Chevron

Chevron U.S.A. Products Company
6001 Bollinger Canyon Road
Building L
San Ramon, CA 94583
P.O. Box 5004
San Ramon, CA 94583-0804

Marketing – Northwest Region
Phone 510 842 9500

September 30, 1994

Ms. Eva Chu
Alameda County Environmental Health
1131 Harbor Bay Parkway, 2nd Floor
Alameda, CA 94502

1) Also sampling 11/94, should start
ASAP
2) MW may be required DG from MW 9,
when 40-80'

Re: Chevron Station # 9-5542, 7007 San Ramon Valley Blvd., Dublin, CA
Attached Subsurface Investigation Report (Sierra, 9/20/94)

Dear Ms. Chu:

Please find attached a report dated September 20, 1994, which was prepared by Chevron's consultant, Sierra Environmental Services (Sierra), to describe the procedures and results of the additional subsurface investigation performed at the subject site on June 8, 1994.

Sierra's investigation involved drilling three soil borings, collecting soil samples from each, and converting one to a groundwater monitoring well. After the groundwater monitoring well was developed, depth to water was gauged on July 6, 1994 and groundwater was sampled on August 26, 1994.

All soil samples were analyzed for TPHGas and BTEX. Detections of each were measured at all three soil boring locations. The largest concentrations detected in soil were from boring B-1 at 20.5 feet below surface. The sample results helped to further define the extent of residual hydrocarbons remaining in soil around the vicinity of the former UST complex.

Groundwater samples were collected from well MW-9 and MW-1 on August 26, 1994. These are tabulated in Sierra's report with second quarter results from the other seven site-related wells obtained on June 29, 1994. The concentrations detected at wells MW-1 through MW-8 were consistent with levels detected during previous monitoring events. The samples collected at MW-9 detected TPHGas at 12,000 ppb and BTEX constituents ranging between 240 and 1,700 ppb. The concentrations detected at MW-9 are consistent with respect to its location downgradient of the former UST complex. The measured direction of groundwater flow during July was toward the east.

Future groundwater monitoring results at MW-9 will be evaluated for any trend indicating a decline in dissolved hydrocarbon concentration. Such a trend would indicate that the source removal performed in February, 1990 caused groundwater contaminant migration to stop and would also serve to demonstrate that the plume size is currently being reduced through natural biodegradation.

If you have any questions or comments, I can be reached at (510) 842-8695.

Sincerely,

Brett L. Hunter
Environmental Engineer
Site Assessment and Remediation

Attachment

cc: Richard Hiett, San Francisco Bay RWQCB, Oakland, CA
Mary Diamond, See's Candy, 3423 S. La Cienega Blvd., Los Angeles, CA 90016-4401
Kenneth Chait, Ardenbrook, Inc., 4725 Thornton Ave., Fremont, CA 94536
See's Real Estate, 210 El Camino Real, S. San Francisco, CA 94080 (w/o attachment)

SIERRA
Environmental Services

September 20, 1994

Brett Hunter
Chevron USA Products Company
P.O. Box 5004
San Ramon, CA 94583

Re: Monitoring Well Installation
Chevron Service Station #9-5542
7007 San Ramon Valley Boulevard
Dublin, California
SES Project #1-214-01

Dear Mr. Hunter:

This report presents the results of the subsurface investigation and ground water monitoring conducted by Sierra Environmental Services (SES) at the above-referenced site (Figure 1, Appendix A).

1. INTRODUCTION

1.1 Scope of Work

The objective of the subsurface investigation was to further evaluate the extent of petroleum hydrocarbons in soil and ground water at the site and to verify the ground water flow direction and gradient in the site vicinity. The following outlines the scope of work for this investigation.

1. Prepare a site specific safety plan to this investigation based on past and present site use and conditions.
2. Drill three soil borings to approximately 35 feet below grade. At a minimum, collect one soil sample from each of the borings. Analyze the selected soil samples for total purgeable petroleum hydrocarbons as gasoline [TPPH(G)] and benzene, toluene, ethylbenzene and xylenes (BTEX).
3. Install one two-inch monitoring well in the off-site soil boring.
4. Develop and sample the newly installed monitoring well. Analyze the ground water sample for TPPH(G) and BTEX.
5. Survey the top of casing elevation and measure depth to water in the new well and in existing site wells. Use the survey and water level data to verify ground water flow direction and gradient in the site vicinity.

6. Arrange for disposal of the drill cuttings from the borings and steam-cleaning rinseate.

7. Report the results of the investigation.

Each of these tasks is described below.

1.2 Background

The following site history information was obtained from Mr. Clint Rogers, formerly of Chevron USA.[1]

Four steel tanks were installed at the site in 1965 (two 10,000-gallon underground fuel tanks, one 4,000-gallon underground fuel tank and one 500-gallon waste oil tank). In 1983, a hole was discovered in the regular leaded gasoline tank and the tank was lined with fiberglass.

In December 1983, five monitoring wells were installed at the site. All five wells were drilled to a depth of approximately 20 feet below grade. Ground water was not encountered in any of the wells. In January 1984, well MW-3 was deepened to a depth of 25 feet below grade. Free-phase motor oil was observed and bailed from the well. No further free-phase hydrocarbons were observed in bi-weekly monitoring through October 1984.

In September 1984 a corroded section of piping was replaced and cathodic protection was installed. In November 1984, the regular leaded product line failed a leak test.

---

[1] Rogers, Clint, 1991, Memorandum from Clint Rogers, Chevron Engineer to Sharon Halper, SES Senior Project Geologist, May 28, 1991, 1 page.

In February 1990, the station was rebuilt and the fuel tanks and product lines were replaced. Three 12,000-gallon fiberglass tanks were installed. The waste oil tank was removed, but was not replaced. Hydrocarbons were detected in soil samples collected from beneath all of the tanks.[2]

Soil was removed to a depth of 22 feet below grade at the southern end of the tank excavation. Soil samples collected from 22 feet below grade in the southern portion of the tank excavation contained over 1,000 parts per million (ppm) total purgeable petroleum hydrocarbons as gasoline [TPPH(G)].

In March 1990, the five existing monitoring wells were abandoned and four new wells were installed at the site. Hydrocarbons were detected in soil samples collected from three of the monitoring wells. (MW-1, MW-3 and MW-4). The highest concentration of TPPH(G) was detected in the soil sample collected from MW-1 at 25 feet below grade.

In June 1991, SES installed three off-site monitoring wells (MW-5, MW-6 and MW-7) to further define the extent of hydrocarbons in ground water in the site vicinity.[3] Hydrocarbons as gasoline were detected in one soil sample from well MW-6, located downgradient of the former underground fuel tank area. Hydrocarbons were not detected in soil samples collected from the other two borings/wells drilled during this investigation.

In 1991, GeoStrategies, Inc. installed an additional off-site monitoring well (MW-8) in the downgradient direction. Soil and ground water samples collected from MW-8 did not contain detectable levels of TPPH(G) or BTEX.[4]

---

[2] Blaine Tech, 1990, Consultant's Tank Removal Report, Chevron SS#9-5542, prepared for Chevron February 13, 1990.

[3] Sierra Environmental Services, 1991, Subsurface Investigation Report prepared for Chevron, July 22, 1991, 10 pages and 5 appendices.

[4] Rogers, Clint, correspondence with Ravi Arulananthum, Alameda County Environmental Health Department, February 13, 1992, 1 page.

In November 1992, Geraghty and Miller, Inc. installed one ground water/vapor extraction well by deepening an existing well (MW-1) and installed two vacuum monitoring wells (VW-1 and VW-2). Hydrocarbons as gasoline were detected in soil samples collected from both vacuum monitoring wells at concentrations ranging from 1 to 990 ppm.

In September 1991, SES began conducting quarterly ground water monitoring at the site. Historic ground water flow direction in the site vicinity is easterly and depth to water ranges from 20 to 26 feet below ground surface. Hydrocarbons as gasoline are typically present in ground water samples collected from four of the eight wells at concentrations ranging from 68 to 94,000 parts per billion (ppb).[5]

1.3 Topographic and Geologic Setting

The site is located in Dublin, in the San Ramon Valley region of California. The topography of the site is relatively flat. The site is mapped as Quaternary alluvium which is composed of clay, silt, sand and gravel.[6] The closest surface water is Dublin Creek, located approximately 2,000 feet south of the site.

Previous work at the site indicates that it is underlain by relatively low-permeability sandy clay.[7] Depth to ground water in March 1994 was between 20 and 26 feet below grade.[8]

---

5 Sierra Environmental Services, Quarterly Ground Water Monitoring Report, Chevron SS#9-5542, April 15, 1994, 1 page and 4 attachments.

6 Dibblee, Thomas, 1980, Preliminary Geologic Map of the Dublin Quadrangle, Alameda and Contra Costa Counties, United States Geologic Survey Open File Report 80-537.

7 Sierra Environmental Services, 1991, Consultant's Subsurface Investigation Report prepared for Chevron, July 22, 1991, 10 pages and 5 appendices.

8 Sierra Environmental Services, Quarterly Ground Water Monitoring Report, Chevron SS#9-5542, April 15, 1994, 1 page and 4 attachments.

The ground water flow direction at the site is consistently to the east, based on water level measurements collected by SES during routine monitoring events.

2. SUBSURFACE INVESTIGATION

On June 8, 1994 Soils Exploration Services of Vacaville, California drilled three soil borings (B-1, B-2 and MW-9) and installed a monitoring well (MW-9) in one of the borings at the site using a CME-55 truck-mounted hollow-stem auger drill rig. The monitoring well and boring locations are shown on Figure 2 (Appendix A).

2.1 Soil Borings

Soil samples were collected during drilling in accordance with SES Standard Operating Procedure - Soil Sampling (Appendix C). The borings were logged in accordance with SES Standard Operating Procedure - Logging Method (Appendix C). Soil samples were screened for volatile organic compounds during drilling in accordance with SES Standard Operating Procedure - OVM Readings (Appendix C).

Soils encountered during drilling consisted of low-permeability lean clay, lean clay with sand, sandy lean clay, silty sand, sandy fat clay and fat clay with sand. The ASTM Soil Classification System used to classify soils is included in Appendix D. Detailed descriptions of subsurface sediments, sampling depths and OVM field measurements are shown on the boring logs (Appendix D).

Drill cuttings were stored temporarily on-site pending analytic results and disposed of by Integrated Waste Stream Management of Milpitas, California.

2.2 Monitoring Well Installation

Ground water was encountered during drilling at approximately 26 feet below ground surface. Water levels stabilized at approximately 25 feet below grade after development. Water levels and well construction details are shown on the boring logs in Appendix D and are tabulated in Table 3 (Appendix B).

The ground water monitoring wells were constructed in the borings in accordance with SES Standard Operating Procedure - Monitoring Well Design and Construction (Appendix C). The wells were constructed using 0.020-inch slotted well screen and #3 sand.

3. WELL DEVELOPMENT AND GROUND WATER SAMPLING

The monitoring well MW-9 was developed on June 15, 1994 by SES personnel using a vented surge block and steam-cleaned PVC bailers in accordance with SES Standard Operating Procedure - Monitoring Well Development (Appendix C).

The monitoring well (MW-9) was sampled on August 26, 1994 in accordance with the SES Standard Operating Procedure - Water Sampling (Appendix C).

Monitoring well development water and sampling purge water were transported to the Chevron Refinery for disposal.

4. SURVEYING AND GROUND WATER GRADIENT

The top of casing elevations of the monitoring wells were surveyed to within 0.01 foot by Ron Miller, Professional Engineer #15816, on July 5, 1994. Water levels were measured to within 0.01 foot in all wells on July 6, 1994. Free-phase hydrocarbons were not present in any of the site

wells. Water level measurements, top of casing elevations and ground water elevations are shown in Table 3 (Appendix B). The ground water flow direction in the site vicinity is easterly.

5. ANALYTIC RESULTS

Field observations, OVM readings and ground water depth were used to select soil samples for analyses. Selected soil samples and ground water samples from the two borings and one well were analyzed for TPPH(G), by EPA Method 8015, and BTEX by EPA Method 8020.

Analytic results for soil and ground water are shown in Tables 1 and 2 (Appendix B). Chain of Custody documents and laboratory analytic reports are included as Appendix E. SES is not responsible for laboratory omissions or errors.

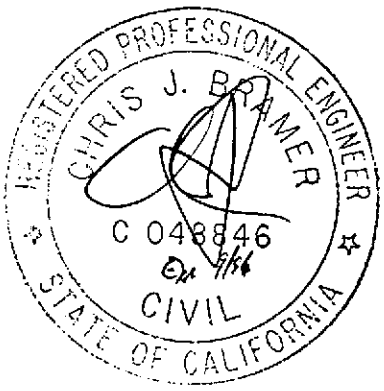
5.1 Analytic Results for Soil

Hydrocarbons as gasoline were detected in one or more soil samples collected from the two borings and one monitoring well. The highest concentration of TPPH(G) detected in soil was from a sample collected from boring B-1 at 20.5 feet below grade (1,600 ppm). Some or all BTEX constituents were detected in all soil samples analyzed, except two shallow samples from boring B-1, at concentrations ranging from 0.008 to 120 ppm.

5.2 Analytic Results for Ground Water

Hydrocarbons as gasoline were detected in the ground water sample collected from monitoring well MW-9 at 20,000 ppb. BTEX constituents were detected in the ground water sample at concentrations ranging from 610 to 2,700 ppb.

Thank you for the opportunity to provide environmental consulting services to Chevron USA Products Company. Please call if you have any questions or comments regarding this investigation.



Sincerely,
Sierra Environmental Services

Argy Leyton
Staff Geologist

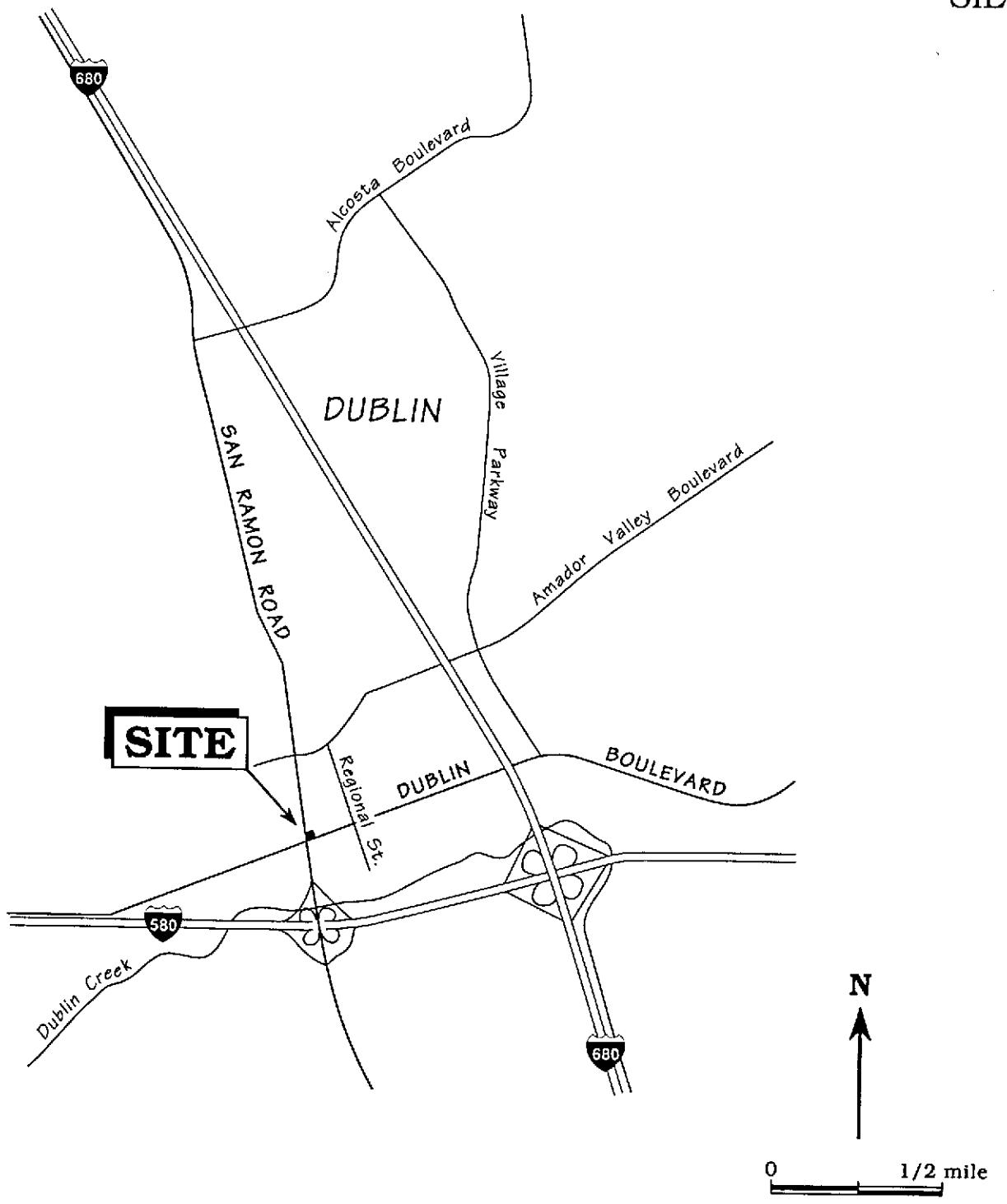
Chris Bramer
Professional Engineer #C48846

AML/CJB/lmo
21401SR.SE4

Attachments:

Appendix A - Figures
Appendix B - Tables
Appendix C - SES Standard Operating Procedures
Appendix D - Soil Classifications, Boring Logs, Well Construction Details
Appendix E - Chain of Custody Documents and Laboratory Reports

SIERRA



Base map ref: California State Automobile Association (AAA)

Figure 1. Site Location Map - Chevron Service Station #9-5542, 7007 San Ramon Road, Dublin, California

1-214-04 9/2/94

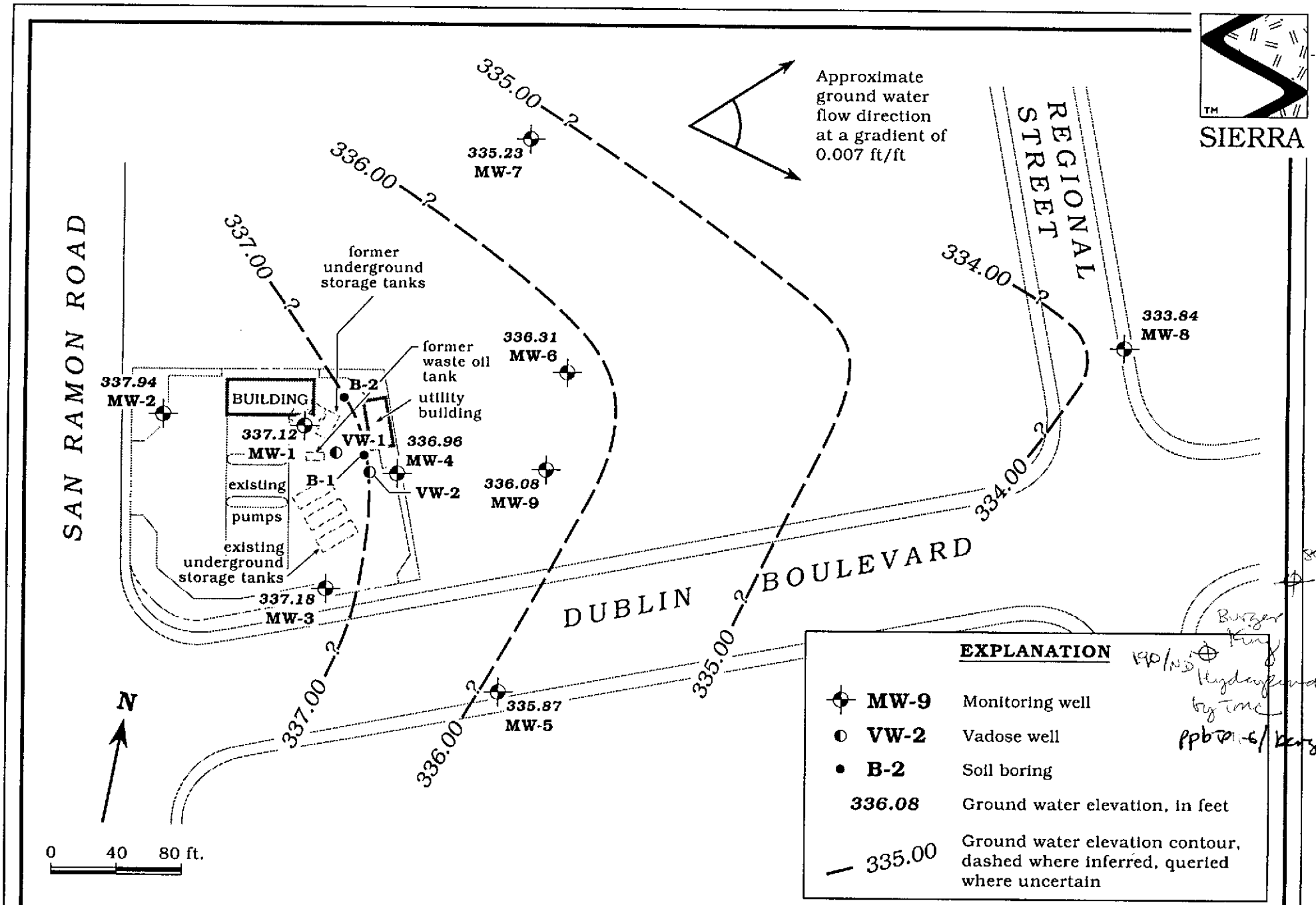


Figure 2. Monitoring Well Location and Ground Water Elevation Contour Map - July 6, 1994 - Chevron Service Station #9-5542, 7007 San Ramon Road, Dublin, California

1-214-04 9/2/94

SIERRA

Table 1. Analytic Results for Soil - Chevron Service Station #9-5542, 7007 San Ramon Road, Dublin, California

Sample ID	Depth (ft)	Sample Date	Analytic Lab	Analytic Method	TPPH(G)	TPH(D)	O&G	B	T	E	X	Cd	Cr	Pb	Zn
					<--------					*ppm*					
MW-1	25	3/27/90	*	8015/8020	1,300	---	---	38	150	34	180	---	---	---	---
	30	3/27/90	*	8015/8020	270	---	---	1	4	4	18	---	---	---	---
MW-2	15	3/26/90	*	8015/8020	<10	---	---	<0.005	<0.005	<0.005	<0.015	---	---	---	---
MW-3	15	3/26/90	*	8015/8020	<10	---	---	<0.005	<0.005	<0.005	<0.015	---	---	---	---
	20	3/26/90	*	8015/8020	<10	---	---	<0.005	0.01	0.01	0.12	---	---	---	---
	25	3/26/90	*	8015/8020	51	---	---	<0.005	0.02	0.05	0.28	---	---	---	---
MW-4	15	3/28/90	*	8015/8020	<10	<10	---	---	---	---	---	---	---	---	---
	15	3/28/90	*	7130/7190/7420/7950	---	---	---	---	---	---	---	<3	26	37	39
	20	3/28/90	*	8015/8020	<10	<10	---	---	---	---	---	---	---	---	---
	20	3/28/90	*	7130/7190/7420/7950	---	---	---	---	---	---	---	<3	25	41	44
	25	3/28/90	*	8015/503E/8240**	<10	<10	39	2.7	23	5.6	46	---	---	---	---
	25	3/28/90	*	7130/7190/7420/7950	---	---	---	---	---	---	---	<3	13	26	28
MW-5	28.5	6/11/91	SAL	8015/8020/7420	<1	---	---	<0.005	<0.005	<0.005	<0.005	---	---	<10	---
MW-6	26	6/12/91	SAL	8015/8020/7420	5	---	---	0.006	0.006	0.060	0.12	---	---	<10	---
MW-7	26	6/11/91	SAL	8015/8020/7420	<1	---	---	<0.005	<0.005	<0.005	<0.005	---	---	<10	---
MW-9	**24.5**	**6/8/94**	**SPA**	**8015/8020**	**57**	**---**	**---**	**0.070**	**0.11**	**0.58**	**3.4**	**---**	**---**	**---**	**---**
	33.5	**6/8/94**	**SPA**	**8015/8020**	**<1**	**---**	**---**	**0.038**	**<0.005**	**<0.005**	**0.008**	**---**	**---**	**---**	**---**
B-1	**5.5**	**6/8/94**	**SPA**	**8015/8020**	**<1**	**---**	**---**	**<0.005**	**<0.005**	**<0.005**	**<0.005**	**---**	**---**	**---**	**---**
	10.5	**6/8/94**	**SPA**	**8015/8020**	**<1**	**---**	**---**	**<0.005**	**<0.005**	**<0.005**	**<0.005**	**---**	**---**	**---**	**---**
	15.5	**6/8/94**	**SPA**	**8015/8020**	**2**	**---**	**---**	**0.081**	**0.19**	**0.020**	**0.13**	**---**	**---**	**---**	**---**
	20.5	**6/8/94**	**SPA**	**8015/8020**	**1,600**	**---**	**---**	**5.3**	**72**	**23**	**120**	**---**	**---**	**---**	**---**
B-2	**20.5**	**6/8/94**	**SPA**	**8015/8020**	**2**	**---**	**---**	**0.060**	**0.026**	**0.031**	**0.19**	**---**	**---**	**---**	**---**
	23.5	**6/8/94**	**SPA**	**8015/8020**	**8**	**---**	**---**	**0.13**	**0.037**	**0.12**	**0.83**	**---**	**---**	**---**	**---**

SIERRA

Table 1. Analytic Results for Soil - Chevron Service Station #9-5542, 7007 San Ramon Road, Dublin, California (continued)

EXPLANATION:

TPPH(G) = Total Purgeable Petroleum Hydrocarbons as Gasoline
TPH(D) = Total Petroleum Hydrocarbons as Diesel
O&G = Oil & Grease
B = Benzene
T = Toluene
E = Ethylbenzene
X = Xylenes
Cd = Cadmium
Cr = Chromium
Pb = Lead
Zn = Zinc
ppm = Parts per million
--- = Not analyzed/Not applicable
** = Method 8240 compounds not detected, detection limits were not stated

ANALYTIC METHODS:

8015 = EPA Method 8015 for TPPH(G) and TPH(D)
8020 = EPA Method 8020 for BTEX
503E = Standard Method 503E for O&G
7130 = EPA Method 7130 for Cd
7190 = EPA Method 7190 for Cr
7420 = EPA Method 7420 for Pb
7950 = EPA Method 7950 for Zn

ANALYTIC LABORATORY:

* Analytic data was compiled from a draft report prepared by Chempro, undated. Analytic laboratory not shown.

SAL = Superior Analytical Laboratories, Inc., of San Francisco and Martinez, California

SIERRA

Table 2. Analytic Results for Ground Water - Chevron Service Station #9-5542, 7007 San Ramon Road, Dublin, California

Sample ID	Date	Analytic Method	Analytic Lab	TPPH(G)	O&G	B	T	E	X	Other HVOCs	1,2-DCA	EDB	OL
				<----------ppb---------->									
MW-1	4/3-4/90	8015/602/504	*	46,000	---	8,400	7,400	860	5,600	---	---	1.04	---
(D)	4/3-4/90	8015/602/504	*	43,000	---	8,400	7,200	840	5,200	---	---	1.1	---
	5/31/91	8015/8020/8010	SAL	31,000	---	7,400	2,500	630	2,100	ND[1]	2	---	---
	5/31/91	503E	SAL	---	<5,000	---	---	---	---	---	---	---	---
	9/20/91	8015/8020/8010	SAL	31,000	---	3,000	2,800	610	3,100	ND[1]	0.6	---	---
	12/19/91	8015/8020/8010	SPA	20,000	---	5,200	1,700	560	2,000	ND[1]	3.3	---	---
	3/19/92	8015/8020/8010	SPA	30,000	---	8,500	3,600	590	2,400	ND[1]	2.7	---	---
	6/19/92	8015/8020	SPA	25,000	---	1,100	2,000	520	1,800	---	---	---	---
	9/22/92	8015/8020	SPA	21,000	---	8,000	3,500	670	2,900	---	---	---	---
	12/18/92	8015/8020	SPA	79,000	---	12,000	12,000	1,600	8,500	---	---	---	---
	3/10/93[6]	---	---	---	---	---	---	---	---	---	---	---	---
	3/21/94	8015/8020	GTEL	5,900	---	1,600	560	140	330	---	---	---	---
	8/26/94	**8015/8020**	---	**20,000**	---	**5,300**	**4,900**	**610**	**2,900**	---	---	---	---
MW-2	4/3-4/90	8015/602/504	*	<50	---	<0.3	<0.3	<0.3	<0.6	---	---	<0.02	---
	5/31/91	8015/8020/8010	SAL	100	---	3.1	4.2	0.7	2.0	ND[1]	<0.5	---	---
	5/31/91	503E	SAL	---	<5,000	---	---	---	---	---	---	---	---
	9/20/91	8015/8020	SAL	68	---	1.3	1.6	0.8	3.0	---	---	---	---
	12/19/91	8015/8020	SPA	<50	---	0.6	1.2	0.8	2.5	---	---	---	---
	3/19/92	8015/8020	SPA	<50	---	2.5	2.0	1.1	2.4	---	---	---	---
	6/19/92	8015/8020	SPA	<50	---	<0.5	0.6	0.7	1.2	---	---	---	---
	9/22/92	8015/8020	SPA	200	---	16	42	6.1	32	---	---	---	---
	12/18/92	8015/8020	SPA	<50	---	<0.5	<0.5	<0.5	<0.5	---	---	---	---
	3/22/93	8015/8020	GTEL	<50	---	<0.5	<0.5	<0.5	<0.5	---	---	---	---
	7/25/93	8015/8020	GTEL	<50	---	<0.5	<0.5	<0.5	<0.5	---	---	---	---
	9/23/93	8015/8020	GTEL	72	---	12	4	6	8	---	---	---	---
	12/22/93	8015/8020	SPA	1,600	---	25	<0.5	3.8	4.8	---	---	---	---
	3/21/94	8015/8020	GTEL	<50	---	0.7	3.3	<0.5	1.9	---	---	---	---
	6/29/94	**8015/8020**	**GTEL**	**52**	---	**0.8**	**0.9**	**0.8**	**1.9**	---	---	---	---
MW-3	4/3-4/90	8015/602/504	*	2,200	---	36	5	6	17	---	---	<0.02	---
	5/31/91	8015/8020/8010	SAL	2,200	---	130	11	31	78	ND[1]	19	---	---
	5/31/91	503E	SAL	---	<5,000	---	---	---	---	---	---	---	---
	9/20/91	8015/8020	SAL	2,200	---	190	6.0	24	32	---	---	---	---
	12/19/91	8015/8020	SPA	640	---	73	27	17	56	---	---	---	---
	3/19/92	8015/8020	SPA	4,500	---	1,000	15	91	240	---	---	---	---
	6/19/92	8015/8020	SPA	1,100	---	89	3.3	9.1	13	---	---	---	---
	9/22/92	8015/8020	SPA	1,400	---	81	51	15	49	---	---	---	---
	12/18/92	8015/8020	SPA	1,100	---	2.0	1.1	53	38	---	---	---	---
	3/22/93	8015/8020	GTEL	1,600	---	96	9	14	91	---	---	---	---
	7/25/93	8015/8020	GTEL	1,200	---	19	6	2	5	---	---	---	---

SIERRA

Table 2. Analytic Results for Ground Water - Chevron Service Station #9-5542, 7007 San Ramon Road, Dublin, California (continued)

Sample ID	Date	Analytic Method	Analytic Lab	TPPH(G)	O&G	B	T	E	X	Other HVOCs	1,2-DCA	EDB	OL
				<----------				ppb					---------->
MW-3 (cont)	9/23/93	8015/8020	GTEL	1,500	---	35	<0.5	5	13	---	---	---	---
	12/22/93	8015/8020	SPA	1,500	---	26	<0.5	3.9	4.9	---	---	---	---
	3/21/94	8015/8020	GTEL	1,400	---	22	14	1.1	5.3	---	---	---	---
	6/29/94	**8015/8020**	**GTEL**	**1,700**	**---**	**90**	**6.1**	**20**	**81**	**---**	**---**	**---**	**---**
MW-4	4/3-4/90	8015/413.1/602/504	*	43,000	18,000	4,000	5,000	790	5,500	---	---	<0.02	---
	4/3-4/90	624**	*	---	---	6,000	8,200	1,500	---	---	---	---	---
	5/31/91	8015/8020/8010	SAL	34,000	---	2,900	2,900	680	3,300	ND[1]	<0.5	---	---
	5/31/91	503E	SAL	---	<5,000	---	---	---	---	---	---	---	---
	9/20/91	8015/8020/8010	SAL	37,000	---	4,000	3,200	580	3,000	ND[1]	9.2	---	---
	12/19/91	8015/8020/8010	SPA	41,000	---	5,500	4,900	1,000	4,400	ND[1]	17	---	---
	3/19/92	8015/8020/8010	SPA	21,000	---	3,800	2,900	500	3,200	ND[2]	15	---	---
	6/19/92	8015/5520/8020	SPA	27,000	<5,000	1,800	1,600	570	1,900	---	---	---	---
	9/22/92	8015/5520/8020	SPA	20,000	<5,000	4,100	2,700	670	3,200	---	---	---	---
	12/18/92	8015/5520/8020	SPA	15,000	<5,000	2,200	2,000	370	1,600	---	---	---	---
	3/22/93	8015/5520/8020	GTEL	41,000	5,000	3,900	5,100	840	4,500	---	---	---	---
	7/25/93	8015/5520/8020	GTEL	94,000	<5,000	18,000	30,000	2,400	14,000	---	---	---	---
	9/23/93	8015/5520/8020	GTEL	23,000	<5,000	4,700	2,000	900	4,600	---	---	---	---
	12/22/93	8015/5520/8020	SPA	18,000	<5,000	2,800	1,300	420	1,700	---	---	---	---
	3/21/94	8015/413.1/8020	GTEL	21,000	<5,000	2,800	1,700	540	1,900	---	---	---	---
	6/29/94	**8015/413.1/8020**	**GTEL**	**25,000**	**<5,000**	**4,000**	**2,600**	**960**	**3,300**	**---**	**---**	**---**	**---**
MW-5	6/21/91	8015/8020	SAL	<50	---	<0.5	<0.5	<0.5	<0.5	---	---	---	---
	6/21/91	8010/LUFT	SAL	---	---	---	---	---	---	ND[1]	<0.5	---	<4,000
	9/20/91	8015/8020	SAL	170[3]	---	0.8	0.9	<0.5	1.5	---	---	---	---
	12/19/91	8015/8020	SPA	<50	---	0.7	0.7	<0.5	1.4	---	---	---	---
	3/19/92	8015/8020	SPA	<50	---	<0.5	<0.5	<0.5	<0.5	---	---	---	---
	6/19/92	8015/8020	SPA	<50	---	<0.5	<0.5	<0.5	<0.5	---	---	---	---
	9/22/92	8015/8020	SPA	150	---	13	34	5.0	26	---	---	---	---
	12/18/92	8015/8020	SPA	<50	---	<0.5	<0.5	<0.5	<0.5	---	---	---	---
	3/10/93	8015/8020	GTEL	<50	---	<0.5	<0.5	<0.5	<0.5	---	---	---	---
	7/25/93	8015/8020	GTEL	<50	---	<0.5	<0.5	<0.5	<0.5	---	---	---	---
	9/23/93	8015/8020	GTEL	<50	---	<0.5	<0.5	<0.5	<0.5	---	---	---	---
	12/22/93	8015/8020	SPA	<50	---	3	1	1	2	---	---	---	---
	3/21/94	8015/8020	GTEL	<50	---	<0.5	<0.5	<0.5	<0.5	---	---	---	---
	6/29/94	**8015/8020**	**GTEL**	**<50**	**---**	**2.4**	**1.4**	**<0.5**	**2**	**---**	**---**	**---**	**---**
MW-6	6/21/91	8015/8020	SAL	3,700	---	**<0.5**	**<0.5**	**<0.5**	**1.0**	**---**	**---**	**---**	**---**
	6/21/91	8010/LUFT	SAL	---	---	50	2.6	150	340	---	---	---	---
	9/20/91	8015/8020	SAL	3,200	---	---	---	---	---	ND[1]	<0.5	---	<4,000
	12/19/91	8015/8020	SPA	380	---	28	<0.5	140	100	---	---	---	---
						2.7	4.0	15	10	---	---	---	---

SIERRA

Table 2. Analytic Results for Ground Water - Chevron Service Station #9-5542, 7007 San Ramon Road, Dublin, California (continued)

Sample ID	Date	Analytic Method	Analytic Lab	TPPH(G)	O&G	B	T	E	X	Other HVOCs	1,2-DCA	EDB	OL
				<----------ppb---------->									
MW-6 (cont)	3/19/92	8015/8020	SPA	3,400	---	57	4.5	330	360	---	---	---	---
	6/19/92	8015/8020	SPA	980	---	11	4.2	57	38	---	---	---	---
	9/22/92	8015/8020	SPA	1,100	---	22	41	77	58	---	---	---	---
	12/18/92	8015/8020	SPA	1,900	---	3.2	1.3	58	47	---	---	---	---
	3/10/93	8015/8020	GTEL	1,400	---	30	9	8	22	---	---	---	---
	7/25/93	8015/8020	GTEL	83[8]	---	<0.5	<0.5	<0.5	<0.5	---	---	---	---
	9/23/93	8015/8020	GTEL	200	---	6	2	3	3	---	---	---	---
	12/22/93	8015/8020	SPA	130	---	<0.5	1.8	1.2	1.5	---	---	---	---
	3/21/94	8015/8020	GTEL	290	---	3	10	1.6	4.7	---	---	---	---
	6/29/94	**8015/8020**	**GTEL**	**300**	**---**	**0.6**	**1.2**	**2.4**	**4.6**	**---**	**---**	**---**	**---**
MW-7	6/21/91	8015/8020	SAL	<50	---	<0.5	<0.5	<0.5	<0.5	---	---	---	---
	6/21/91	8010/LUFT	SAL	---	---	---	---	---	---	ND[1]	<0.5	---	<4,000
	9/20/91	8015/8020	SAL	69	---	4.4	3.3	1.2	3.9	---	---	---	---
	12/19/91	8015/8020	SPA	<50	---	0.9	2.8	1.7	5.9	---	---	---	---
	3/19/92	8015/8020	SPA	<50	---	1.1	0.6	0.9	2.5	---	---	---	---
	6/19/92[4]	---	---	---	---	---	---	---	---	---	---	---	---
	9/22/92[4]	---	---	---	---	---	---	---	---	---	---	---	---
	12/18/92[4]	---	---	---	---	---	---	---	---	---	---	---	---
	3/22/93[7]	---	---	---	---	---	---	---	---	---	---	---	---
	7/25/93[7]	---	---	---	---	---	---	---	---	---	---	---	---
	12/23/93	8015/8020	SPA	<50	---	0.9	0.5	<0.5	<0.5	---	---	---	---
	3/21/94	8015/8020	GTEL	<50	---	0.5	1.1	<0.5	1.4	---	---	---	---
	6/29/94	**8015/8020**	**GTEL**	**<50**	**---**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**---**	**---**	**---**	**---**
MW-8	12/12/91	8015/8020	SPA	<50	---	<0.5	<0.5	<0.5	<0.5	---	---	---	---
	6/19/92	8015/8020	SPA	<50	---	1.2	1.4	0.5	2.9	---	---	---	---
	9/22/92	8015/8020	SPA	180	---	17	42	6.0	31	---	---	---	---
	12/18/92	8015/8020	SPA	<50	---	<0.5	<0.5	<0.5	<0.5	---	---	---	---
	3/10/93	8015/8020	GTEL	<50	---	0.8	2	<0.5	2	---	---	---	---
	7/25/93	8015/8020	GTEL	<50	---	<0.5	<0.5	<0.5	<0.5	---	---	---	---
	9/23/93	8015/8020	GTEL	<50	---	1	0.9	0.7	1	---	---	---	---
	12/22/93	8015/8020	SPA	<50	---	<0.5	<0.5	<0.5	<0.5	---	---	---	---
	3/21/94	8015/8020	GTEL	<50	---	0.9	1.5	<0.5	2	---	---	---	---
	6/29/94	**8015/8020**	**GTEL**	**<50**	**---**	**<0.5**	**<0.5**	**<0.5**	**0.8**	**---**	**---**	**---**	**---**
MW-9	**8/26/94**	**8015/8020**	**GTEL**	**12,000**	**---**	**1,700**	**240**	**410**	**1,400**	**---**	**---**	**---**	**---**
Trip Blank MW-AA	5/31/91	8015/8020	SAL	<50	---	<0.5	<0.5	<0.5	<0.5	---	---	---	---

SIERRA

Table 2. Analytic Results for Ground Water - Chevron Service Station #9-5542, 7007 San Ramon Road, Dublin, California (continued)

Sample ID	Date	Analytic Method	Analytic Lab	TPPH(G)	O&G	B	T	E	X	Other HVOCs	1,2-DCA	EDB	OL
				<----------ppb---------->									
MW-AA	6/21/91	8015/8020	SAL	<50	---	<0.5	<0.5	<0.5	<0.5	---	---	---	---
(cont)	9/20/91	8015/8020	SAL	<50	---	<0.5	<0.5	<0.5	<0.5	---	---	---	---
	12/19/91	8015/8020	SPA	<50	---	<0.5	<0.5	<0.5	<0.5	---	---	---	---
	3/19/92	8015/8020	SPA	<50	---	<0.5	<0.5	<0.5	<0.5	---	---	---	---
TB-LB	6/19/92	8015/8020	SPA	<50	---	<0.5	<0.5	<0.5	<0.5	---	---	---	---
	9/22/92	8015/8020	SPA	92[5]	---	<0.5	<0.5	<0.5	<0.5	---	---	---	---
	12/18/92	8015/8020	SPA	<50	---	<0.5	<0.5	<0.5	<0.5	---	---	---	---
	3/10/93	8015/8020	GTEL	<50	---	<0.5	<0.5	<0.5	<0.5	---	---	---	---
	3/22/93	8015/8020	GTEL	<50	---	<0.5	<0.5	<0.5	<0.5	---	---	---	---
	7/25/93	8015/8020	GTEL	<50	---	<0.5	<0.5	<0.5	<0.5	---	---	---	---
	9/23/93	8015/8020	GTEL	<50	---	<0.5	<0.5	<0.5	<0.5	---	---	---	---
	12/22/93	8015/8020	SPA	<50	---	<0.5	<0.5	<0.5	<0.5	---	---	---	---
	3/21/94	8015/8020	GTEL	<50	---	<0.5	<0.5	<0.5	<0.5	---	---	---	---
	6/29/94	**8015/8020**	**GTEL**	**<50**	**---**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**---**	**---**	**---**	**---**
	8/26/94	**8015/8020**	**GTEL**	**<10**	**---**	**<0.3**	**<0.3**	**<0.3**	**<0.5**	**---**	**---**	**---**	**---**
Bailer Blank													
MW-BB	5/31/91	8015/8020	SAL	<50	---	<0.5	<0.5	<0.5	<0.5	---	---	---	---
	6/21/91	8015/8020	SAL	<50	---	<0.5	<0.5	<0.5	<0.5	---	---	---	---
	9/20/91	8015/8020	SAL	<50	---	<0.5	<0.5	<0.5	<0.5	---	---	---	---
	12/19/91	8015/8020	SPA	<50	---	<0.5	<0.5	<0.5	<0.5	---	---	---	---
	3/19/92	8015/8020	SPA	<50	---	<0.5	<0.5	<0.5	<0.5	---	---	---	---
	6/19/92	8015/8020	SPA	<50	---	<0.5	<0.5	<0.5	<0.5	---	---	---	---
	9/22/92	8015/8020	SPA	<50	---	<0.5	<0.5	<0.5	<0.5	---	---	---	---
	12/21/92	8015/8020	SPA	<50	---	<0.5	<0.5	<0.5	0.8	---	---	---	---
	3/10/93	8015/8020	GTEL	<50	---	<0.5	<0.5	<0.5	<0.5	---	---	---	---
	3/22/93	8015/8020	GTEL	<50	---	<0.5	<0.5	<0.5	0.6	---	---	---	---
	7/25/93	8015/8020	GTEL	<50	---	<0.5	<0.5	<0.5	<0.5	---	---	---	---
	9/23/93	8015/8020	GTEL	<50	---	<0.5	<0.5	<0.5	<0.5	---	---	---	---
	12/22/93	8015/8020	SPA	<50	---	<0.5	<0.5	<0.5	<0.5	---	---	---	---
	3/21/94	8015/8020	GTEL	<50	---	<0.5	<0.5	<0.5	<0.5	---	---	---	---

SIERRA

Table 2. Analytic Results for Ground Water - Chevron Service Station #9-5542, 7007 San Ramon Road, Dublin, California (continued)

EXPLANATION:

TPPH(G) = Total Purgeable Petroleum Hydrocarbons as Gasoline
O&G = Oil and Grease
B = Benzene
T = Toluene
E = Ethylbenzene
X = Xylenes
HVOCs = Halogenated Volatile Organic Compounds
1,2-DCA = 1,2-Dichloroethane
EDB = Ethylene dibromide
OL = Organic lead
ppb = Parts per billion
D = Duplicate sample
--- = Not analyzed/not applicable
ND = Not detected (see notes)

ANALYTIC METHODS:

8015 = EPA Method 8015/5030 for TPPH(G)
602 = EPA Method 602 for BTEX
504 = EPA Method 504 for EDB
8020 = EPA Method 8020 for BTEX
8010 = EPA Method 8010 for HVOCs
503E = Standards Methods Method 503E for O&G

ANALYTIC METHODS: (continued)

413.1 = EPA Method 413.1 for total O&G
624 = EPA Method 624 for BTEX and VOCs
5520 = Standard Methods Method 5520 for O&G
LUFT = DHS LUFT Manual Method for OL

ANALYTIC LABORATORIES:

SAL = Superior Analytic Laboratory, Inc. of San Francisco and Martinez, California
SPA = Superior Precision Analytical, Inc. of San Francisco and Martinez, California
GTEL = Groundwater Technology Environmental Laboratory, Inc., of Concord, California

NOTES:

Analytic data was compiled from a draft report prepared by Chempro, undated.

* Analytic laboratory was not shown.
** 624 compounds other than BTE were not reported
1 Other HVOCs were not detected at detection limits ranging from 0.5 to 1 ppb.
2 Chloroform and bromodichloromethane were detected at 1.3 and 0.9 ppb, respectively. Other HVOCs were not detected at detection limits ranging from 0.5 to 1 ppb.
3 A non-standard gasoline pattern was observed in the chromatogram.
4 This well could not be located; therefore it was not sampled.
5 Gasoline range concentration reported. The chromatogram shows only a single peak in the gasoline range.
6 Monitoring well deleted from sampling program per Chevron Project Engineer.
7 Monitoring well not located since March 1992 sampling event.
8 Uncategorized compound not included in gasoline total.

SIERRA

Table 3. Water Level Data and Well Construction Details - Chevron Service Station #9-5542, 7007 San Ramon Road, Dublin, California

Well ID	Date Measured	DTW (ft)	TOC (msl)	GWE (msl)	Product Thickness* (ft)	Screen Interval	Sand Pack Interval	Bentonite/Grout Interval
						<----------*feet below grade*---------->		
MW-1	5/31/91	25.67	363.98[1]	338.31	0	20.0 - 35.0	19.5 - 35.5	0 - 19.5
	6/21/91	26.23		337.75	0			
	7/17/91	26.53		337.45	0			
	10/4/91	27.90		336.08	0			
	12/19/91	28.12		335.86	0			
	3/19/92	24.63		339.35	0			
	6/19/92	26.23	364.32[2]	338.09	0			
	9/22/92	27.73		336.59	0			
	12/18/92	26.76		337.56	0			
	3/22/93[4]	---		---	---			
	6/14/93[4]	---		---	---			
	7/25/93[4]	---		---	---			
	9/23/93[4]	---		---	---			
	3/21/94	26.16		338.16	0			
	7/6/94	**27.20**		**337.12**	**0**			
MW-2	5/31/91	25.51	364.19[1]	338.68	0	22.0 - 37.0	20.0 - 37.0	0 - 20.0
	6/21/91	26.13		338.06	0			
	7/17/91	26.46		337.73	0			
	10/4/91	27.79		336.40	0			
	12/19/91	28.06		336.13	0			
	3/19/92	24.46		339.73	0			
	6/19/92	26.10	364.64[2]	338.54	0			
	9/22/92	27.60		337.04	0			
	12/18/92	26.32		338.32	0			
	3/22/93	21.39		343.29	0			
	6/14/93	25.15		339.49	0			
	7/25/93	24.52		340.12	0			
	9/23/93	25.63		339.01	0			
	12/22/93	26.34		338.30	0			
	3/21/94	25.83		338.81	0			
	7/6/94	**26.70**		**337.94**	**0**			
MW-3	5/31/91	23.20	361.92[1]	338.72	0	20.0 - 35.0	19.0 - 35.0	0 - 19.0
	6/21/91	24.13		337.79	0			
	7/17/91	24.59		337.73	0			
	9/20/91	25.98		335.94	0			
	12/19/91	26.24		335.68	0			
	3/19/92	22.46		339.46	0			
	6/19/92	24.32	362.26[2]	337.94	0			
	9/22/92	25.84		336.42	0			

SIERRA

Table 3. Water Level Data and Well Construction Details - Chevron Service Station #9-5542, 7007 San Ramon Road, Dublin, California (continued)

Well ID	Date Measured	DTW (ft)	TOC (msl)	GWE (msl)	Product Thickness* (ft)	Screen Interval	Sand Pack Interval	Bentonite/Grout Interval
						<----------feet below grade---------->		
MW-3 (cont)	12/18/92	24.40		337.86	0			
	3/22/93	19.72		342.54	0			
	6/14/93	23.52		338.74	0			
	7/25/93	23.21		339.05	0			
	9/23/93	24.02		338.24	0			
	12/22/93	24.67		337.59	0			
	3/21/94	24.05		338.21	0			
	7/6/94	**25.08**		**337.18**	**0**			
MW-4	5/31/91	24.67	362.70[1]	338.03	0	20.0 - 35.0	19.0 - 35.0	0 - 19.0
	6/21/91	25.31		337.39	0			
	7/17/91	25.73		336.97	0			
	10/4/91	27.08		335.62	0			
	12/19/91	27.24		335.46	0			
	3/19/92	23.66		339.04	0			
	6/19/92	25.33	363.07[2]	337.74	0			
	9/22/92	26.90		336.17	0			
	12/18/92	25.62		337.45	0			
	3/22/93	20.80		342.27	0			
	6/14/93	25.73		337.34	0			
	7/25/93	24.02		339.05	0			
	9/23/93	25.00		338.07	0			
	12/22/93	25.72		337.35	0			
	3/21/94	25.09		337.98	0			
	7/6/94	**26.11**		**336.96**	**0**			
MW-5	6/21/91	23.17	359.95[1]	336.78	0	21.0 - 36.0	19.5 - 36.0	0 - 19.5
	7/17/91	23.68		336.27	0			
	10/4/91	25.20		334.75	0			
	12/19/91	25.20		334.75	0			
	3/19/92	21.21		338.74	0			
	6/19/92	23.42	360.28[2]	336.86	0			
	9/22/92	24.97		335.31	0			
	12/18/92	23.52		336.76	0			
	3/22/93	19.10		341.18	0			
	6/14/93	22.71		337.57	0			
	7/25/93	21.99		338.29	0			
	9/23/93	23.48		336.80	0			
	12/22/93	23.98		336.30	0			
	3/21/94	23.18		337.10	0			

SIERRA

Table 3. Water Level Data and Well Construction Details - Chevron Service Station #9-5542, 7007 San Ramon Road, Dublin, California (continued)

Well ID	Date Measured	DTW (ft)	TOC (msl)	GWE (msl)	Product Thickness* (ft)	Screen Interval	Sand Pack Interval	Bentonite/Grout Interval
						<----------feet below grade---------->		
MW-5 (cont)	**7/6/94**	**24.41**		**335.87**	**0**			
MW-6	6/21/91	23.55	360.22[1]	336.67	0	20.0 - 35.0	18.5 - 35.0	0 - 18.5
	7/17/91	24.00		336.22	0			
	10/4/91	25.29		334.93	0			
	12/19/91	25.34		334.88	0			
	3/19/92	22.05		338.17	0			
	6/19/92	23.52	360.58[2]	337.06	0			
	9/22/92	25.60		334.98	0			
	12/18/92	24.18		336.40	0			
	3/22/93	19.36		341.22	0			
	6/14/93	23.48		337.10	0			
	7/25/93	22.30		338.28	0			
	9/23/93	23.20		337.38	0			
	12/22/93	23.91		336.67	0			
	3/21/94	23.27		337.31	0			
	7/6/94	**24.27**		**336.31**	**0**			
MW-7	6/21/91	23.45	360.63[1]	337.18	0	20.0 - 35.0	18.5 - 35.0	0 - 18.5
	7/17/91	23.90		336.73	0			
	10/4/91	25.03		335.60	0			
	12/19/91	25.10		335.53	0			
	3/19/92	22.74		337.89	0			
	6/19/92[3]	---	360.99[2]	---	---			
	9/22/92[3]	---		---	---			
	12/18/92[3]	---		---	---			
	3/22/93[5]	---		---	---			
	6/14/93[5]	---		---	---			
	7/25/93[5]	---		---	---			
	12/23/93	23.67	361.68[6]	338.01	0			
	3/21/94	24.13		337.55	0			
	7/6/94	**26.45**		**335.23**	**0**			
MW-8	12/12/91	22.54	---	---	0	---	---	---
	6/19/92	20.47	354.89[2]	334.42	0			
	9/22/92	29.80		325.09	0			
	12/18/92	21.18		333.71	0			
	3/22/93	16.91		337.98	0			
	6/14/93	24.30		330.59	0			
	7/25/93	23.77		331.12	0			

SIERRA

Table 3. Water Level Data and Well Construction Details - Chevron Service Station #9-5542, 7007 San Ramon Road, Dublin, California (continued)

Well ID	Date Measured	DTW (ft)	TOC (msl)	GWE (msl)	Product Thickness* (ft)	Screen Interval	Sand Pack Interval	Bentonite/Grout Interval
						<----------*feet below grade*---------->		
MW-8 (cont)	9/23/93	20.40		334.49	0			
	12/22/93	20.92		333.97	0			
	3/21/94	20.19		334.70	0			
	7/6/94	**21.05**		**333.84**	**0**			
MW-9	**7/6/94**	**25.15**	**361.23[7]**	**336.08**	**0**	**19 - 34.5**	**18 - 34.5**	**0.18**

EXPLANATION:

DTW = Depth to water
TOC = Top of casing elevation
GWE = Ground water elevation
msl = Measurements referenced relative to mean sea level
--- = Not available/not applicable

NOTES:

Well construction details for MW-1 through MW-4 were compiled from a draft report prepared by Chempro, undated.

* Product thickness was measured with an MMC flexi-dip interface probe.

1 Top of casing elevations for monitoring wells MW-1 through MW-7 were surveyed by Ron Miller, Professional Engineer #15816 on June 26, 1991.

2 Top of casing elevations for monitoring wells MW-1 through MW-8 were surveyed by Kier & Wright of Pleasanton, California on December 12, 1991. Survey data received by SES on April 30, 1992.

3 Well could not be located on this date due to surface conditions from recent discing.

4 Monitoring well part of remediation system.

5 Monitoring well not located since March 1992 sampling event.

6 Top of casing elevation surveyed by Ron Miller, PE #15816, on January 13, 1994.

7 Monitoring well surveyed by Ron Miller, PE #15816, on July 5, 1994.

SIERRA

APPENDIX C
SIERRA ENVIRONMENTAL SERVICES
STANDARD OPERATING PROCEDURES

SIERRA

SES STANDARD OPERATING PROCEDURE

SOIL SAMPLING

The following describes sampling procedures used by SES field personnel to collect, handle, and transport soil samples. Before samples are collected, careful consideration is given to the type of analysis to be performed so that precautions are taken to prevent loss of volatile components or contamination of the sample, and to preserve the sample for subsequent analysis.

All drilling and sampling equipment is steam-cleaned between boreholes to prevent cross-contamination. The sampler is washed with an EPA approved detergent (such as liquinox or trisodium phosphate) between sample collection. Collection methods specific to soil sampling are presented below.

Soil samples are collected at pre-specified depth intervals or at a sediment/lithologic change for hydrogeologic description and possible chemical analysis. Samples are collected using a modified California split-spoon sampler lined with 2- or 2.5-inch I.D. x 4- or 6-inch long steam-cleaned or new stainless steel or brass tubes. The sampler is lowered into the borehole and driven 18 inches, using a 140-pound hammer. The drilling contractor provides the SES field personnel with the number of blows required to drive the sampler for each 6 inches of penetration.

The sampler is then extracted from the borehole and the middle or bottom brass tube is carefully removed for possible analysis. The soil material is immediately trimmed flush with the tube ends, and sealed with Teflon tape beneath polyethylene end caps. The caps are hermetically sealed to the brass tube with duct tape. The sample is then labeled to include the date, boring number, depth of sample, project number, SES, and the SES field personnel's initials. The samples are put into a plastic "zip-lock" type bag and placed into an ice chest maintained below 4°C with blue ice or dry ice, for transport under chain of custody to the laboratory. The chain-of-custody form includes the project number, analysis requested, sample ID, date analysis and the SES field personnel's name. The form is signed, dated and timed by each person who yields or receives the samples beginning with the field personnel and ending with the laboratory personnel.

SIERRA

SES STANDARD OPERATING PROCEDURE

LOGGING METHOD

Unconsolidated soil is classified and described by trained SES field personnel. All available information is used, including the following: soil recovered in the sampler, including the soil visible on both ends of the sample retained for possible analysis; soil cuttings generated during drilling; and the drilling contractor's observations of the drill rig's behavior.

Classification and description of unconsolidated soil is accomplished using the American Society of Testing and Materials (ASTM) Methods D2487-85 (Unified Soil Classification System (USCS)) and/or D2488-69 (Description and Identification of Soils (Visual-Manual Procedure)).

The soil classification and description is recorded on the field log sheet by SES field personnel and includes the following information:

1) Soil type;
2) Soil classification;
3) Soil color, including mottling;
4) Moisture content;
5) Plasticity and consistency (fine-grained material) or density (coarse-grained material);
6) Percentages of clay, silt, sand and gravel;
7) Grain size range of sands and gravels;
8) Angularity and largest diameter of gravel component;
9) Estimated permeability;
10) Odor; and
11) Any other observations which would assist in the interpretation of the depositional environment and/or differentiation between the various geologic units expected to be encountered.

In addition to the above, the ground water levels encountered during drilling and measured after the water stabilized is also recorded on the field log.

SIERRA

SES STANDARD OPERATING PROCEDURE

OVM READINGS

SES uses an organic vapor meter (OVM) to determine the presence or absence of volatile organic compounds (VOCs), including benzene, toluene, ethylbenzene, and xylenes in soil samples chosen for field screening. The OVM uses a photoionization detector (PID) and is calibrated daily to 100 parts per million of 1-liter of isobutylene. The OVM, which measures in parts per million by volume (ppmv), is used for qualitative, not quantitative, assessment because the correlation between the volume measurements of the OVM and the weight measurements of the laboratory instruments is not well defined.

A field screen sample is obtained from the brass tube immediately above or below the brass tube containing the sample selected for possible analysis. The soil to be screened is removed from the brass tube, and is placed in a pre-cleaned brass tube with aluminum foil and a polyethylene cap on one end. The brass tube is loosely filled to approximately 1/2 full. Another square of aluminum foil is placed on the open end and a polyethylene cap with crossed slits is placed over it.

The field screen sample is allowed to temperature equilibrate for approximately 15 to 30 minutes in the sun, allowing any VOCs which might be present in the soil to volatilize out into the brass tube's headspace. The OVM nozzle is then placed inside the sealed brass tube, through the slits in the cap, in order to measure the VOCs present, if any, in the headspace. The nozzle should remain inside the brass tube for approximately 15 to 30 seconds or until the maximum reading has been recorded on the OVM readout panel.

The depth from which the sample came and the corresponding OVM reading is recorded on the original field log sheet. Field observations, OVM and (odor and staining) readings are used in determining which soil samples are to be analyzed in the laboratory.

SIERRA

SES STANDARD OPERATING PROCEDURE

MONITORING WELL DESIGN AND CONSTRUCTION

Where possible, information from published and unpublished reports is reviewed prior to installation of monitoring wells. Relevant data includes highest and lowest anticipated ground water elevations, aquifer materials, aquifer yield and contaminants expected. This information is used to aid the field geologist rather than to predetermine how the wells will be constructed. Well construction is based on *site specific conditions* and is determined in the field after discussion with the senior geologist.

The wells are screened to monitor the first water-bearing zone encountered. If high ground water conditions exist the top of the well screen may be set at static water level or below static water level.

Fifteen feet of well screen will be used in the wells (five feet above static ground water and ten feet below static water) unless a five foot clay layer is encountered. If a clay layer is encountered, it will be confirmed by sampling. The sampling hole into the underlying confining layer will be sealed with bentonite pellets and the well screen will terminate 0 to 1 foot into the clay layer. When field observations indicate that low permeability materials are acting as an aquitard to prevent movement of contaminants less screen may be used.

Monitoring wells are constructed with flush-threaded, 2-inch or 4-inch diameter, slotted PVC, stainless steel or teflon well screen and PVC, stainless steel or teflon blank casing. Number 3 or #212 sand is used in the annular space around the well screen. The sand is placed into the annular space around the well screen to approximately 2 feet above the top of the well screen. If high ground water conditions exist, the sand may be placed 0 to 1 foot above the top of the well screen. Two feet of bentonite pellets are used to separate the sand from the sanitary surface seal (grout). If high ground water conditions exist 1/2 foot of bentonite may be used to separate the sand from the sanitary surface seal.

The grout (Portland cement with approximately 3-5% bentonite powder) is poured into the annular space above the bentonite pellets. If the surface seal is greater than 5 feet thick, grout consisting of cement mixed with 3-5% bentonite powder will be tremied or pumped into the

annular space above the bentonite pellets to prevent the infiltration of surface water into the well. If the surface seal is less than 5 feet thick, the grout will be poured from the surface. The resulting seal will be checked for shrinkage within 24 hours and additional grout will be added, if necessary. The surface seal is used to prevent infiltration of surface water into the well.

The monitoring well(s) is locked with a stovepipe or cap and covered with a traffic-rated vault if it is located in a developed area. The well ID is clearly marked on the cap or casing.

SIERRA

SES STANDARD OPERATING PROCEDURE

WELL DEVELOPMENT

SES develops ground water monitoring wells not less than 48 hours after placement of the surface seal (grouting) to allow sufficient time for the cement grout to set. The wells are developed to restore the natural hydraulic conductivity of the formation(s) to be monitored, and to remove all sand and as much fine-grained material as possible. Well development consists of several cycles of surging (using a vented surge block) and over pumping of the well.

Prior to development, SES field personnel measure the depth to water and the total depth of the well. The total depth measurement is compared to the well completion diagram shown on the field log and any discrepancies are noted.

SES begins development by carefully lowering a pre-cleaned stainless steel vented surge block into the well casing to a position approximately three feet below the top of the well screen or the air/water interface, whichever is deepest. Surging begins with a slow upward stroke motion of the surge block at a stroke length not exceeding three feet. The stroke rate and length is progressively increased as surging continues for 10 to 15 minutes to loosen sand and fine-grained material from the screened interval. The surge block is then removed and placed in a clean 5-gallon bucket for future use.

During over pumping, the pump is run at the maximum flow rate to evacuate approximately two well casing volumes of ground water from the well. Over pumping will remove any sediment accumulated in the bottom of the well and any fine-grained material suspended in the water.

After a cycle of surging and over pumping has been completed SES field personnel record the time spent on each task, approximate discharge flow rate, and approximate volume of water evacuated. SES field personnel measure the depth to water, immediately after pumping and at various intervals, to approximate the recovery rate of the well.

Development shall continue until the turbidity of the water is less than 5 NTUs, or when ten well volumes have been removed, whichever occurs first.

SIERRA

After development is completed, the total depth of the well is remeasured and compared to the total depth noted on the field log. The two depths should be approximately the same. All data measured during the procedures described herein are recorded on the SES Well Development Form, which is part of the project file.

The water is taken to Chevron's Richmond Refinery for disposal.

WELLDVLP.CHE

SIERRA

SES STANDARD OPERATING PROCEDURE
GROUND WATER SAMPLING

The following describes sampling procedures used by SES field personnel to collect and handle ground water samples. Before samples are collected, careful consideration is given to the type of analysis to be performed so that precautions are taken to prevent loss of volatile components or contamination of the sample, and to preserve the sample for subsequent analysis. Wells will be sampled no less than 24 hours after well development. Collection methods specific to ground water sampling are presented below.

Prior to sampling, each well is checked for the presence of free-phase hydrocarbons using an MMC flexi-dip interface probe. Product thickness (measured to the nearest 0.01 foot) is noted on the sampling form. Water level measurements are also made using either a water level meter or the interface probe. The water level measurements are also noted on the sampling form.

Prior to sampling, each well is purged of a minimum of three well casing volumes of water using a steam-cleaned PVC bailer, or a pre-cleaned pump. Temperature, pH and electrical conductivity are measured at least three times during purging. Purging is continued until these parameters have stabilized (i.e., changes in temperature, pH or conductivity do not exceed ±0.5°F, 0.1 or 5%, respectively).

The purge water is taken to Chevron's Richmond Refinery for disposal.

Ground water samples are collected from the wells with Chevron designated disposable bailers. The water samples are decanted into the appropriate container for the analysis to be performed. Pre-preserved sample containers may be used or the analytic laboratory may add preservative to the sample upon arrival. Duplicate samples are collected from each well as a back-up sample and/or to provide quality control. The samples are labeled to include the project number, sample ID, date, preservative, and the field person's initials. The samples are placed in polyethylene bags and in an ice chest (maintained at 4°C) for transport under chain of custody to the laboratory.

The chain of custody form includes the project number, analysis requested, sample ID, date analysis and the SES field person's name. The form is signed and dated (with the transfer time) by each person who yields or receives the samples beginning with the field personnel and ending with the laboratory personnel.

A trip blank accompanies each sampling set, or 5% trip blanks are included for sets of greater than 20 samples. The trip blank is analyzed for some or all of the same compounds as the ground water samples.

SIERRA

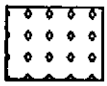
APPENDIX D

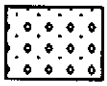
ASTM SOIL CLASSIFICATION SYSTEM CHART
BORING LOG EXPLANATION
TYPICAL MONITORING WELL CONSTRUCTION DIAGRAM
AND BORING LOGS

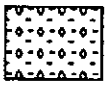
					Group Symbol				Group Name
>50% Sand & Gravel	GRAVEL % gravel > % sand	≤5% fines	Well-graded		GW	<15% sand			Well-graded GRAVEL
						≥15% sand			Well-graded GRAVEL with Sand
			Poorly graded		GP	<15% sand			Poorly graded GRAVEL
						≥15% sand			Poorly graded GRAVEL with Sand
		10% fines	Well-graded	fines=ML or MH	GW-GM	<15% sand			Well-graded GRAVEL with Silt
						≥15% sand			Well-graded GRAVEL with Silt and Sand
				fines=CL or CH	GW-GC	<15% sand			Well-graded GRAVEL with Clay
						≥15% sand			Well-graded GRAVEL with Clay and Sand
			Poorly graded	fines=ML or MH	GP-GM	<15% sand			Poorly graded GRAVEL with Silt
						≥15% sand			Poorly graded GRAVEL with Silt and Sand
				fines=CL or CH	GP-GC	<15% sand			Poorly graded GRAVEL with Clay
						≥15% sand			Poorly graded GRAVEL with Clay and Sand
		≥15% fines		fines=ML or MH	GM	<15% sand			Silty GRAVEL
						≥15% sand			Silty GRAVEL with Sand
				fines=CL or CH	GC	<15% sand			Clayey GRAVEL
						≥15% sand			Clayey GRAVEL with Sand
	SAND % sand ≥ % gravel	≤5% fines	Well-graded		SW	<15% gravel			Well-graded SAND
						≥15% gravel			Well-graded SAND with Gravel
			Poorly graded		SP	<15% gravel			Poorly graded SAND
						≥15% gravel			Poorly graded SAND with Gravel
		10% fines	Well-graded	fines=ML or MH	SW-SM	<15% gravel			Well-graded SAND with Silt
						≥15% gravel			Well-graded SAND with Silt and Gravel
				fines=CL or CH	SW-SC	<15% gravel			Well-graded SAND with Clay
						≥15% gravel			Well-graded SAND with Clay and Gravel
			Poorly graded	fines=ML or MH	SP-SM	<15% gravel			Poorly graded SAND with Silt
						≥15% gravel			Poorly graded SAND with Silt and Gravel
				fines=CL or CH	SP-SC	<15% gravel			Poorly graded SAND with Clay
						≥15% gravel			Poorly graded SAND with Clay and Gravel
		≥15% fines		fines=ML or MH	SM	<15% gravel			Silty SAND
						≥15% gravel			Silty SAND with Gravel
				fines=CL or CH	SC	<15% gravel			Clayey SAND
						≥15% gravel			Clayey SAND with Gravel
>50% or More Fines	Low-Plasticity Clay				CL	<30% sand & gravel	<15% Sand and Gravel		Lean CLAY
							15-25% sand & gravel	% sand ≥ % gravel	Lean CLAY with Sand
								% sand < % gravel	Lean CLAY with Gravel
						≥30% sand & gravel	% sand ≥ % of gravel	<15% gravel	Sandy lean CLAY
								≥15% gravel	Sandy lean CLAY with Gravel
							% sand < % gravel	<15% sand	Gravelly lean CLAY
								≥15% sand	Gravelly lean CLAY with Sand
	Low-Permeability Silt				ML	<30% sand & gravel	<15% sand & gravel		SILT
							15-25% sand & gravel	% sand ≥ % gravel	SILT with Sand
								% sand < % gravel	SILT with Gravel
						≥30% sand & gravel	% sand ≥ % of gravel	<15% gravel	Sandy SILT
								≥15% gravel	Sandy SILT with Gravel
							% sand < % gravel	<15% sand	Gravelly SILT
								≥15% sand	Gravelly SILT with Sand
	Plastic Clay				CH	<30% sand & gravel	<15% sand & gravel		Fat CLAY
							15-25% sand & gravel	% sand ≥ % gravel	Fat CLAY with Sand
								% sand < % gravel	Fat CLAY with Gravel
						≥30% sand & gravel	% sand ≥ % of gravel	<15% gravel	Sandy fat CLAY
								≥15% gravel	Sandy fat CLAY with Gravel
							% sand < % gravel	<15% sand	Gravelly fat CLAY
								≥15% sand	Gravelly fat CLAY with Sand
	Plastic Silt				MH	<30% sand & gravel	<15% sand & gravel		Elastic SILT
							15-25% sand & gravel	% sand ≥ % gravel	Elastic SILT with Sand
								% sand < % gravel	Elastic SILT with Gravel
						≥30% sand & gravel	% sand ≥ % of gravel	<15% gravel	Sandy elastic SILT
								≥15% gravel	Sandy elastic SILT with Gravel
							% sand < % gravel	<15% sand	Gravelly elastic SILT
								≥15% sand	Gravelly elastic SILT with Sand
	Organics (Peat or Bay Mud)				OL/OH	<30% sand & gravel	<15% sand & gravel		Organic SOIL
							15-25% sand & gravel	% sand ≥ % gravel	Organic SOIL with Sand
								%sand < % gravel	Organic SOIL with Gravel
						≥30% sand & gravel	% sand ≥ % gravel	<15% gravel	Sandy Organic SOIL
								≥15% gravel	Sandy Organic SOIL with Gravel
							% sand < % gravel	<15% sand	Gravelly Organic SOIL
								≥15% sand	Gravelly Organic SOIL with Sand

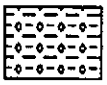
SIERRA

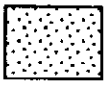
EXPLANATION FOR SES BORING LOGS

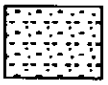

GRAVEL

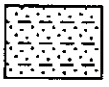

Sandy GRAVEL

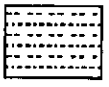

Silty GRAVEL

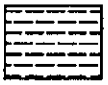

Clayey GRAVEL

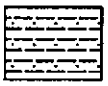

SAND

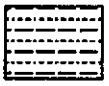

Silty SAND/Sandy SILT

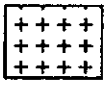

Clayey SAND


SILT

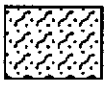

CLAY

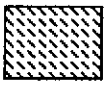

Sandy CLAY


Silty CLAY/Clayey SILT


Organics


Hard Rock


Slough


Asphalt


Concrete
Cement/Grout

K = Field estimation of soil hydraulic conductivity

Drive sample interval

Drive sample collected for possible chemical analysis

Contact between sedimentary or lithologic units; dotted where approximate, dashed where uncertain, hatched where gradational

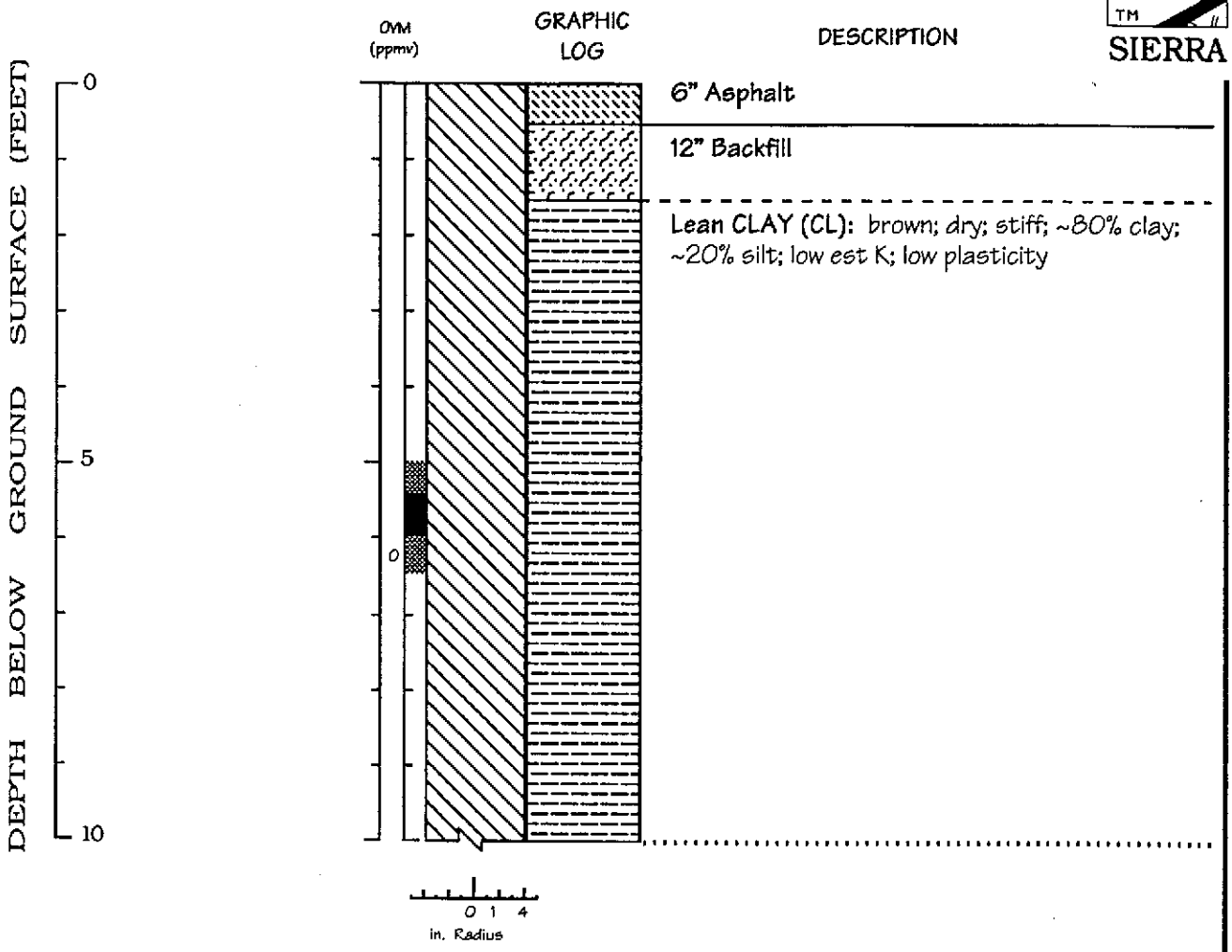
Initial water level measured during drilling (date in italics)

Static water level, measured after well development (date in italics)

Note: Soils are logged using ASTM D2487 Soil Classification System

BORING B-1

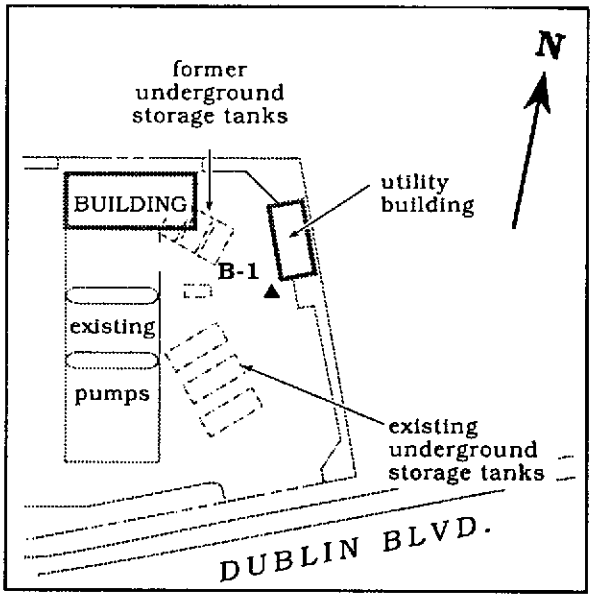
SIERRA



Boring Log – Boring B-1

Chevron Service Station #9-5542
7007 San Ramon Valley Blvd.
Dublin, California

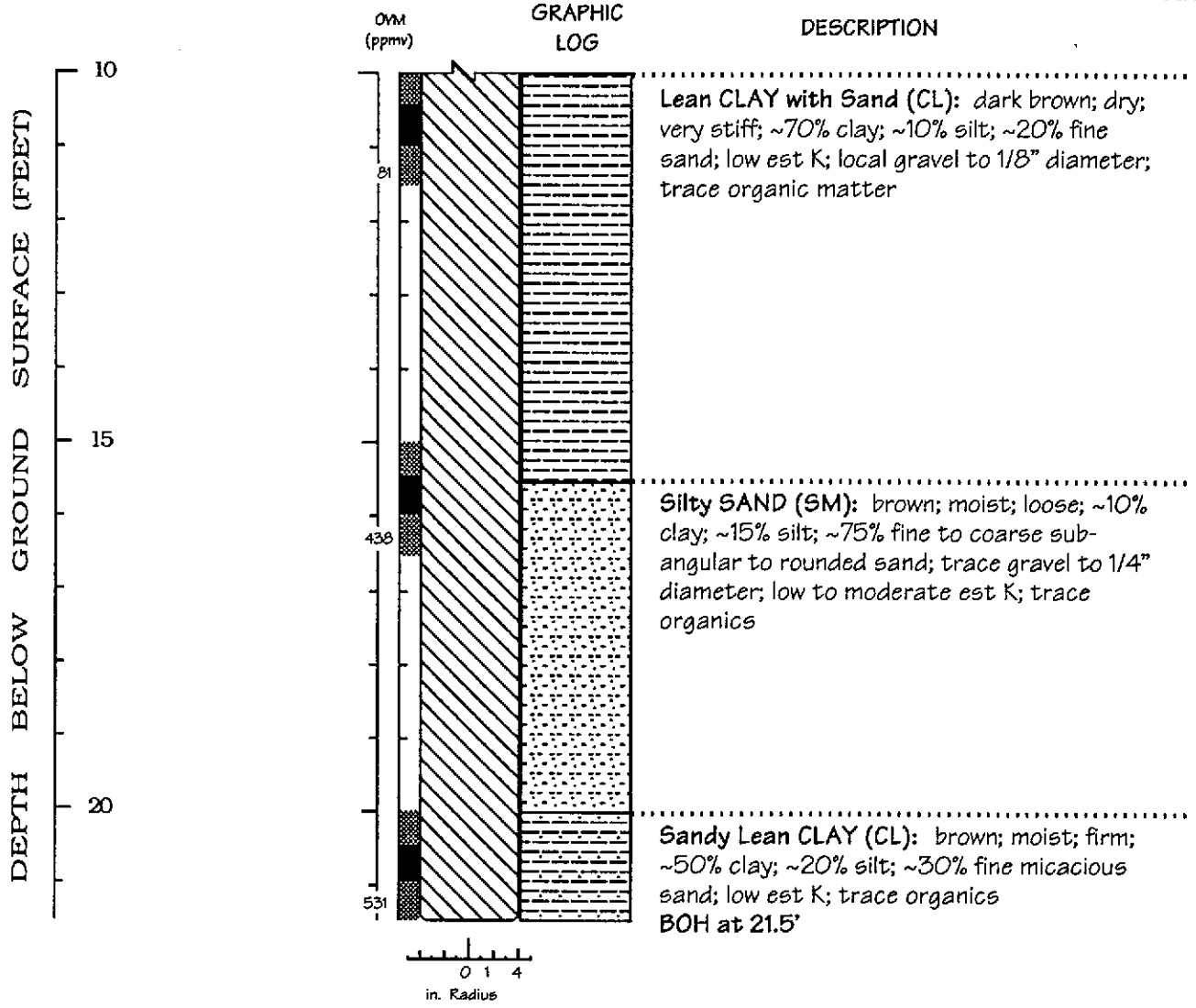
Logged by:	Argy Mena
Supervisor:	C. Bramer P.E. #C48846
Drilling Company:	Soils Exploration Services
C-57#:	582696
Driller:	Morris Petersen
Drilling Method:	Hollow stem auger
Date Drilled:	June 8, 1994
Well Head Completion:	Grouted to surface
Type of sampler:	Split barrel (2" ID)



BORING B-1

(continued)

SIERRA

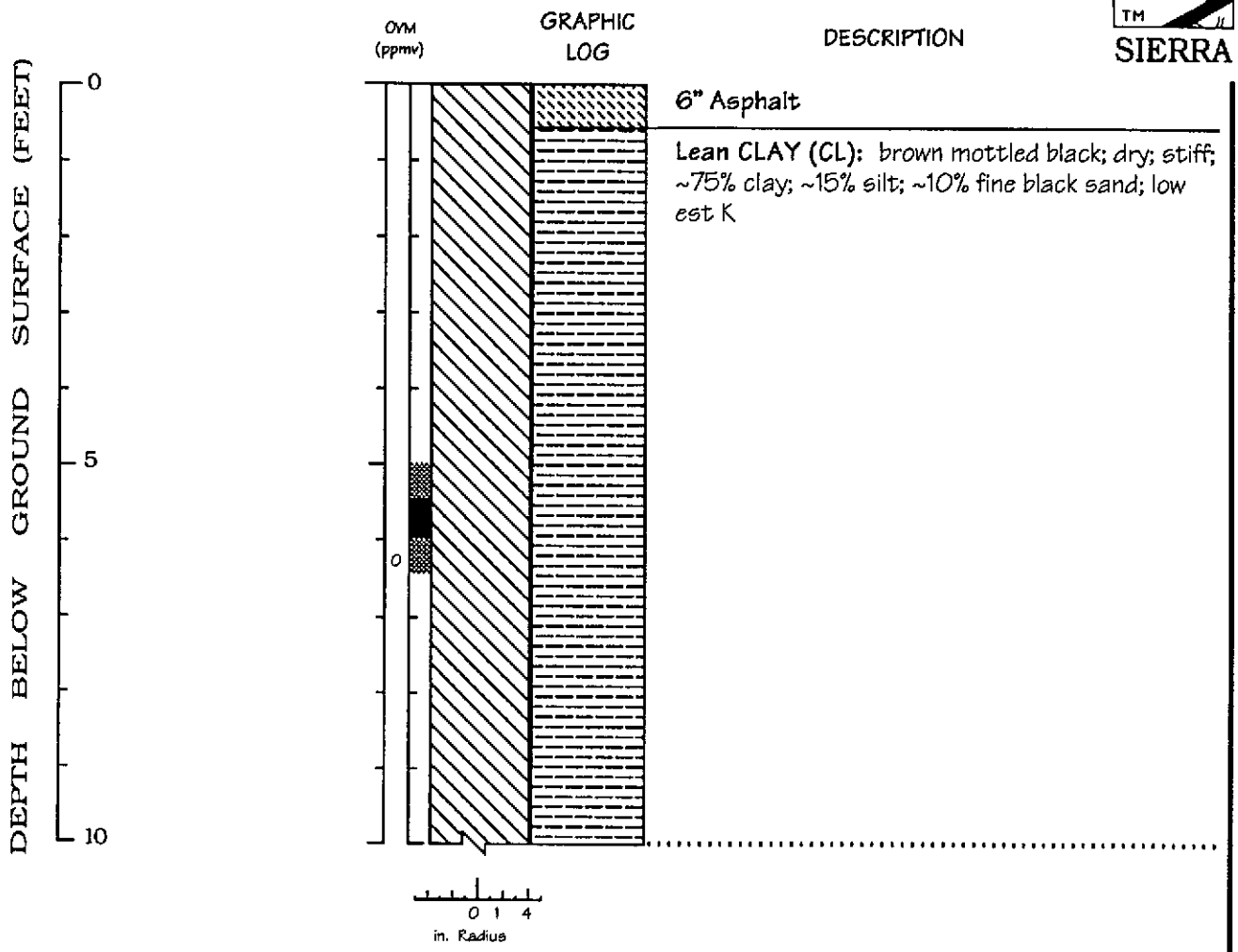


Boring Log - Boring B-1

Chevron Service Station #9-5542
7007 San Ramon Valley Blvd.
Dublin, California

BORING B-2

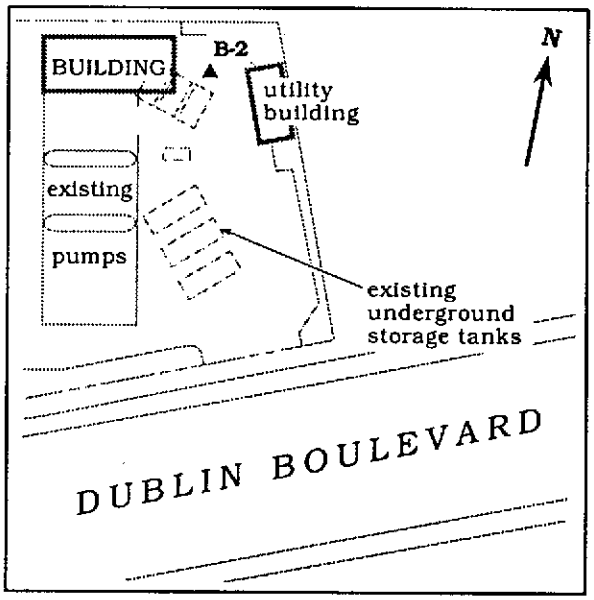
SIERRA



Boring Log - Boring B-2

Chevron Service Station #9-5542
7007 San Ramon Valley Blvd.
Dublin, California

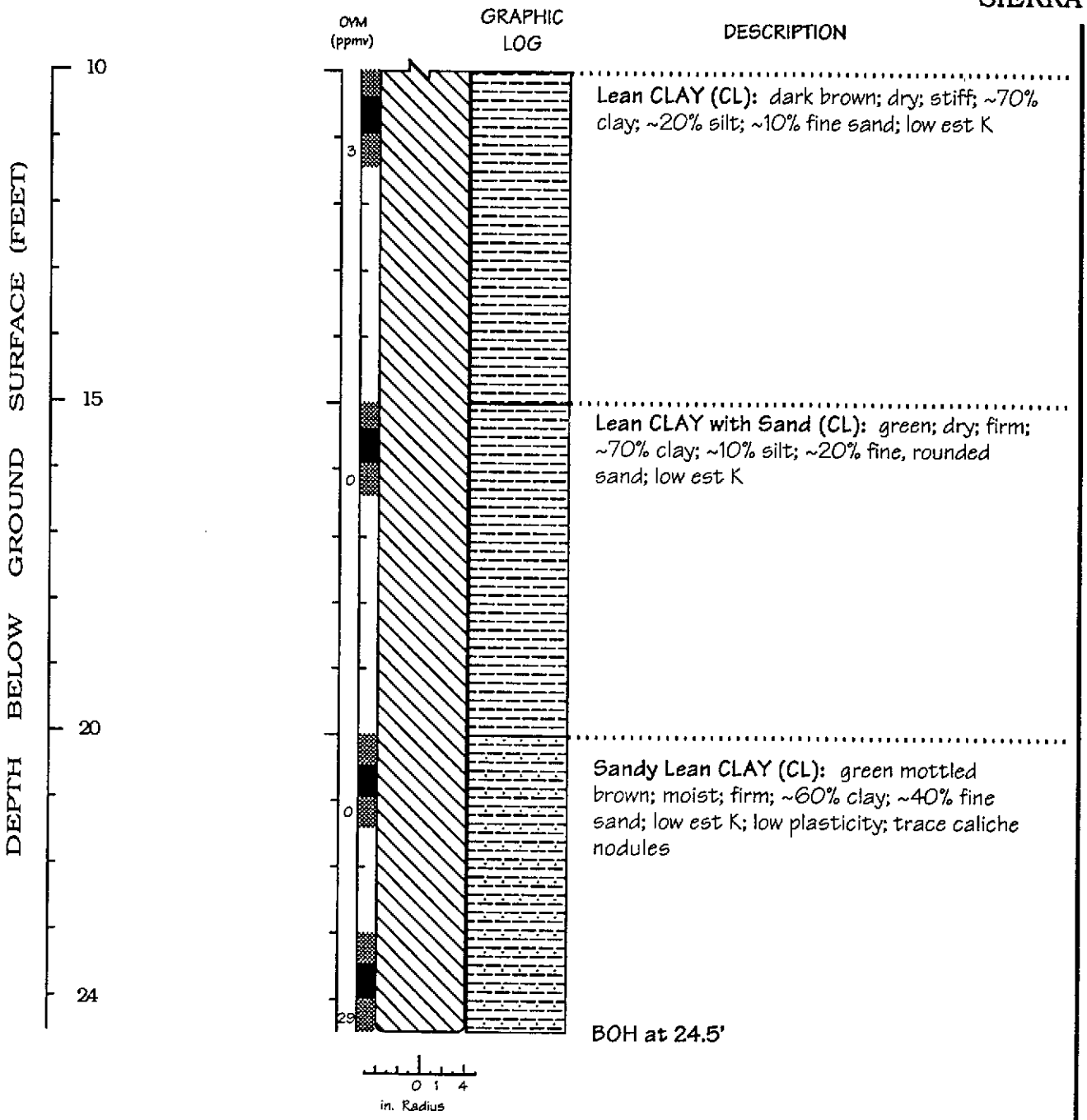
Logged by:	Argy Mena
Supervisor:	C. Bramer P.E. #C48846
Drilling Company:	Soils Exploration Services
C-57#:	582696
Driller:	Morris Petersen
Drilling Method:	Hollow stem auger
Date Drilled:	June 8, 1994
Well Head Completion:	Grouted to surface
Type of sampler:	Split barrel (2" ID)



BORING B-2

(continued)

SIERRA

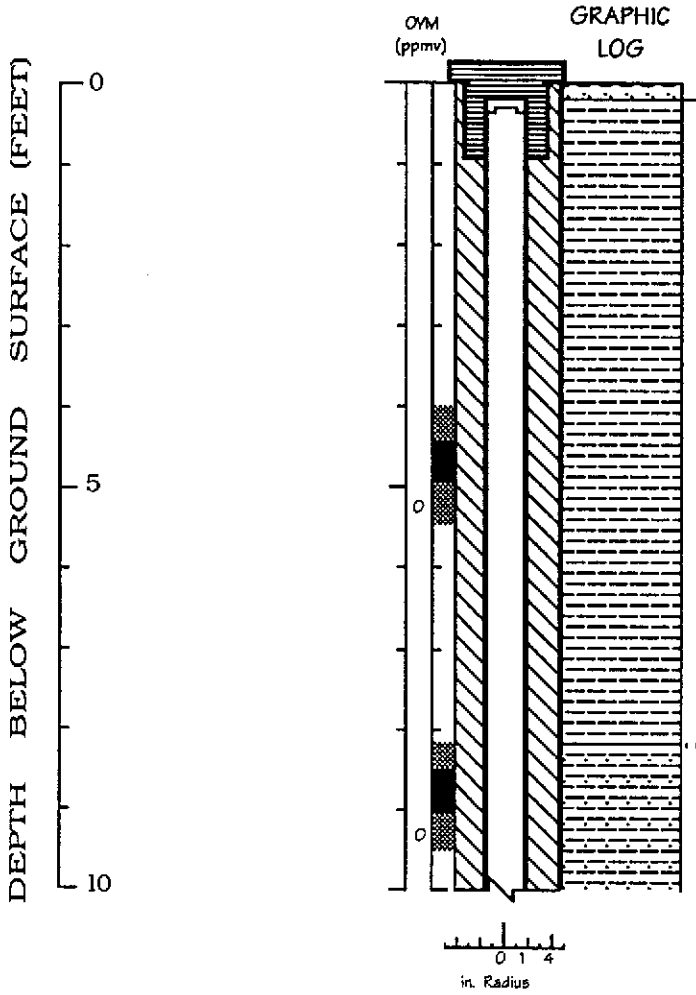


Boring Log - Boring B-2

Chevron Service Station #9-5542
7007 San Ramon Valley Blvd.
Dublin, California

WELL MW-9

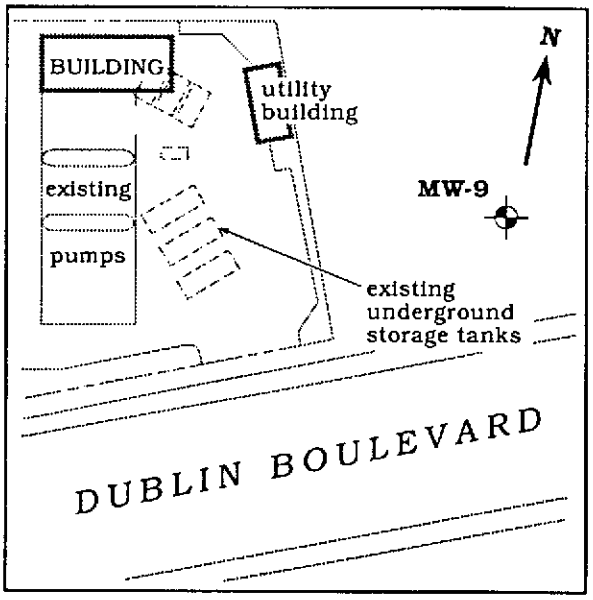
SIERRA



Well Construction and Boring Log - Well MW-9

Chevron Service Station #9-5542
7007 San Ramon Valley Blvd.
Dublin, California

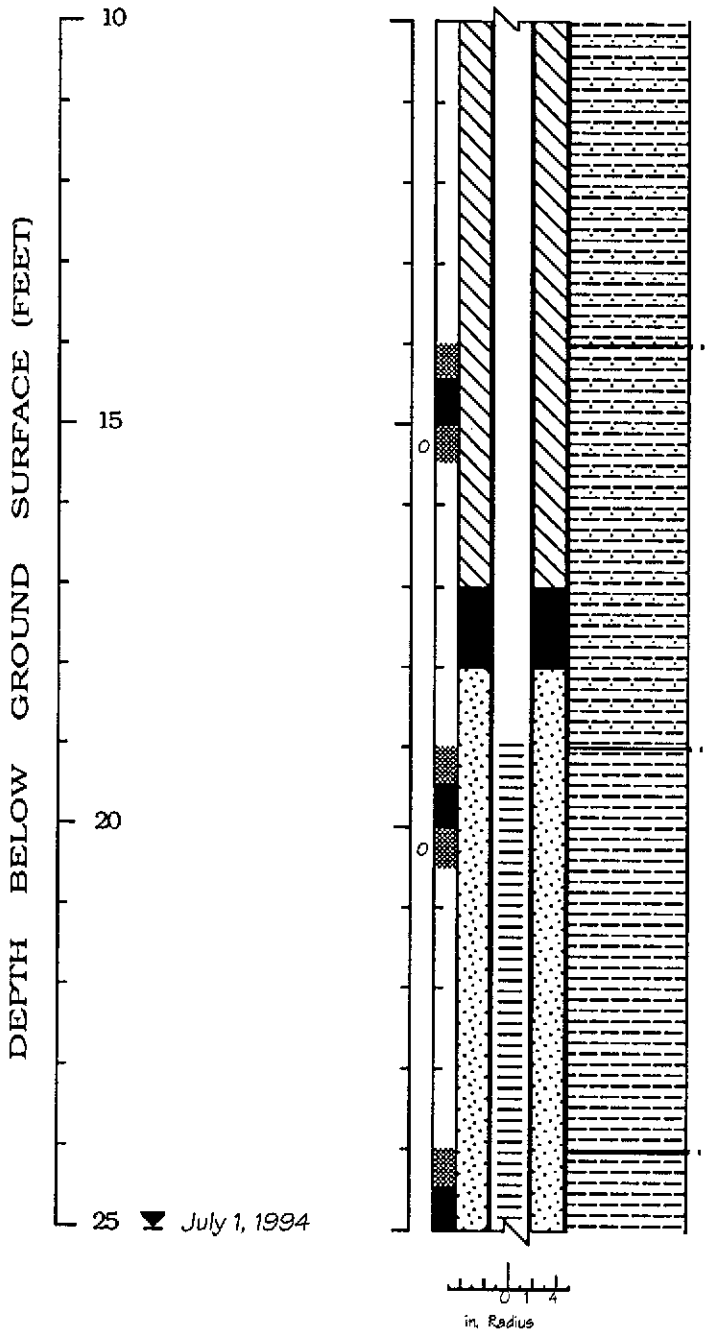
Logged by:	Argy Mena
Supervisor:	C. Bramer P.E. #C48846
Drilling Company:	Soils Exploration Services
C-57#:	582696
Driller:	Morris Petersen
Drilling Method:	Hollow stem auger
Date Drilled:	June 8, 1994
Well Head Completion:	Locking cap & traffic-rated vault
Type of sampler:	Split barrel (2" ID)



WELL MW-9

(continued)

SIERRA



Sandy Lean CLAY with Gravel (CL): *continued*

Sandy Fat CLAY (CH): brown; moist; stiff; ~50% clay; ~10% silt; ~30% very fine to fine sand; ~10% gravel to 1/8" diameter; trace angular gravel to 1" diameter; low est K; high plasticity

Fat CLAY with Sand (CH): olive brown; moist; firm; ~60% clay; ~20% silt; ~20% fine sand; low est K; micaceous, trace caliche nodules; high plasticity

Lean CLAY (CL): olive brown; moist; firm; ~80% clay; ~20% silt; trace gravels; low est K; trace caliche nodules, micaceous

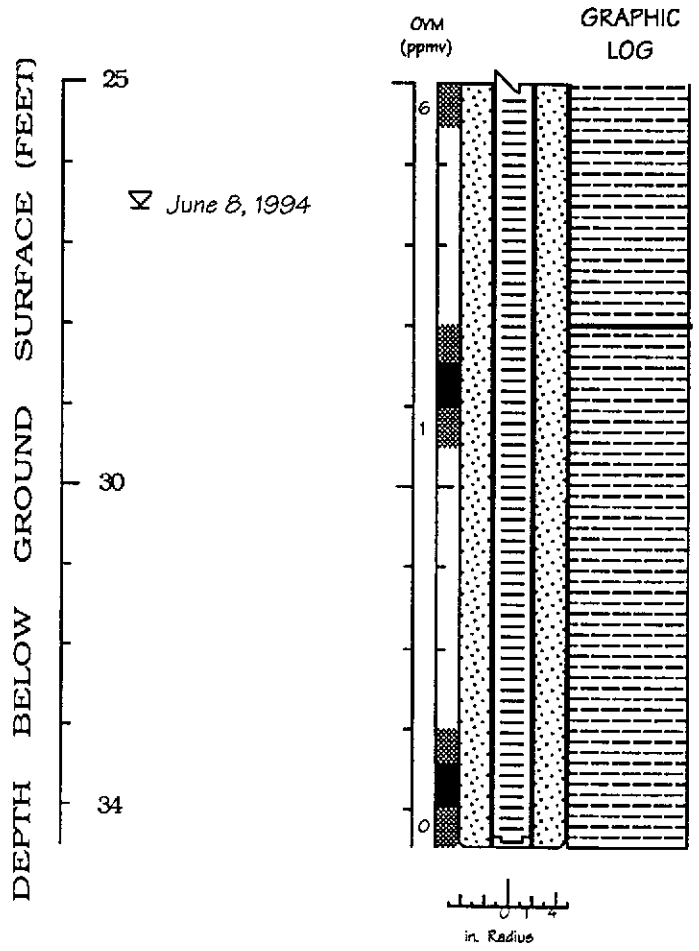
Well Construction and Boring Log - Well MW-9

Chevron Service Station #9-5542
7007 San Ramon Valley Blvd.
Dublin, California

WELL MW-9

(continued)

SIERRA



DESCRIPTION

Lean CLAY (CL): *continued*

Fat CLAY with Sand (CH): *green; wet; stiff; ~70% clay; ~10% silt; ~20% fine black sand; trace gravel to 1/4" diameter; low est K; high plasticity; hydrocarbon staining*

BOH at 34.5'

Well Construction and Boring Log - Well MW-9

Chevron Service Station #9-5542
7007 San Ramon Valley Blvd.
Dublin, California

SIERRA

APPENDIX E
CHAIN OF CUSTODY DOCUMENTS AND
LABORATORY ANALYTIC REPORTS

Fax copy of Lab Report and COC to Chevron Contact: ☐ Yes ☐ No Page 1 of 1

Chain-of-Custody-Record

Chevron U.S.A. Inc.
P.O. BOX 5004
San Ramon, CA 94583
FAX (415)842-9591

Chevron Facility Number: 9-5542
Facility Address: 7007 San Ramon Valley Blvd, Dublin
Consultant Project Number: 1-214-01
Consultant Name: Sierra Environmental Services
Address: P.O. Box 2546, Martinez, CA
Project Contact (Name): Ed Morales
(Phone) 370-1580 (Fax Number) 370-7959

Chevron Contact (Name): Brett Hunter
(Phone) 842-8695
Laboratory Name: Superior Precision Analytical
Laboratory Release Number: 5464460
Samples Collected by (Name): Angy Mena
Collection Date: 6/8/94
Signature: Angy Mena

Sample Number	Lab Sample Number	Number of Containers	Matrix S = Soil A = Air W = Water C = Charcoal	Type G = Grab C = Composite D = Discrete	Date / Time	Sample Preservation	Iced (Yes or No)	BTEX + TPH GAS (8020 + 8015)	TPH Diesel (8015)	Oil and Grease (5520)	Purgeable Halocarbons (8010)	Purgeable Aromatics (8020)	Purgeable Organics (8240)	Extractable Organics (8270)	Metals Cd,Cr,Pb,Zn,Ni (ICAP or AA)	Remarks
MW-9@ 4.5	1	2"x6"	S	D	6-8-94	None	Y									Hold
MW-9@ 8.5	2															
MW-9@ 14.5	3															
MW-9@ 19.5	4															
MW-9@ 24.5	5							✓								Analyze
MW-9@ 28.5	6															Hold
MW-9@ 33.5	7							✓								Analyze
B-1@ 5.5	8							✓								Analyze
B-1@ 10.5	9							✓								Analyze
B-1@ 15.5	10							✓								Analyze
B-1@ 20.5	11	↓	↓	↓	↓	↓	↓	✓								Analyze

Analyses To Be Performed

Note:
Do Not Bill
TB-LB Samples

Relinquished By (Signature)	Organization	Date/Time	Received By (Signature)	Organization	Date/Time
[signature]	SES	6/9/94 8:00	[signature]	SES	6/9/94 8:00
Relinquished By (Signature)	Organization	Date/Time	Received By (Signature)	Organization	Date/Time
[signature]	SES		[signature]		
Relinquished By (Signature)	Organization	Date/Time	Received For Laboratory By (Signature)		Date/Time
[signature]			[signature]		06-07-94

Turn Around Time (Circle Choice)
24 Hrs.
48 Hrs.
5 Days
10 Days
As Contracted

6/9/94

Supervisor 11:15

Fax copy of Lab Report and COC to Chevron Contact: ☐ Yes ☐ No PAGE 2 OF 2

Chain-of-Custody-Record

Chevron U.S.A. Inc.
P.O. BOX 5004
San Ramon, CA 94583
FAX (415)842-9591

Chevron Facility Number: 9-5542
Facility Address: 7007 San Ramon Valley Blvd, Dublin
Consultant Project Number: 1-2101
Consultant Name: Sierra Environmental Services
Address: P.O. Box 2546, Martinez, CA
Project Contact (Name): Ed Morales
(Phone) 370-1280 (Fax Number) 370-7959

Chevron Contact (Name): Brett Hunter
(Phone) 842-8695
Laboratory Name: Superior Precision Analytical
Laboratory Release Number: 5464466
Samples Collected by (Name): Angy Mena
Collection Date: 6/8/94
Signature:

Sample Number	Lab Sample Number	Number of Containers	Matrix S = Soil A = Air W = Water C = Charcoal	Type G = Grab C = Composite D = Discrete	Date/Time	Sample Preservation	Iced (Yes or No)	Analyses To Be Performed: BTEX + TPH GAS (8020 + 8015)	TPH Diesel (8015)	Oil and Grease (5520)	Purgeable Halocarbons (8010)	Purgeable Aromatics (8020)	Purgeable Organics (8240)	Extractable Organics (8270)	Metals Cd,Cr,Pb,Zn,Ni (ICAP or AA)	Remarks
B-2 @ 5.5	12	2x6	S	G	6-x-94	—	Y									Hold
B-2 @ 10.5	13															↓
B-2 @ 15.5	14															Analyze
B-2 @ 20.5	15							✓								
B-2 @ 23.5	16	↓	↓	↓	↓	↓	↓	✓					DO 5/65	1/65 NA		Analyze

Note:
Do Not Bill
TB-LB Samples

Relinquished By (Signature)	Organization	Date/Time	Received By (Signature)	Organization	Date/Time
	SES	6/9/94 9:00		SES	6/9/94 8:05
Relinquished By (Signature)	Organization	Date/Time	Received by (Signature)	Organization	Date/Time
		6/9/94			
Relinquished By (Signature)	Organization	Date/Time	Received For Laboratory By (Signature)		Date/Time
					06-09-94

Turn Around Time (Circle Choice)
24 Hrs.
48 Hrs.
5 Days
10 Days
As Contracted

Superior Precision Analytical, Inc.
1555 Burke, Unit I • San Francisco, California 94124 • (415) 647-2081 / fax (415) 821-7123

Sierra Environmental
Attn: ED MORALES

Project 1-214-01
Reported 06/16/94

TOTAL PETROLEUM HYDROCARBONS

Lab #	Sample Identification	Sampled	Analyzed	Matrix
30567- 5	MW-9@ 24.5	06/08/94	06/14/94	Soil
30567- 7	MW-9@ 33.5	06/08/94	06/14/94	Soil
30567- 8	B-1@ 5.5	06/08/94	06/14/94	Soil
30567- 9	B-1@ 10.5	06/08/94	06/14/94	Soil
30567-10	B-1@ 15.5	06/08/94	06/14/94	Soil
30567-11	B-1@ 20.5	06/08/94	06/14/94	Soil
30567-15	B-2@ 20.5	06/08/94	06/14/94	Soil
30567-16	B-2@ 23.5	06/08/94	06/14/94	Soil

RESULTS OF ANALYSIS

Laboratory Number:	30567- 5	30567- 7	30567- 8	30567- 9	30567-10
Gasoline:	57	ND<1	ND<1	ND<1	2
Benzene:	0.070	0.038	ND<.005	ND<.005	0.081
Toluene:	0.11	ND<.005	ND<.005	ND<.005	0.19
Ethyl Benzene:	0.58	ND<.005	ND<.005	ND<.005	0.020
Total Xylenes:	3.4	0.008	ND<.005	ND<.005	0.13
Concentration:	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg

Laboratory Number:	30567-11	30567-15	30567-16
Gasoline:	1600	2	8
Benzene:	5.3	0.060	0.13
Toluene:	72	0.026	0.037
Ethyl Benzene:	23	0.031	0.12
Total Xylenes:	120	0.19	0.83
Concentration:	mg/kg	mg/kg	mg/kg

Superior Precision Analytical, Inc.
1555 Burke, Unit I • San Francisco, California 94124 • (415) 647-2081 / fax (415) 821-7123

C E R T I F I C A T E O F A N A L Y S I S

ANALYSIS FOR TOTAL PETROLEUM HYDROCARBONS

QA/QC INFORMATION
SET: 30567

NA = ANALYSIS NOT REQUESTED
ND = ANALYSIS NOT DETECTED ABOVE QUANTITATION LIMIT
mg/kg = parts per million (ppm)

OIL AND GREASE ANALYSIS By Standard Methods Method 5520F:
Minimum Detection Limit in Soil: 50mg/kg

Modified EPA SW-846 Method 8015 for Extractable Hydrocarbons:
Minimum Quantitation Limit for Diesel in Soil: 1mg/kg

EPA SW-846 Method 8015/5030 Total Purgable Petroleum Hydrocarbons:
Minimum Quantitation Limit for Gasoline in Soil: 1mg/kg

EPA SW-846 Method 8020/BTXE
Minimum Quantitation Limit in Soil: 0.005mg/kg

ANALYTE	MS/MSD RECOVERY	RPD	CONTROL LIMIT
Gasoline:	96/92	4%	70-130
Benzene:	70/76	8%	70-130
Toluene:	75/84	11%	70-130
Ethyl Benzene:	76/83	9%	70-130
Total Xylenes:	92/103	11%	70-130

Senior Chemist
Certified Laboratories

Fax copy of Lab Report and COC to Chevron Contact: ☐ Yes ☐ No

Chain-of-Custody-Record

Chevron U.S.A. Inc.
P.O. BOX 5004
San Ramon, CA 94583
FAX (415)842-9591

Chevron Facility Number: 9-5542
Facility Address: 7007 San Ramon Rd, Dublin
Consultant Project Number: 1-214-04
Consultant Name: Sierra Environmental Services
Address: P.O. Box 2546, Martinez, CA
Project Contact (Name): Ed Morales
(Phone) 370-1280 (Fax Number) 370-7959

Chevron Contact (Name): Brett Hunter
(Phone): 842-8695
Laboratory Name: GTEL
Laboratory Release Number: 3236620
Samples Collected by (Name): Joe Carter / Luda Chernyak
Collection Date: 06/24/94
Signature: L. Chernyak, Joe Carter

Sample Number	Lab Sample Number	Number of Containers	Matrix S = Soil A = Air W = Water C = Charcoal	Type G = Grab C = Composite D = Discrete	Time	Sample Preservation	Iced (Yes or No)	Analyses To Be Performed: BTEX + TPH GAS (8020 + 8015)	TPH Diesel (8015)	Oil and Grease (5520)	Purgeable Halocarbons (8010)	Purgeable Aromatics (8020)	Purgeable Organics (8240)	Extractable Organics (8270)	Metals Cd,Cr,Pb,Zn,Ni (ICAP or AA)					Remarks
TB-LB	01	2	W	G	—	HCl	Y	Y	N											Analyze
mw-8	02	3			11:00			✓	N											
mw-5	03	3			11:33			✓	N											
mw-7	04				12:03			✓	N											
mw-2	05				12:42			✓	N											
mw-6	06				13:20			✓	N											
mw-3	07				2:05			✓	N											
mw-4	08	✓	✓	✓	2:50	✓	✓	✓	N											
mw-4	09	1	✓	✓	2:50	H_2SO_4	✓			N										

CL010039

Note:
Do Not Bill
TB-LB Samples
SEALS INTACT, ON ICE AT 4°C

Relinquished By (Signature)	Organization	Date/Time	Received By (Signature)	Organization	Date/Time
Joe Carter / L. Chernyak	SES	7-1-94 16:30	Julia Weber	GTEL	7-1-94 16:30
Relinquished By (Signature) Julia Weber	Organization GTEL	Date/Time 7-1-94 16:40	Received By (Signature)	Organization	Date/Time
Relinquished By (Signature)	Organization	Date/Time	Received For Laboratory By (Signature)		Date/Time 7/1/94 1630

Turn Around Time (Circle Choice)
24 Hrs.
48 Hrs.
5 Days 7/1/94
10-Days
As Contracted

GTEL
ENVIRONMENTAL
LABORATORIES, INC.

Western Region
4080 Pike Lane, Suite C
Concord, CA 94520
(510) 685-7852
(800) 544-3422 Inside CA
FAX (510) 825-0720

Client Number: SIE01CHV08
Consultant Project Number: 1-214-04
Facility Number: 9-5542
Project ID: 7007 San Ramon Rd., Dublin
Work Order Number: C4-07-0039

July 13, 1994

Ed Morales
Sierra Environmental Services
P.O. Box 2546
Martinez, CA 94553

Enclosed please find the analytical results for samples received by GTEL Environmental Laboratories, Inc. on 07/01/94.

A formal Quality Assurance/Quality Control (QA/QC) program is maintained by GTEL, which is designed to meet or exceed the EPA requirements. Analytical work for this project met QA/QC criteria, unless otherwise stated in the footnotes.

GTEL is certified by the California State Department of Health Services, Laboratory certification number E1075, to perform analyses for drinking water, wastewater, and hazardous waste materials according to EPA protocols.

If you have any questions concerning this analysis or if we can be of further assistance, please call our Customer Service Representative.

Sincerely,
GTEL Environmental Laboratories, Inc.

Rashmi Shah
Laboratory Director

Client Number: SIE01CHV08
Consultant Project Number: 1-214-04
Facility Number: 9-5542
Project ID: 7007 San Ramon Rd., Dublin
Work Order Number: C4-07-0039

ANALYTICAL RESULTS

Volatile Organics in Water

EPA Methods 8020 and Modified 8015[a]

GTEL Sample Number		01	02	03	04
Client Identification		TB-LB	MW-8	MW-5	MW-7
Date Sampled		06/29/94	06/29/94	06/29/94	06/29/94
Date Analyzed		07/06/94	07/06/94	07/06/94	07/08/94
Analyte	Detection Limit, ug/L	Concentration, ug/L			
Benzene	0.5	<0.5	<0.5	<0.5	<0.5
Toluene	0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	0.5	<0.5	<0.5	<0.5	<0.5
Xylene, total	0.5	<0.5	0.8	1.0	<0.5
Gasoline	50	<50	<50	<50	<50
Detection Limit Multiplier		1	1	1	1
BFB surrogate, % recovery		104	107	100	83.1

a. Test Methods for Evaluating Solid Waste, SW-846, Third Edition, Revision 0, US EPA November 1986. Modification for TPH as gasoline as per California State Water Resources Board LUFT Manual procedures. Bromofluorobenzene surrogate recovery acceptability limits are 70-130%.

GTEL ENVIRONMENTAL LABORATORIES, INC.

Client Number: SIE01CHV08
Consultant Project Number: 1-214-04
Facility Number: 9-5542
Project ID: 7007 San Ramon Rd., Dublin
Work Order Number: C4-07-0039

ANALYTICAL RESULTS

Volatile Organics in Water

EPA Methods 8020 and Modified 8015[a]

GTEL Sample Number		05	06	07	08
Client Identification		MW-2	MW-6	MW-3	MW-4
Date Sampled		06/29/94	06/29/94	06/29/94	06/29/94
Date Analyzed		07/08/94	07/06/94	07/06/94	07/07/94
Analyte	Detection Limit, ug/L	Concentration, ug/L			
Benzene	0.5	0.8	0.6	90	4000
Toluene	0.5	0.9	1.2	6.1	2600
Ethylbenzene	0.5	0.8	2.4	20	960
Xylene, total	0.5	1.9	4.6	81	3300
Gasoline	50	52	300	1700	25000
Detection Limit Multiplier		1	1	1	10
BFB surrogate, % recovery		94.4	98.5	101	97.3

a. Test Methods for Evaluating Solid Waste, SW-846, Third Edition, Revision 0, US EPA November 1986. Modification for TPH as gasoline as per California State Water Resources Board LUFT Manual procedures. Bromofluorobenzene surrogate recovery acceptability limits are 70-130%.

Client Number: SIE01CHV08
Consultant Project Number: 1-214-04
Facility Number: 9-5542
Project ID: 7007 San Ramon Rd., Dublin
Work Order Number: C4-07-0039

ANALYTICAL RESULTS

Volatile Organics in Water

EPA Methods 8020 and Modified 8015[a]

GTEL Sample Number		Q070894-1			
Client Identification		METHOD BLANK			
Date Sampled		--			
Date Analyzed		07/08/94			
Analyte	Detection Limit, ug/L	Concentration, ug/L			
Benzene	0.5	<0.5			
Toluene	0.5	<0.5			
Ethylbenzene	0.5	<0.5			
Xylene, total	0.5	<0.5			
Gasoline	50	<50			
Detection Limit Multiplier		1			
BFB surrogate, % recovery		97.6			

a. Test Methods for Evaluating Solid Waste, SW-846, Third Edition, Revision 0, US EPA November 1986. Modification for TPH as gasoline as per California State Water Resources Board LUFT Manual procedures. Bromofluorobenzene surrogate recovery acceptability limits are 70-130%.

Client Number: SIE01CHV08
Consultant Project Number: 1-214-04
Facility Number: 9-5542
Project ID: 7007 San Ramon Rd., Dublin
Work Order Number: C4-07-0039

ANALYTICAL RESULTS

Total Petroleum Hydrocarbons in Water by Infrared Spectrometry

EPA Method 418.1[1](SM 5520 FC[2])

1. Methods for Chemical Analysis of Water and Wastes, EPA 600/4-79-202, Revised March 1983, U.S. Environmental Protection Agency.
2. Standard Methods for the Examination of Water and Wastewater, 17th ed., 1989, American Public Health Association.

GTEL Sample Number		09	070794 TPH		
Client Identification		MW-4	METHOD BLANK		
Date Sampled		06/29/94	--		
Date Prepared		07/06/94	07/06/94		
Date Analyzed		07/07/94	07/07/94		
Analyte	Detection Limit, ug/L	Concentration, ug/L			
Total Petroleum Hydrocarbons	5000	<5000	<5000		
Detection Limit Multiplier		1	1		

GTEL ENVIRONMENTAL LABORATORIES, INC.

Client Number: SIE01CHV08
Consultant Project Number: 1-214-04
Facility Number: 9-5542
Project ID: 7007 San Ramon Rd., Dublin
Work Order Number: C4-07-0039

QC Matrix Spike and Duplicate Spike Results

Matrix: Water

Analyte	Sample ID	Spike Amount	Units	Recovery, %	Duplicate Recovery, %	RPD, %	Control Limits
Modified EPA 8020:							
Benzene	C4070045-6	20.0	ug/L	121	98.5	20.5	57.3 - 138
Toluene	C4070045-6	20.0	ug/L	120	98.0	20.2	63.0 - 134
Ethylbenzene	C4070045-6	20.0	ug/L	118	95.5	21.1	59.3 - 137
Xylene, total	C4070045-6	60.0	ug/L	113	92.5	20	59.3 - 144
TOG/IR:	LCS[a]	52.9	mg/L	89.6	90.7	1.2	70 - 130

a. Not enough sample was provided by the client to perform a matrix QC. Laboratory control sample indicated the analysis was within control limits.

Fax copy of Lab Report and COC to Chevron Contact: ☐ No _____

Chain-of-Custody-Record

Chevron U.S.A. Inc.
P.O. BOX 5004
San Ramon, CA 94583
FAX (415)842-9591

Chevron Facility Number: 9-5542
Facility Address: 2002 SAN RAMON RD, DUBLIN
Consultant Project Number: 1-214.04
Consultant Name: SIERRA ENVIRONMENTAL
Address: PO BOX 2546, INTL, 94553
Project Contact (Name): G. MONACO
(Phone): 370.1250 (Fax Number): 370.7954

Chevron Contact (Name): BRETT HUNTER
(Phone): 842-8605
Laboratory Name: STL
Laboratory Release Number: 3236620
Samples Collected by (Name): BILL HUSTON
Collection Date: 26 AUG '94
Signature:

Sample Number	Lab Sample Number	Number of Containers	Matrix S = Soil A = Air W = Water C = Charcoal	Type G = Grab C = Composite D = Discrete	Time	Sample Preservation	Iced (Yes or No)	Analyses To Be Performed: BTEX + TPH GAS (8020 + 8015)	TPH Diesel (8015)	Oil and Grease (5520)	Purgeable Halocarbons (8010)	Purgeable Aromatics (8020)	Purgeable Organics (8240)	Extractable Organics (8270)	Metals Cd,Cr,Pb,Zn,Ni (ICAP or AA)	Remarks
MW-9	01	3	W	G		HCL	Y	✓								NOTE TAT (5°) CALLED IN TO BILL HUSTON
MW-1	02	3	↓	↓		↓	↓	✓								ANALYZE ↓

C40850455

Relinquished By (Signature)	Organization	Date/Time	Received By (Signature)	Organization	Date/Time
	SES	8/26/94 1800			
Relinquished By (Signature)	Organization	Date/Time	Received By (Signature)	Organization	Date/Time
Relinquished By (Signature)	Organization	Date/Time	Received For Laboratory By (Signature)		Date/Time
			Lisa Mahandiru		8-26-94 1500

Turn Around Time (Circle Choice)
(24 Hrs.)
48 Hrs.
5 Days
10 Days
As Contracted

GTEL
ENVIRONMENTAL
LABORATORIES, INC.

Western Region
4080 Pike Lane, Suite C
Concord, CA 94520
(510) 685-7852
(800) 544-3422 Inside CA
FAX (510) 825-0720

August 29, 1994

Ed Morales
Sierra Environmental Services
P.O. 2546
Martinez, CA 94553

RE: GTEL Client ID: SIE01CHV08
Login Number: C4080435
Project ID (number): 1-214-04
Project ID (name): CHEVRON/#9-5542, Dublin, CA

Dear Ed Morales:

Enclosed please find the analytical results for the samples received by GTEL Environmental Laboratories, Inc. on 08/26/94.

A formal Quality Assurance/Quality Control (QA/QC) program is maintained by GTEL, which is designed to meet or exceed the EPA requirements. Analytical work for this project met QA/QC criteria unless otherwise stated in the footnotes.

GTEL is accredited by the state of Alaska to perform analysis for drinking water and hazardous waste materials.

If you have any questions regarding this analysis, or if we can be of further assistance, please call our Customer Service Representative.

Sincerely,
GTEL Environmental Laboratories, Inc.

Rashmi Shah
Laboratory Director

GTEL Client ID: SIE01CHV08
Login Number: C4080435
Project ID (number): 1-214-04
Project ID (name): CHEVRON/#9-5542, Dublin, CA

ANALYTICAL RESULTS

Volatile Organics
Method: EPA 8020
Matrix: Aqueous

GTEL Sample Number	C4080435-01	C4080435-02	--	--	
Client ID	MW-9	MW-1	--	--	
Date Sampled	08/26/94	08/26/94	--	--	
Date Analyzed	08/28/94	08/28/94	--	--	
Dilution Factor	25.0	25.0	--	--	

Analyte	Reporting Limit	Units	Concentration:			
Benzene	0.5	ug/L	1700	5300	--	--
Toluene	0.5	ug/L	240	4900	--	--
Ethylbenzene	0.5	ug/L	410	610	--	--
Xylenes (total)	0.5	ug/L	1400	2900	--	--
TPH as GAS	50.	ug/L	12000	20000	--	--
BFB (Surrogate)	--	%	94.6	92.4	--	--

Notes:

Dilution Factor:

Dilution factor indicates the adjustments made for sample dilution.

EPA 8020:

"Test Methods for Evaluating Solid Waste, Physical and Chemical Methods, SW-846", Third Edition, Revision 1, US EPA November 1986. Bromofluorobenzene surrogate recovery acceptability limits are 62-129%. Modification for TPH as gasoline as per California State Water Resources Board LUFT Manual protocols, May 1988 revision.

GTEL ENVIRONMENTAL LABORATORIES, INC.

GTEL Client ID: SIE01CHV08
Login Number: C4080435
Project ID (number): 1-214-04
Project ID (name): CHEVRON/#9-5542, Dublin, CA

QUALITY CONTROL RESULTS

Volatile Organics
Method: EPA 8020
Matrix: Aqueous

Method Blank Results

QC Batch No: Q082794-5
Date Analyzed: 27-AUG-94

Analyte	Method: EPA 8020 Concentration: ug/L
Benzene	< 0.30
Toluene	< 0.30
Ethylbenzene	< 0.30
Xylenes (Total)	< 0.50
TPH as Gasoline	< 10.

Notes:

GTEL ENVIRONMENTAL LABORATORIES, INC.