
MW-5 (X')	WELL OR SOIL BORING NUMBER DISTANCE AND DIRECTION OF PROJECTION
	MONITORING WELL SCREENED INTERVAL
TD=36'	TOTAL DEPTH (FEET BELOW GROUND SURFACE)

0 10 20
VERT. SCALE IN FEET

0 20 40
HORIZ. SCALE IN FEET

URS	Project No. 38486896 Arco Service Station #2111 1156 Davis Street San Leandro, California	GEOLOGIC CROSS-SECTION A'-A	FIGURE 2





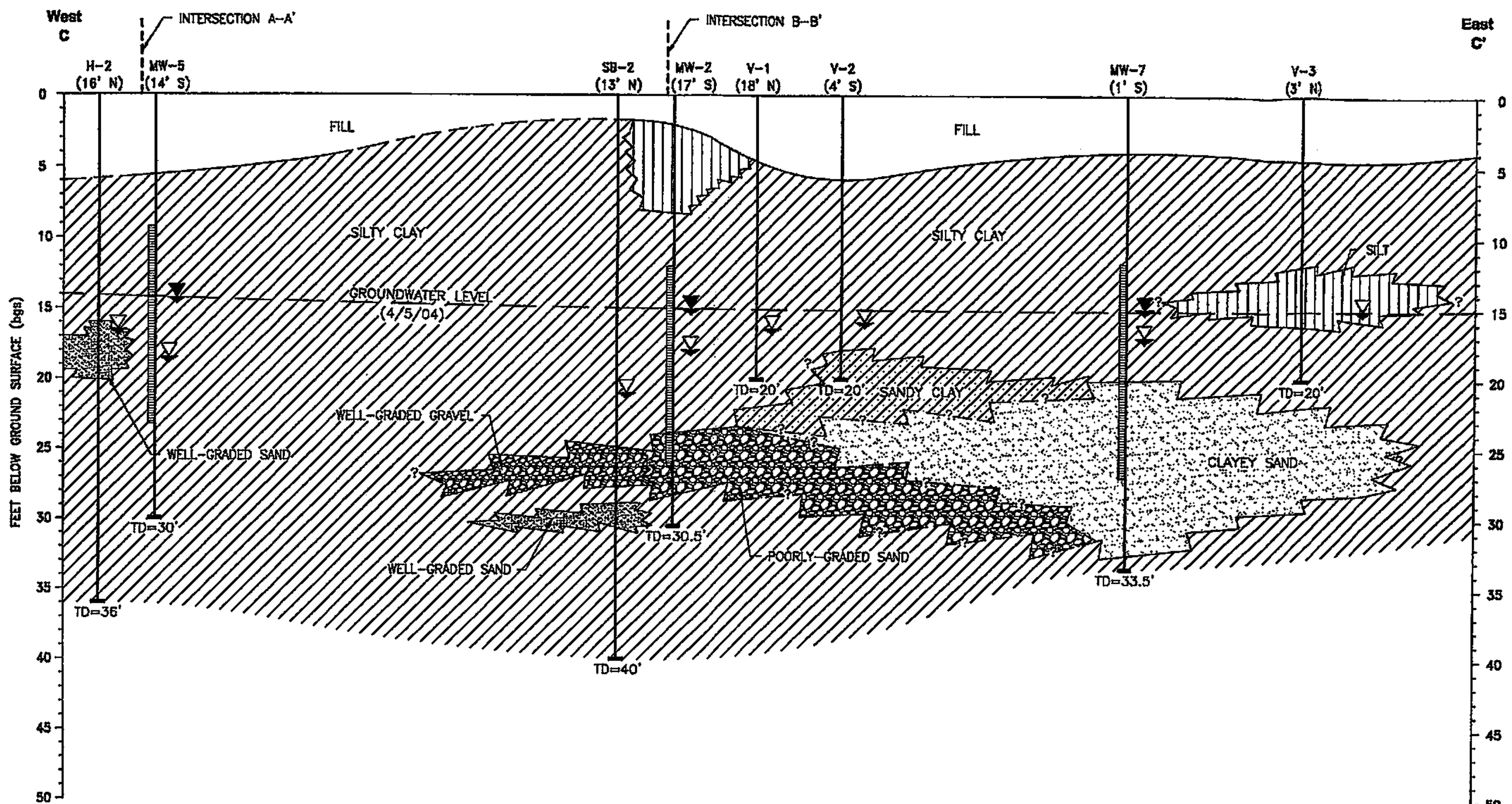
LEGEND:

- FIRST ENCOUNTER GROUNDWATER (3/20/04–3/21/04)
- STATIC WATER LEVEL (4/8/04)
- FILL
- GRAVEL/SILTY GRAVEL/SANDY GRAVEL (GM/GP)
- SAND/SILTY SAND/GRAVELLY SAND (SP/SM/SP/SW)
- SILT/CLAYEY SILT (ML)
- SILTY CLAY (CL)
- MW–5 (X') WELL OR SOIL BORING NUMBER DISTANCE AND DIRECTION OF PROJECTION
- MONITORING WELL SCREENED INTERVAL
- TD=36' TOTAL DEPTH (FEET BELOW GROUND SURFACE)

0 10 20
VERT. SCALE IN FEET

0 20 40
HORIZ. SCALE IN FEET

URS	Project No. 38486896 Arco Service Station #2111 1156 Davis Street San Leandro, California	GEOLOGIC CROSS-SECTION B'-B	FIGURE 3



LEGEND:

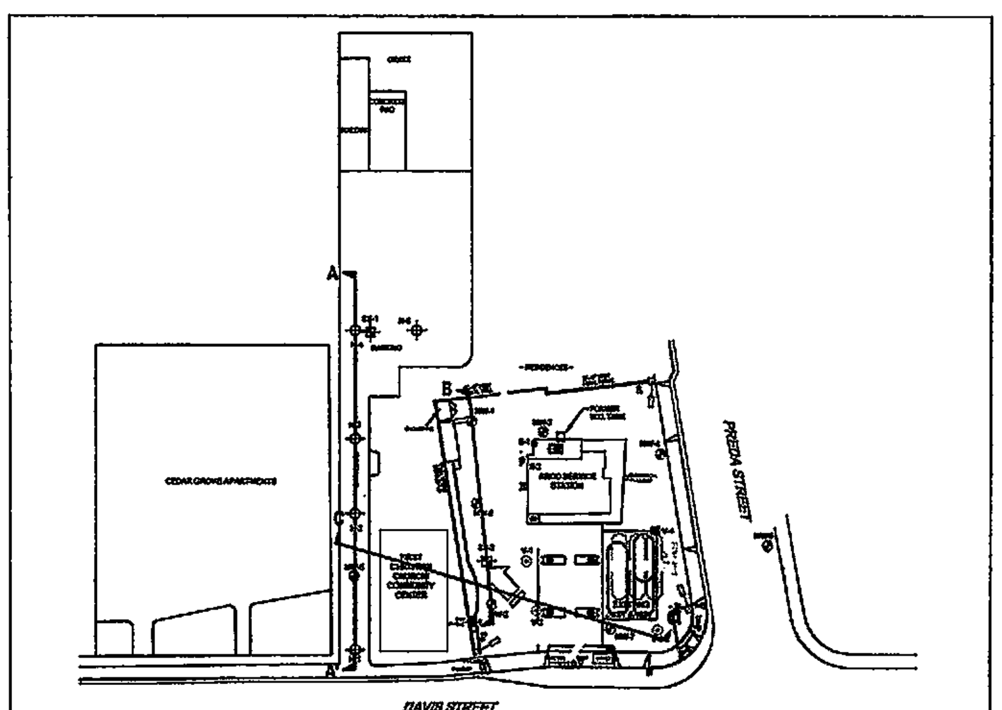
- FIRST ENCOUNTER GROUNDWATER (3/20/04-3/21/04)
- STATIC WATER LEVEL (4/5/04)
- GRAVEL/SILTY GRAVEL/SANDY GRAVEL (GM/GP)
- SAND/SILTY SAND/GRAVELLY SAND (SP/SM/SP/SW)
- SILT/CLAYEY SILT (ML)
- SILTY CLAY (CL)
- SANDY CLAY (CL)
- MW-5 (X') WELL OR SOIL BORING NUMBER DISTANCE AND DIRECTION OF PROJECTION
- MONITORING WELL SCREENED INTERVAL
- TD=36' TOTAL DEPTH (FEET BELOW GROUND SURFACE)

0 10 20

VERT. SCALE IN FEET

0 20 40

HORIZ. SCALE IN FEET



URS

Project No. 38486896

Arco Service Station #2111
1156 Davis Street
San Leandro, California

GEOLOGIC CROSS-SECTION
C - C'

FIGURE
4

Appendix C
URS Borehole Checklist

PREDRILLING/SUBSURFACE CHECKLIST FOR INTRUSIVE FIELDWORK

Site Name _____ Job # _____
Site Phone Number: _____ _____
Site Address _____ County _____
BP EBM: _____ Phone _____
BP Site Manager Contacted On: _____ By: _____
Site Drawings (yes / no / NA) _____ (please attach) Historical Drawings (yes / no / NA) _____
As-Build Drawings (yes/no/NA)_____ (please attach)
Third Party Construction/Redevelopment Plans (yes/no/NA) (please attach)
***ATTACH SITE FIGURE WITH PROPOSED BORING LOCATIONS
Subcontractor's (drillers, concrete, etc...) Company _____
Subcontractor's Name / Contact Person _____ Phone _____
Meeting / Start Date _____ Time _____

1) **Health and Safety Form Completed:** Y / N Date _____

2) **Mandatory Utility Protection Services** Minimum 48 Hrs. Advance Notice (State Specific Notification Period Supercedes)
Called: Date _____ Time _____ Initials _____
Reference # _____
Proposed Drilling Locations Premarked for Locating Service. Y / N

3) **Mandatory Private or In-House Utility Locating Service Performed?** Y / N
Called: Date _____ Time _____ Initials _____
Name of Locating Service: _____
Telephone #/ contact: _____
Supplier Locating Technician: _____
Type of sensing equipment used: _____
Proposed Drilling Locations Premarked Y / N

4) **Other Potential Underground Structures**
Name of City Engineer/Utility Representative: _____
Telephone #: _____
Date Notified _____ Maps: Y / N
Cleared: Y / N

5) **COMPLETED SITE WALKOVER W/ SITE MANAGER/DESIGNEE OR OWNER/TENANT REP.** Y / N
Name of Site Manager: _____
Name of Property Owner/Tenant Representative: _____
Cleared: Yes / No
Building Utility Service Line Connections Identified: Y / N
Utility Service Line Points of Entry to the Property from Utility Mains Identified: Y / N
(Hand sketch on site map w/proposed boring locations and most likely utility trench locations)

6) **Utility Inventory:** Y / N

Utility	Name	Depth (ft)	Phone	Notified - Date	Marked
Above Ground Services:					
Electric		NA		Y / N	Y / N
Telephone		NA		Y / N	Y / N
Cable		NA		Y / N	Y / N
Overhead Supports		NA		Y / N	Y / N
Traffic light cables		NA		Y / N	Y / N

PREDRILLING/SUBSURFACE CHECKLIST FOR INTRUSIVE FIELDWORK

6) Utility Inventory Continued:

Below Ground Services:

Electric				Y / N		Y / N
Telephone				Y / N		Y / N
Cable				Y / N		Y / N
Gas				Y / N		Y / N
Water				Y / N		Y / N
UST System				Y / N		Y / N
Storm				Y / N		Y / N
Sanitary				Y / N		Y / N
Steam				Y / N		Y / N
Pipeline Companies				Y / N		Y / N

Other:

				Y / N		Y / N
				Y / N		Y / N
				Y / N		Y / N

7) Site-Specific Emergency Contingency Plan Incorporated in Health & Safety Plan Y / N

8) Signature of Supplier Project Mgr. (required to begin fieldwork):

High Risk Drilling Locations Approved by EBM **Date:** Y / N

(Predrilling Checklist and supporting information to be included with the site H&S Plan, present on-site during all intrusive investigations and available upon request.)

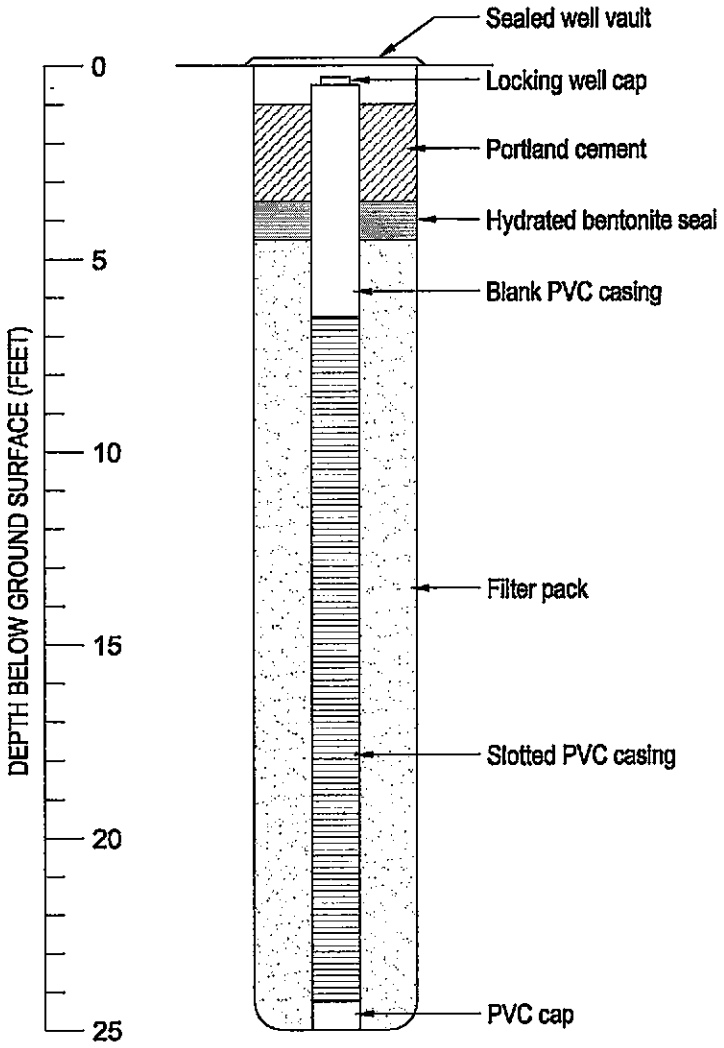
NAME OF PROJ. MGR. (PRINTED OR TYPED) SIGNATURE OF PROJ. MGR.

Name of Supplier Field Personnel Signature of Field Personnel

NOTE: Primary Contractor Signature is verification that Field Personnel have reviewed, adhered to and received the necessary supplier training to implement precautionary drilling standards for performing work at GEM Marketing Retail properties as defined in BP's PRECAUTIONARY PROCEDURES AND GUIDELINES FOR DRILLING, SUBSURFACE INVESTIGATIONS AND REMEDIAL CONSTRUCTION ACTIVITIES. Any questions or concerns should be elevated to the Primary Contractor Project Manager or EBM prior to initiating field work.

ADDITIONAL COMMENTS / NOTES:

Appendix D
Well Construction Diagram



URS

TYPICAL
MONITORING WELL CONSTRUCTION

Nov 18, 2004 - 4:28pm
X:\x_envi_waste\BP GEM\Sites\Scott Robinson\Paul Supple\2111\Drawings\MW-CONSTR.dwg