

ALAMEDA COUNTY
HEALTH CARE SERVICES

AGENCY
DAVID J. KEARS, Agency Director



ENVIRONMENTAL HEALTH SERVICES
ENVIRONMENTAL PROTECTION (LOP)
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577
(510) 567-6700
FAX (510) 337-9335

REMEDIAL ACTION COMPLETION CERTIFICATION

StID 2320 - 1119 Greenville Road, Livermore, CA
(1-10K gallon diesel, 1-1K and 1-2K gallon gasoline, and
2-5K gallon diesel tanks removed on March 6, 1990)

March 10, 1997

Ms. Jean Galdeira
Eugene Caldeira Trust
7491 Mines Road
Livermore, CA 94550

Dear Ms. Caldeira:

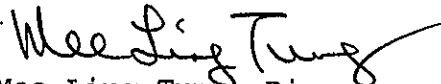
This letter confirms the completion of site investigation and remedial action for the underground storage tanks formerly located at the above-described location. Thank you for your cooperation throughout this investigation. Your willingness and promptness in responding to our inquiries concerning the former underground storage tanks are greatly appreciated.

Based on information in the above-referenced file and with the provision that the information provided to this agency was accurate and representative of site conditions, no further action related to the underground tank release is required.

This notice is issued pursuant to a regulation contained in Title 23, Section 2721(e) of the California Code of Regulations.

Please contact our office if you have any questions regarding this matter.

Sincerely,


Mee Ling Tung, Director

enclosure

cc: Chief, Division of Environmental Protection
Kevin Graves, RWQCB
Lori Casias, SWRCB (with attachment)
Cheryl Gordon, UST Cleanup Fund
files-ec (caldeira.13)

JAN 31 1997

CASE CLOSURE SUMMARY
Leaking Underground Fuel Storage Tank Program

I. AGENCY INFORMATION

Date: December 24, 1996

Agency name: **Alameda County-HazMat** Address: **1131 Harbor Bay Pkwy**
City/State/Zip: **Alameda, CA 94502** Phone: **(510) 567-6700**
Responsible staff person: **Eva Chu** Title: **Hazardous Materials Spec.**

II. CASE INFORMATION

Site facility name: **Gene Caldeira Grading & Paving**
Site facility address: **1119 Greenville Road, Livermore, CA**
RB LUSTIS Case No: **N/A** Local Case No./LOP Case No.: **2320**
URF filing date: **4/30/90** SWEEPS No: **N/A**

<u>Responsible Parties:</u>	<u>Addresses:</u>	<u>Phone Numbers:</u>
Jean Caldeira Eugene Caldeira Trust B	7491 Mines Road Livermore, CA 94550	510/443-0787

<u>Tank No:</u>	<u>Size in gal.:</u>	<u>Contents:</u>	<u>Closed in-place or removed?:</u>	<u>Date:</u>
1	10,000	Diesel	Removed	3/6/90
2	1,000	Gasoline	"	"
3	2,000	Gasoline	"	"
4	5,000	Diesel	"	"
5	5,000	Diesel	"	"

III. RELEASE AND SITE CHARACTERIZATION INFORMATION

Cause and type of release: **Unknown**
Site characterization complete? **YES**
Date approved by oversight agency: **11/18/96**
Monitoring Wells installed? **Yes** Number: **4**
Proper screened interval? **Yes**
Highest GW depth below ground surface: **33.35'** Lowest depth: **37.30'**
Flow direction: **NW**
Most sensitive current use: **Industrial (site is used by a grading and paving company and a landscaping business).**
Are drinking water wells affected? **No** Aquifer name: **Spring/Altamont Subbasins**
Is surface water affected? **No** Nearest affected SW name: **NA**
Off-site beneficial use impacts (addresses/locations): **None**
Report(s) on file? **YES** Where is report(s) filed? **Alameda County**

**1131 Harbor Bay Pkwy
Alameda, CA 94502**

97 JAN 31 PM 3:33

ENVIRONMENTAL PROTECTION

Treatment and Disposal of Affected Material:

<u>Material</u>	<u>Amount (include units)</u>	<u>Action (Treatment or Disposal w/destination)</u>	<u>Date</u>
Tank Piping	5 USTs	Erickson, in Richmond	3/6/90
Soil	~800 cy	Vasco Rd L.F. in Livermore	Sep/Oct 1992

Maximum Documented Contaminant Concentrations - - Before and After Cleanup

<u>Contaminant</u>	<u>Soil (ppm)</u>		<u>Water (ppb)</u>	
	<u>Before¹</u>	<u>After³</u>	<u>Before⁴</u>	<u>After⁵</u>
TPH (Gas)	ND	NA	4,800	70
TPH (Diesel)	35,000 ²	110	150,000	490
Benzene	0.22	ND	14	2.7
Toluene	0.58	ND	3.0	2.8
Ethylbenzene	0.96	ND	2.3	ND
Xylenes	7.0	ND	15	2.5
Oil & Grease	5,200	NA	NA	NA
Heavy metals				
Other				

- NOTE: 1 soil sample from diesel pit (tanks 4 & 5) at time of removal, 3/6/90
 2 soil sample from diesel pit at 13' bgs, 7/5/90
 3 confirmatory sidewall and/or bottom pit sample after overexcavation, 12/90
 4 highest historic groundwater concentration from monitoring wells
 5 recent groundwater concentration from monitoring wells (3/96 or 8/96)

Comments (Depth of Remediation, etc.):

See Section VII, Additional Comments, etc...

IV. CLOSURE

Does completed corrective action protect existing beneficial uses per the Regional Board Basin Plan? **Undetermined**
 Does completed corrective action protect potential beneficial uses per the Regional Board Basin Plan? **Undetermined**
 Does corrective action protect public health for current land use? **YES**
 Site management requirements: **None**
 Should corrective action be reviewed if land use changes? **YES**
 Monitoring wells Decommissioned: **No, pending site closure**
 Number Decommissioned: **0** Number Retained: **5**
 List enforcement actions taken: **None**
 List enforcement actions rescinded: **NA**

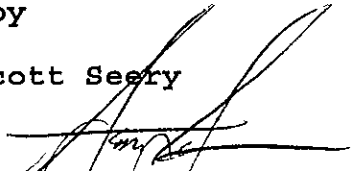
V. LOCAL AGENCY REPRESENTATIVE DATA

Name: **Eva Chu** Title: **Haz Mat Specialist**

Signature:  Date: **1/21/97**

Reviewed by

Name: **Scott Seery** Title: **Sr. Haz Mat Specialist**

Signature:  Date: **12/24/96**

Name: **Thomas Peacock** Title: **Supervisor**

Signature:  Date: **1-17-97**

VI. RWQCB NOTIFICATION

Date Submitted to RB: **1/22/97** RB Response: **Approved**

RWQCB Staff Name: **Kevin Graves** Title: **AWRCE**

Signature:  Date: **1/27/97**

VII. ADDITIONAL COMMENTS, DATA, ETC.

Five USTs (2 gasoline and 1 diesel [Tanks 1, 2, and 3] in a common pit, and 2 diesel tanks [Tanks 4 and 5] in separate common pit) were removed March 6, 1990. Soil samples were collected below each tank. Laboratory results did not indicate hydrocarbon contamination in the UST 1, 2, and 3 pit. (See Figs 1, 2 and 3, Table 1)

When tanks 4 and 5 (diesel) were pumped out, the liquid was "as thick as molasses". Therefore, TOG, in addition to TPHd and BTEX analyses, was also sought in the soil samples collected. Up to 17,000 ppm TPHd, 5,200 ppm TOG and low levels of BTEX were identified in samples collected from the diesel pit. (See Table 1)

On July 5, 1990 boring B-1 was drilled northwest of the former diesel tank pit to 49' bgs and converted into groundwater monitoring well MW-1. Soil samples collected at 20' and 30' bgs did not contain detectable TPH or BTEX. A water sample collected from B-1 did not contain detectable TPH or BTE, but did show 1.1 ppb xylenes. (See Fig 5)

It appeared that the diesel tank pit was left open since the tanks were removed. The pit was resampled on 7/30/90. The NE corner of the pit contained up to 35,000 ppm TPHd at 13' bgs. The SE corner contained 1,700 ppm TPHd. Both corners were overexcavated. Confirmatory soil samples revealed that the SE corner still contained 1,700 ppm TPHd at 24' bgs and the NE corner 11,000 ppm TPHd at 24' bgs. BTEX were not sought. (See Fig 4, Table 2)

The NE corner was overexcavated to 37' bgs where a "hard pan clay layer" was encountered. A soil sample collected on August 28, 1990 from 37' bgs contained 20,000 TPHd, the only analysis performed. Additional excavation below 37' bgs was not attempted to avoid penetration of the clay layer (a potential aquitard). (See Table 2)

Yet, excavation resumed in December 1990. A ramp was dug so that the excavator could reach the expected excavation depth of 39'. Confirmatory sidewall and bottom samples (Sample 1 through 8) contained a maximum of 110 ppm TPHd. BTEX was sought but not identified. (See Figs 5 and 6, Table 3)

It appears the diesel release migrated straight down from the east end of both tanks. There was little lateral migration (<10') of contaminants visible in the excavation wall. The elevated concentration of diesel directly above the clay pan may indicate some accumulation of product at that depth. The series of excavations removed most of the hydrocarbon impacted soil. The clay layer was sampled to determine soil permeability. A hydraulic conductivity of 7.04×10^{-8} cm/sec was determined.

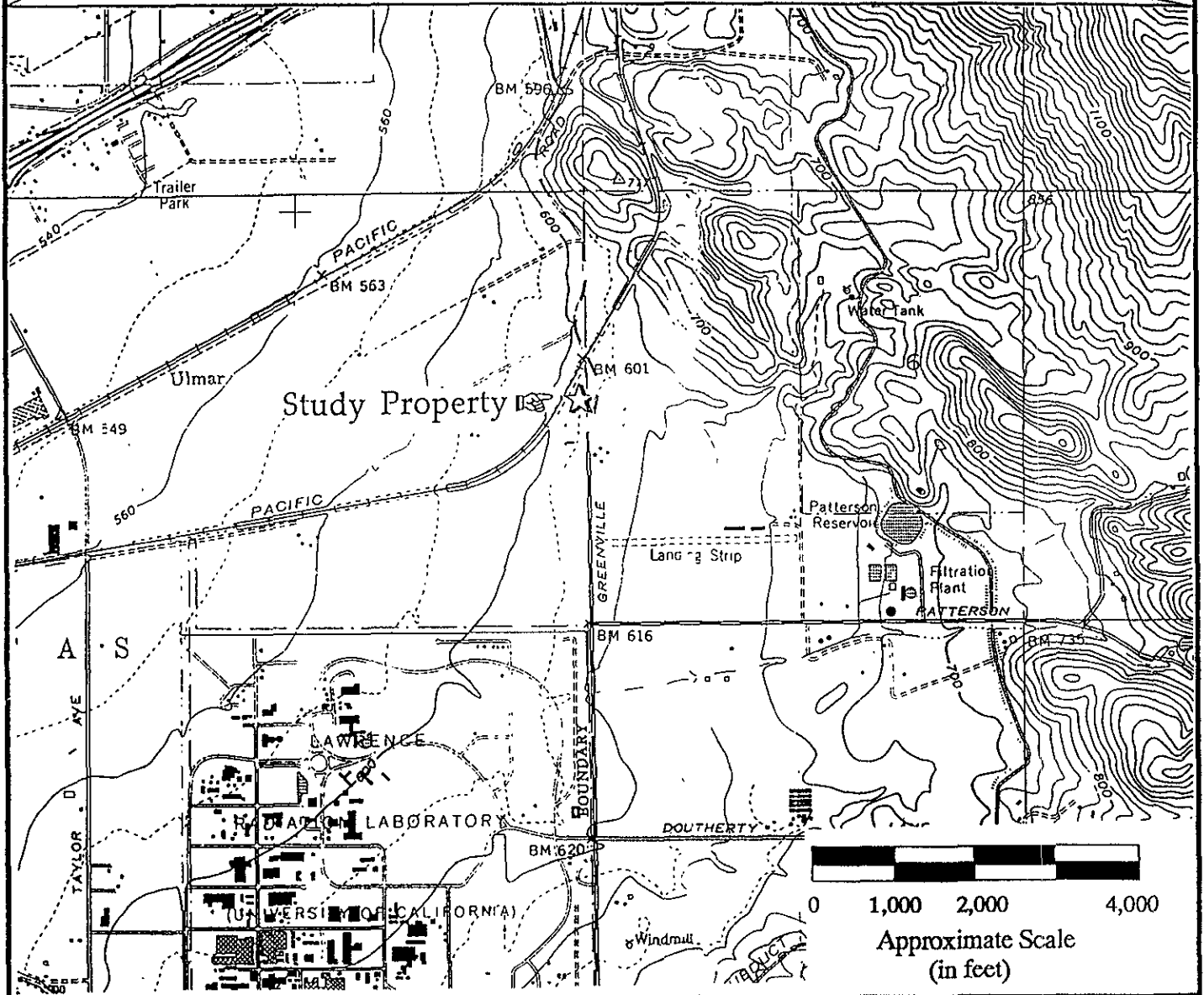
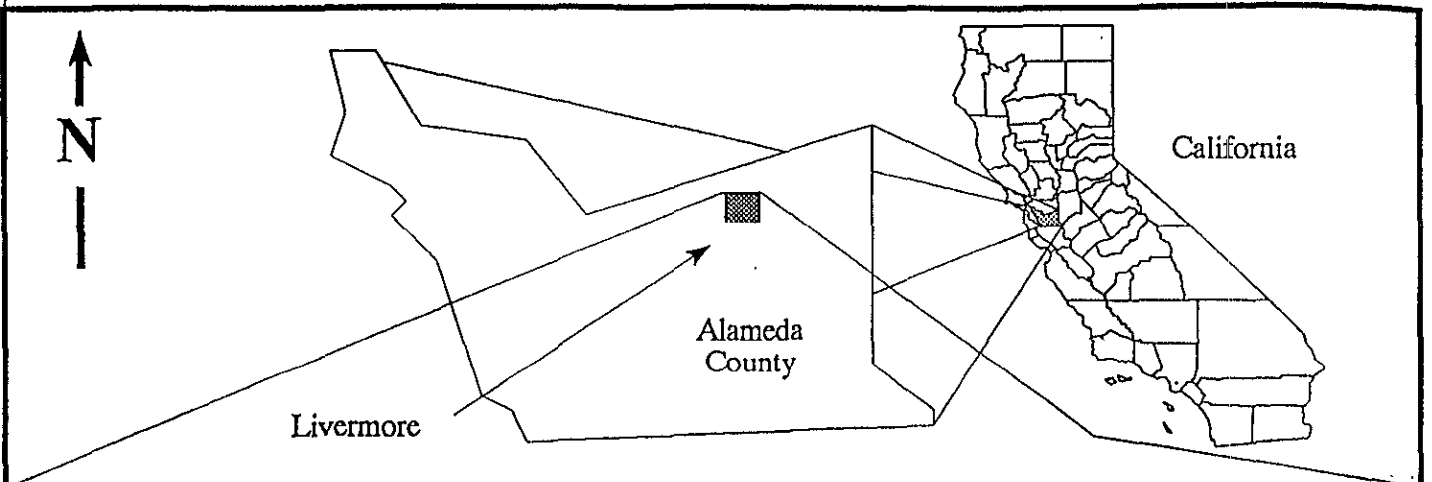
In September 1993 two additional wells, MW-2 and MW-3, were installed to verify groundwater flow direction. These wells were selected to surround the former UST locations. Three soil samples were collected from each boring (at 15, 25, and 35' bgs) for TPHd and BTEX analysis. None were detected. However groundwater from well MW-2 contained up to 21,000 ppb TPHd (see Fig 7, Tables 4 & 5). After nine consecutive quarters of sampling, TPHd concentration ranged from 92 to 150,000 ppb in well MW-2. PNAs were not detected during the October 1994 sampling event. Low levels of TPHd (160 to 570 ppb) and BTEX have been identified in well MW-1. (See Table 6)

In March 1996 two additional wells, MW-4 and MW-5, were installed up-gradient and cross-gradient, respectively, of the former diesel tank excavation. These wells did not contain detectable levels of TPHg, TPHd or BEX. Trace levels of toluene were identified. (See Fig 7, Table 7 and 8)

The most recent sampling events (March and August 1996) show TPHd levels at 140 to 490 ppb in well MW-2. It appears that residual hydrocarbons within the clay hard-pan may serve as a long-term source for affecting groundwater in the immediate area near the UST 4 and 5 excavation. Residual soil contamination, however, is not widespread at the site. Wells MW-1 and MW-3, located ~60' downgradient of well MW-2 have not detected contamination in excess of 360 ppb TPHg, 570 ppb TPHd, and 14 ppb benzene. An onsite "domestic" well, located ~275' northwest of the former UST pits, provides water for the bathrooms and handwashing facility (see Fig 7). According to Mrs. Pat Caldeira, a designated responsible party, the water has high alkalinity and mineral content and is not potable. "Non-Potable" signs are also posted on all faucets. The site uses bottled water for all other purposes. It appears that contamination at the site, at a depth of >33' bgs, should not pose a risk to human health or the environment since there are no potential receptors.

In summary, case closure is recommended because:

- o the leaking USTs and ongoing sources have been removed;
- o the site has been adequately characterized;
- o the dissolved plume is not migrating;
- o no water wells, surface water, or other sensitive receptors are likely to be impacted; and,
- o the site presents no significant risk to human health or the environment.



<p>PARKER Environmental Services</p>	<p>190 East 7th Street Pittsburg, CA 94565 (510) 439-1024</p>	<p>Figure 1- Site Location Map Caldeira Grading and Paving 1119 Greenville Road Livermore, CA</p>
<p>Project 101-04</p>		<p>4/94</p>

Gene Grading and Paving
1119 Greenville Rd.
Livermore, CA

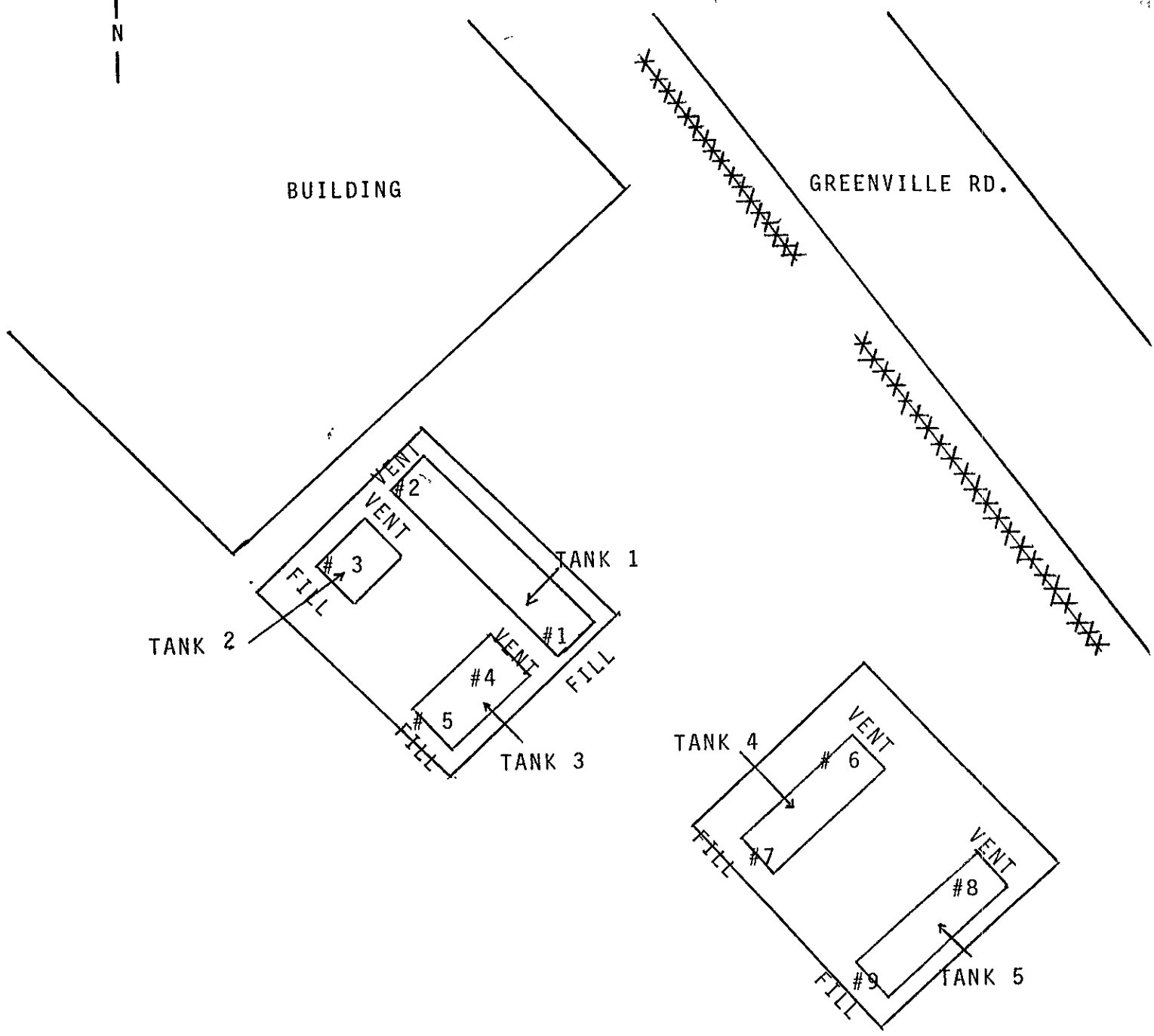
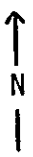
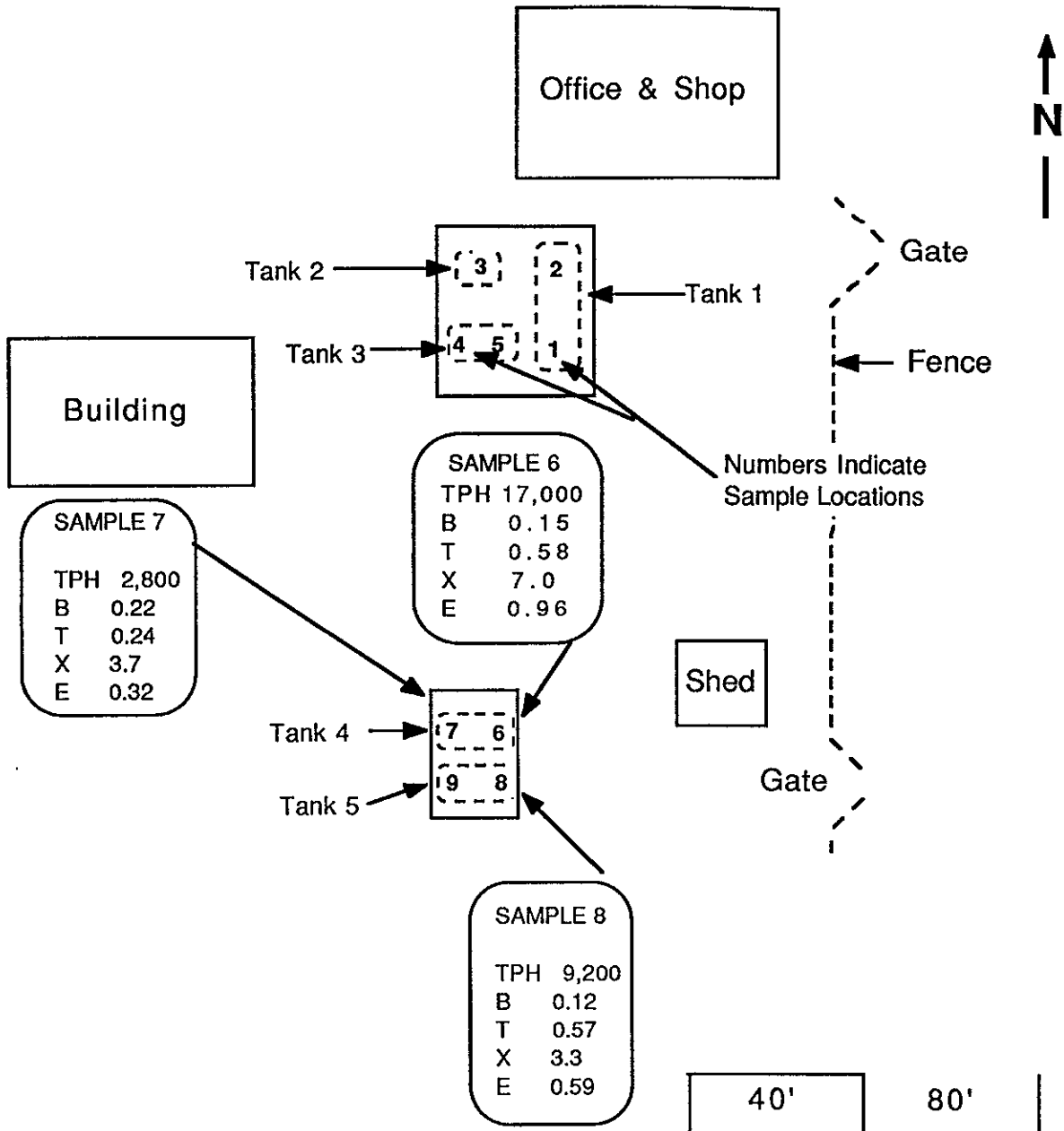


FIG 2

Sample numbers / locations



Numbers Indicate Sample Locations

40' 80'
Approximate Scale
(in feet)

KEY:
 TPH = Total Petroleum Hydrocarbons
 B = Benzene
 T = Toluene
 X = Xylenes
 E = Ethyl Benzene

Note: All amounts are in parts per million (ppm)

PARKER Environmental Services	4185 Rialto Court Pittsburg, CA 94565 (415) 439-1024
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GENE CALDERIA GRADING & PAVING, INC.
 1119 Greenville Road, Livermore, CA
 Figure 3 - Sample Locations

Key:



Existing Tank Excavation



Trench



Sample Point, Non-Detect

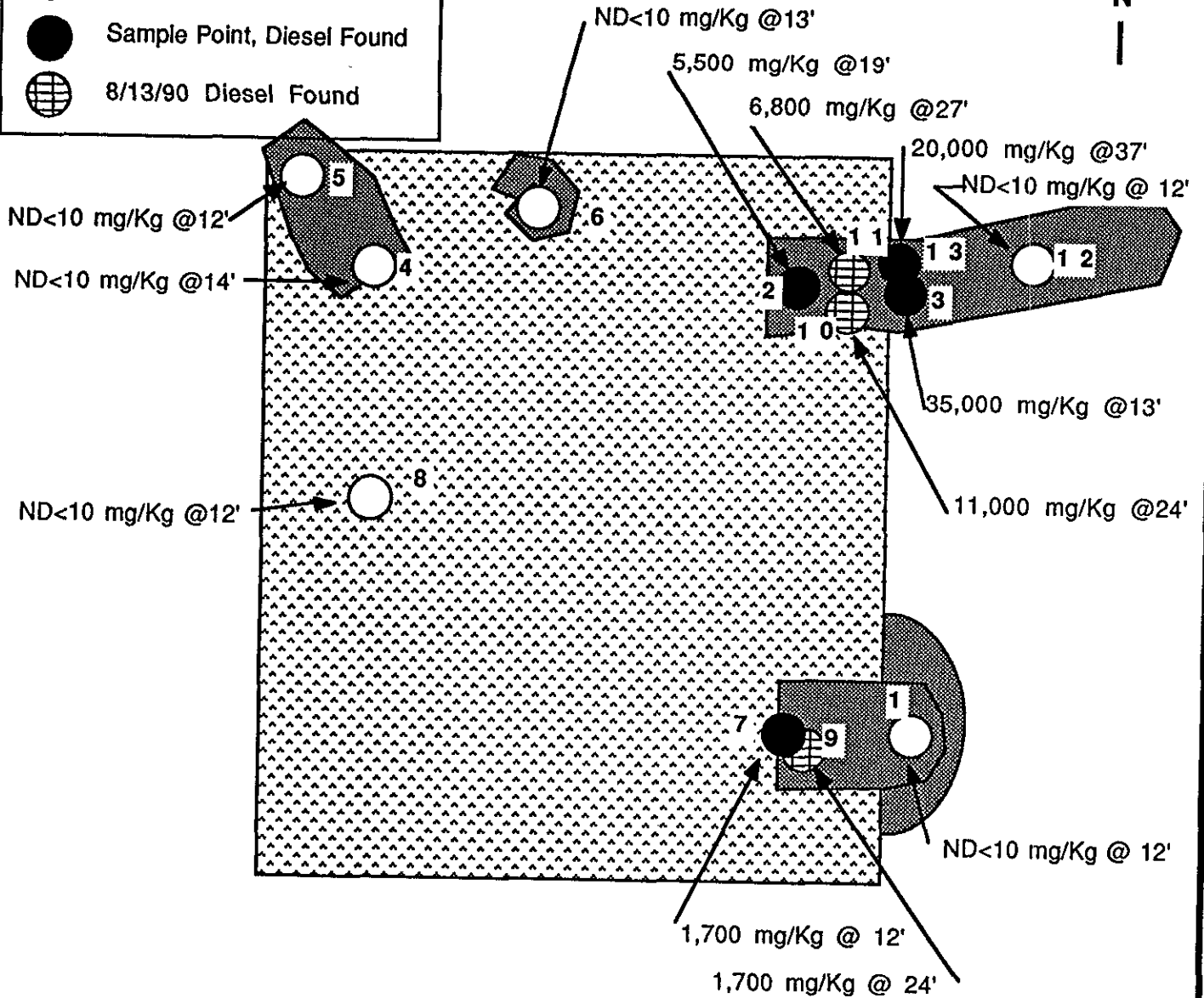


Sample Point, Diesel Found



8/13/90 Diesel Found

*samples 1-8 out of backhoe bucket
9-12 second sampling*



No Scale Implied

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Pittsburg, CA 94565
(415) 349-1024

GENE CALDERIA PAVING & GRADING
1119 Greenville Rd, Livermore, CA

Figure 4 Sample Locations

UST 4 and 5 pit

10/90

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Pittsburg, CA. 94565
(415)439-1024

GENE CALDERIA GRADING & PAVING, INC.
1119 Greenville Road, Livermore, CA.
Figure #5 Excavation Sampling Locations

UST 4 and 5 pit

1/91



Building

Ground-water flow
direction

2" monitoring well

B-1 (mw-1)

Original
Excavation
Boundary

Ramp

Shed

Soil
Pile

P-2

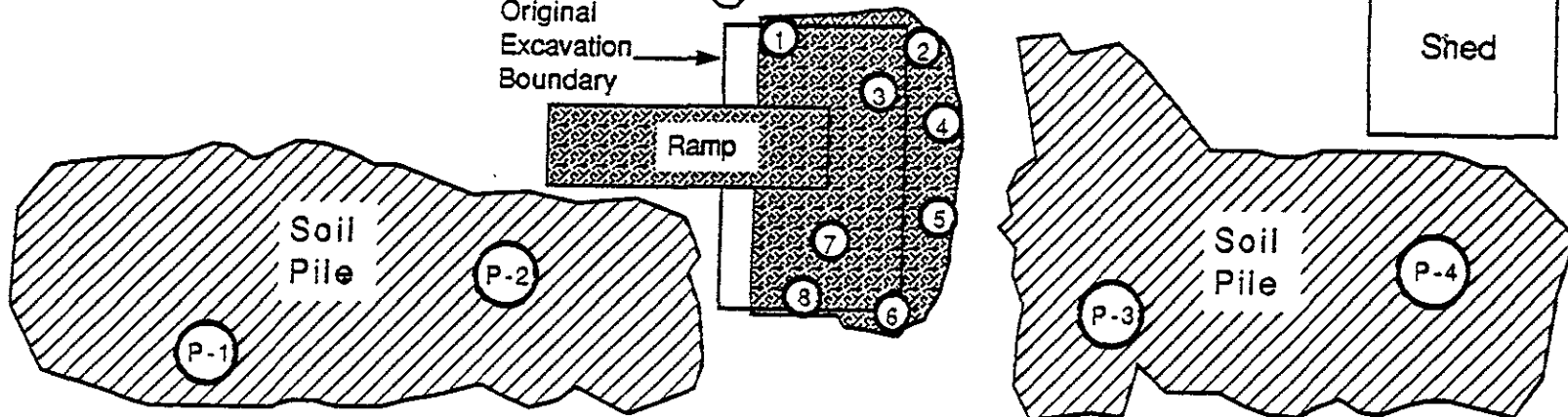
Soil
Pile

P-4

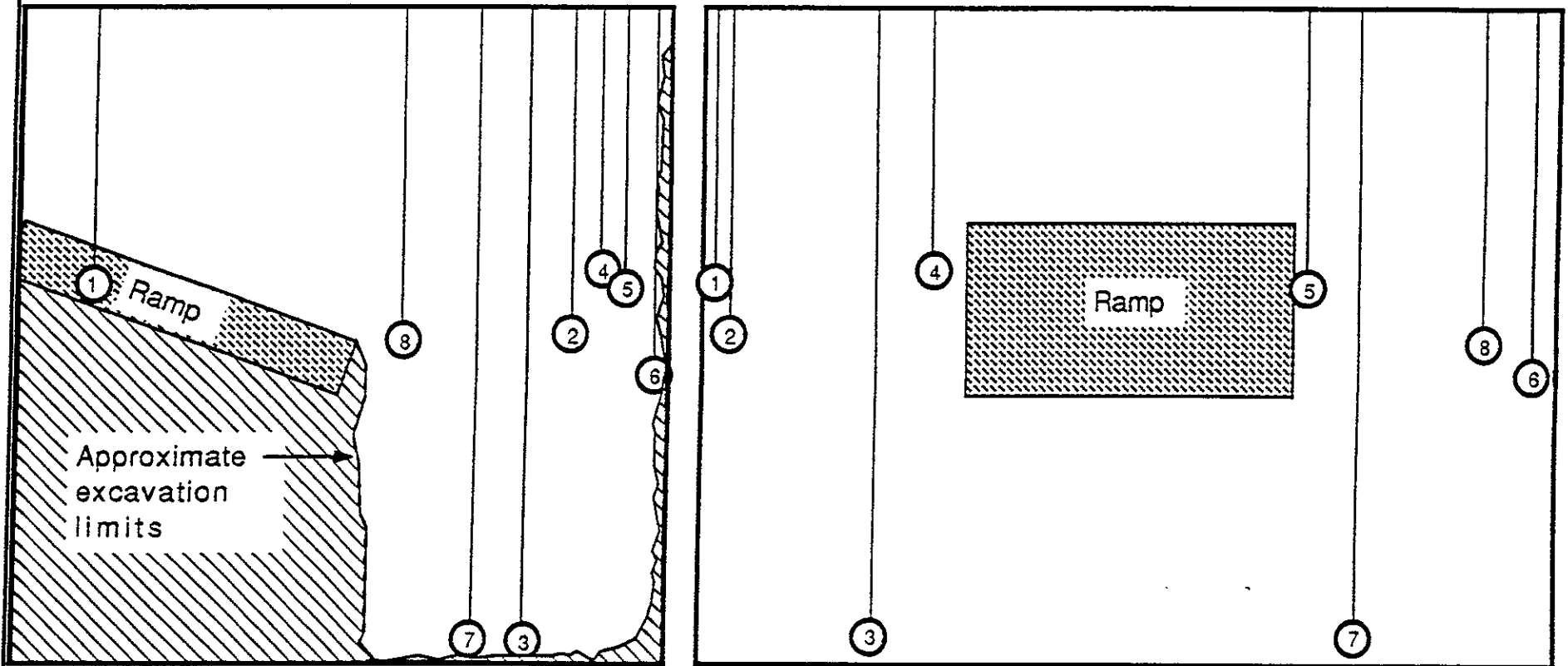
Property Boundary

○ = Sample Point

20' 40'
Approximate Scale
(in feet)



Ground Surface



End View Looking North

Side View Looking East

○ = Sampling Point



Approximate Scale
(in feet)

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GENE CALDERIA GRADING & PAVING, INC.

1119 Greenville Road, Livermore, CA

Figure 2 - Excavation Plan Views

UST 4 and 5 pit

Water Supply Well, approx. 200'

KEY:

MW-1
571.27 = Water Elevation (feet MSL)

Former gas tanks

Office

Former diesel tank



GREENVILLE ROAD

Shop

MW-1
570.92

MW-5
571.05

Former Diesel Underground Tanks

Groundwater flow direction

Office

MW-3
570.92

MW-2
571.19

MW-4
571.55

Wells measured on October 17, 1996

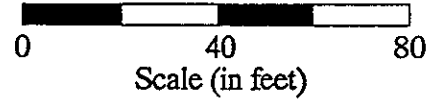
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Environmental
Services

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Pittsburg, CA 94565
(510) 439-1024

CALDEIRA GRADING & PAVING

1119 Greenville Road, Livermore, California

Figure 57- Water Elevations & Gradient
10/96



Location of Site Features Approximate



90 APR 12 AM 10:55

LOG NO.: 8418
 DATE SAMPLED: 3/6/90
 DATE RECEIVED: 3/6/90
 DATE EXTRACTED: 3/13/90, 3/17/90, and 3/21/90
 DATE ANALYZED: 3/15/90, 3/20/90, and 3/22/90
 DATE REPORTED: 3/29/90

CUSTOMER: Butch's Excavating
 REQUESTER: Carolin Blair
 PROJECT: Gene Grading and Paving, 1119 Greenville Road, Livermore, CA

Sample Type: Soil

Method and Constituent	Units	No.1		No.2		No.3	
		Concentration	Detection Limit	Concentration	Detection Limit	Concentration	Detection Limit
DHS Method:							
Total Petroleum Hydrocarbons as Diesel	mg/kg	< 3	3	< 3	3		
Total Petroleum Hydrocarbons as Gasoline	mg/kg					< 0.7	0.7
Modified EPA Method 8020:							
Benzene	mg/kg	< 0.1	0.1	< 0.1	0.1	< 0.1	0.1
Toluene	mg/kg	< 0.1	0.1	< 0.1	0.1	< 0.1	0.1
Xylenes	mg/kg	< 0.6	0.6	< 0.6	0.6	< 0.6	0.6
Ethylbenzene	mg/kg	< 0.2	0.2	< 0.2	0.2	< 0.2	0.2

Sample Type: Soil

Method and Constituent	Units	No.4		No.5		No.6	
		Concentration	Detection Limit	Concentration	Detection Limit	Concentration	Detection Limit
DHS Method:							
Total Petroleum Hydrocarbons as Diesel	mg/kg					17,000	30
Total Petroleum Hydrocarbons as Gasoline	mg/kg	< 0.7	0.7	< 0.7	0.7		
Modified EPA Method 8020:							
Benzene	mg/kg	< 0.1	0.1	< 0.1	0.1	0.15	0.1
Toluene	mg/kg	< 0.1	0.1	< 0.1	0.1	0.58	0.1
Xylenes	mg/kg	< 0.6	0.6	< 0.6	0.6	7	0.6
Ethylbenzene	mg/kg	< 0.2	0.2	< 0.2	0.2	0.96	0.2

cont. Table 1

LOG NO.: 8418
 DATE SAMPLED: 3/6/90
 DATE RECEIVED: 3/6/90
 DATE EXTRACTED: 3/13/90, 3/17/90, and 3/21/90
 DATE ANALYZED: 3/15/90, 3/20/90, and 3/22/90
 DATE REPORTED: 3/29/90
 PAGE: Two

Sample Type: Soil

Method and Constituent	Units	No. 7		No. 8		No. 9	
		Concentration	Detection Limit	Concentration	Detection Limit	Concentration	Detection Limit
DHS Method:							
Total Petroleum Hydrocarbons as Diesel	mg/kg	2,800	20	9,200	20	< 3	3
Modified EPA Method 8020:							
Benzene	mg/kg	0.22	0.1	0.12	0.1	< 0.1	0.1
Toluene	mg/kg	0.24	0.1	0.57	0.1	< 0.1	0.1
Xylenes	mg/kg	3.7	0.6	3.3	0.6	< 0.6	0.6
Ethylbenzene	mg/kg	0.32	0.2	0.59	0.2	< 0.2	0.2
Standard Method 503E, Hydrocarbons:							
Oil and Grease	mg/kg	5,200	50			< 50	50



 Louis W. DuPuis
 Quality Assurance/Quality Control Manager

Table 2

Samples Collected on July 30, 1990 from tank excavation pit

<u>Sample Location</u>	<u>TPH*</u>	<u>Sample Number on Figure 5</u>
1. SE@ 12'	ND<10	1
2. NE@ 19'	5,500	2
3. NE@ 13'	35,000	3
4. NW@ 14'	ND<10	4
5. NW@ 12'	ND<10	5
6. N @ 13'	ND<10	6
7. SE @ 12'	1,700	7
8. W @ 12'	ND<10	8

Samples Collected on August 13, 1990 from tank excavation pit.

1. SE @ 24'	1,700	9
2. NE @ 24'	11,000	10
3. NE @ 27'	6,800	11
4. NE @ 15'	ND<10	12 (trenched away from excavation)

Sample Collected on August 28, 1990 from tank excavation pit.

<u>Sample Location</u>	<u>TPH*</u>	<u>Sample Number on Figure 5</u>
1. NE @ 37'	20,000	13

* TPH measurements are in parts per million (mg/Kg)

A sample was also collected for a permeability test at a depth of 37.5 feet, directly beneath Sample 1 taken on August 28. The analysis was conducted by Woodward-Clyde Consultants of Pleasant Hill, California. The permeability was calculated to be 7.04×10^{-8} cm/sec.

transport to the state certified hazardous materials testing laboratory. Sample locations are shown in Figure 1 - Excavation Sampling Locations, and Figure 2 - Excavation Plan Views.

A water sample was collected from the ground water monitoring well using a teflon bailer. Fifteen gallons of water was purged from the well with a bailer prior to collecting the sample. Three 40 milliliter vials were filled from the bailer and capped leaving no air space. The water sample was labeled and placed on ice for transport to the state certified hazardous materials testing laboratory. Sample results are listed in Table 1 below.

The samples were analyzed for Total Petroleum Hydrocarbons (TPH) as ~~gasoline~~^{diesel}, Benzene, Toluene, Ethylbenzene and Xylenes (BTEX) using EPA Methods 8015, 8030 and 8020. As shown in Table 1, most samples were below the detection limits for the specific materials tested. Samples 6 and 8 showed 11 and 110 parts per million TPH as diesel. Both samples were from the wall of the excavation and not the bottom. BTEX was not analyzed in these samples. The well water sample (W-1) showed non-detect for TPH but measurable amounts of BTEX. Copies of the laboratory analysis sheets and chain of custody forms are appended to this report.

TABLE 3
Laboratory Analysis Results
Gene Calderia Grading & Paving
1119 Greenville Road, Livermore, CA
Samples Collected December 20, 1990

Sample -Depth, Location	TPH*	Benzene	Toluene	Ethyl Benzene	Xylenes
1 - 17', bottom	ND < 10	N/A	N/A	N/A	N/A
2 - 20', side	ND < 10	N/A	N/A	N/A	N/A
3 - 39', bottom	ND < 10	ND < 3	ND < 3	ND < 3	ND < 3
4 - 16' side	ND < 10	N/A	N/A	N/A	N/A
5 - 17' side	ND < 10	ND < 3	ND < 3	ND < 3	ND < 3
6 - 22' side	11	N/A	N/A	N/A	N/A
7 - 39' bottom	ND < 10	ND < 3	ND < 3	ND < 3	ND < 3
8 - 21' side	110	N/A	N/A	N/A	N/A
W-1 - 39' (mg/l)	ND < 1	(ug/l) 10	0.4	10	18

ND = Non Detectable N/A = Not Applicable, sample not analyzed for this constituent.*

TPH is in parts per million (mg/Kg), Benzene, Toluene, Ethyl Benzene and Xylenes are in parts per billion (ug/Kg)

Parker Environmental Services, 4185 Rialto Court, Pittsburg, CA 94565-6116
Phone (415) 439-1024 Fax (415) 439-2566

Table # 4
 Soil Sample Analysis Results
 Caldeira Grading & Paving
 1119 Greenville Road, Livermore, CA
 Samples Obtained September 16, 1993

Sample #	TPH-d	Benzene	Toluene	Ethylbenzene	Xylenes
B-1-15	ND<1	ND<0.005	ND<0.005	ND<0.005	ND<0.005
B-1-25	ND<1	ND<0.005	ND<0.005	ND<0.005	ND<0.005
B-1-35	ND<1	ND<0.005	ND<0.005	ND<0.005	ND<0.005
B-2-15	ND<1	ND<0.005	ND<0.005	ND<0.005	ND<0.005
B-2-25	ND<1	ND<0.005	ND<0.005	ND<0.005	ND<0.005
B-2-35	ND<1	ND<0.005	ND<0.005	ND<0.005	ND<0.005

ND means not detected. Sample results are in mg/kg, or parts per million

B. Groundwater Samples

Laboratory analysis results of groundwater samples collected on September 22, 1993, showed detectable amounts of TPH-d in all three wells, detectable amounts of benzene in MW-1. Toluene was not detected in all three wells, ethylbenzene was only found in MW-2 and xylenes were found in MW-1 and MW-2. TPH as gasoline was detected in MW-1 and MW-2, with the gasoline range compounds significant in MW-1.

Table # 5
 Groundwater Sample Analysis Results
 Caldeira Grading & Paving
 1119 Greenville Road, Livermore, CA
 Samples Obtained September 22, 1993

Sample #	TPH-d	TPH-g	Benzene	Toluene	Ethylbenzene	Xylenes
MW-1	550a,b	260	6.6	ND<0.5	ND<0.5	9.2
MW-2	21000c,d	710	ND<0.5	ND<0.5	2.3	9.8
MW-3	120b	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5

ND means not detected. Results are in µg/L or parts per billion.

a) gasoline range compounds are significant. b) diesel range compounds are significant; no recognizable pattern. c) unmodified or weakly modified diesel is significant. d) lighter than water immiscible sheen is present.

Two monitoring wells (MW-4, MW-5) were installed north and east of MW-2 on March 15, 1996, to determine if petroleum hydrocarbons were either coming from off site or had significantly spread beyond MW-2. Sample analysis of soil and groundwater samples from MW-4 and MW-5 showed no petroleum hydrocarbons or constituents detected. Contamination patterns from MW-1, MW-2 and MW-3 followed previous sampling events. Table 2 shows historical sample analysis results.

Table 2 Groundwater Sampling Analysis Results
 Caldeira Grading and Paving, 1119 Greenville Road, Livermore

Well; Date	TPH-g	TPH-d	Benzene	Toluene	Ethylbenzene	Xylenes
1; 9/22/93	260	550	6.6	ND<0.5	ND<0.5	9.2
1; 1/28/94	360	570	12	ND<0.5	ND<0.5	1.6
1; 4/11/94	210	510	4.2	ND<0.5	ND<0.5	6.3
1; 7/5/94	300	550	14	ND<0.5	ND<0.5	15
1; 10/17/94	160	390	5.6	ND<0.5	ND<0.5	6.1
1; 1/17/95	91	280	7.2	ND<0.5	ND<0.5	8.8
1; 4/4/95	100	260	3.9	ND<0.5	ND<0.5	4.3
1; 7/25/95	120	220	3.5	ND<0.5	ND<0.5	4.4
1; 11/16/95	ND<50	160	2.1	ND<0.5	ND<0.5	1.8
1; 3/21/96	100	390	3.7	2.9	ND	3.3
1; 8/5/96	70	180	2.7	ND<0.5	ND<0.5	2.5
2; 9/22/93	710	21,000	ND<0.5	ND<0.5	2.3	9.8
2; 1/28/94	620	13,000	ND<0.5	ND<0.5	ND<0.5	1.9
2; 4/11/94	190	14,000	ND<0.5	ND<0.5	ND<0.5	0.68
2; 7/5/94	99	330	ND<0.5	ND<0.5	ND<0.5	ND<0.5
2; 10/17/94	ND<50	97	ND<0.5	ND<0.5	ND<0.5	ND<0.5
2; 1/17/95	ND<50	230	ND<0.5	ND<0.5	ND<0.5	ND<0.5
2; 4/4/95	520	40,000	ND<0.5	ND<0.5	ND<0.5	6.2
2; 7/25/95	60	130	ND<0.5	ND<0.5	ND<0.5	1.3
2; 11/16/95	4,800	150,000	ND<0.5	ND<0.5	ND<0.5	3.6
2; 3/21/96	ND<50	140	ND<0.5	0.73	ND<0.5	ND<0.5
2; 8/5/96	ND<50	490	ND<0.5	ND<0.5	ND<0.5	ND<0.5
3; 9/22/93	ND<50	120	ND<0.5	ND<0.5	ND<0.5	ND<0.5
3; 1/28/94	ND<50	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5
3; 7/5/94	ND<50	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5
3; 4/11/94	ND<50	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5
3; 10/17/94	ND<50	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5
3; 1/17/95	ND<50	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5
3; 7/25/95	ND<50	ND<50	ND<0.5	ND<0.5	ND<0.5	1.4
3; 11/16/95	ND<50	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5
3; 3/21/96	ND<50	ND<50	ND<0.5	2.8	ND<0.5	ND<0.5
4; 3/21/96	ND<50	ND<50	ND<0.5	1.9	ND<0.5	ND<0.5
4; 8/5/96	ND<50	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5
5; 3/21/96	ND<50	ND<50	ND<0.5	3.0	ND<0.5	ND<0.5
5; 8/5/96	ND<50	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5
detect. limit	50 µg/L	50 µg/L	0.5 µg/L	0.5 µg/L	0.5 µg/L	0.5 µg/L

TPH and BTEX are in parts per billion, or µg/L.

All samples were ND for all 65 compounds from the EPA Method 8270 analysis, which includes PNAs, in October, 1994.

Table #7
Caldeira Grading and Paving
1119 Greenville Road, Livermore, California
Boreholes MW-4 and MW-5
Soil Sample Analytical Results
Samples Collected March 15, 1996

Sample I.D.	TPH-gas	TPH-diesel	benzene	toluene	ethylbenzene	xylenes
B4@35.5-36	ND	ND	ND	ND	ND	ND
B4@40.5-41	ND	ND	ND	ND	ND	ND
B4@45.5-46	ND	ND	ND	ND	ND	ND
B5@35.5-36	ND	ND	ND	ND	ND	ND
B5@40.5-41	ND	ND	ND	ND	ND	ND
B5@45.5-46	ND	ND	ND	ND	ND	ND
detect. limit	1.0 mg/Kg	1.0 mg/Kg	5.0 µg/Kg	5.0 µg/Kg	5.0 µg/Kg	5.0 µg/Kg

ND = not detected

Groundwater Sample Analytical Results

Groundwater samples were obtained from the wells on March 21, 1996, and analyzed at the lab on March 22, 1996. The samples were analyzed for TPH-g, TPH-d and BTEX. The results of these analyses are summarized in Table 5.

Table #6
Caldeira Grading and Paving
1119 Greenville Road, Livermore, California
Groundwater Sample Analytical Results
Groundwater Sampled March 21, 1996

Sample I.D.	TPH-gas	TPH-diesel	benzene	toluene	ethylbenzene	xylenes
MW-1	100	390	3.7	2.9	ND	3.3
MW-2	ND	140	ND	0.73	ND	ND
MW-3	ND	ND	ND	2.8	ND	ND
MW-4	ND	ND	ND	1.9	ND	ND
MW-5	ND	ND	ND	3.0	ND	ND
detect. limit	50 µg/L	50 µg/L	0.5 µg/L	0.5 µg/L	0.5 µg/L	0.5 µg/L

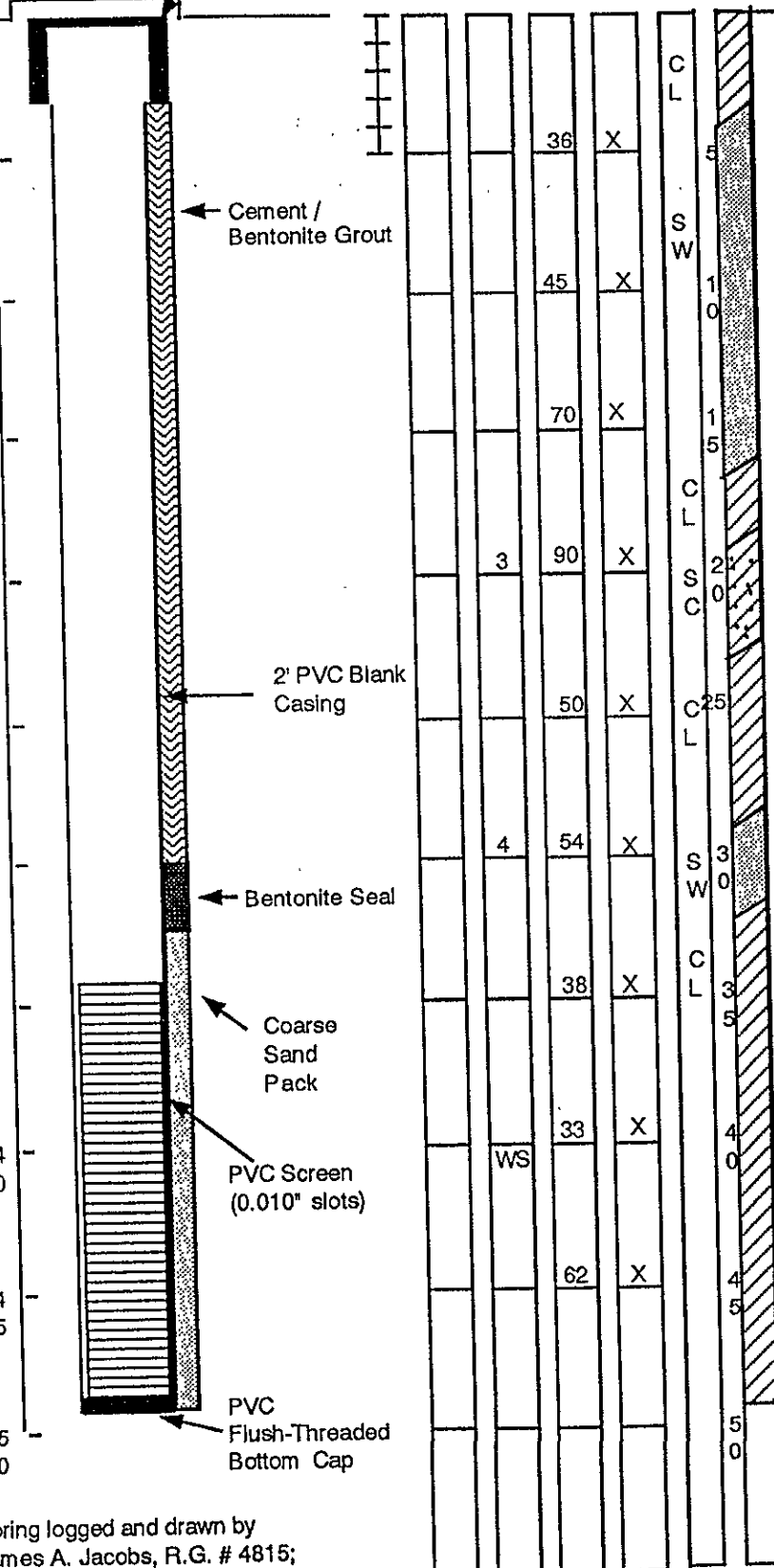
µg/L = ppb (parts per billion) ND = not detected

WELL CONSTRUCTION DETAIL

Gene Calderia Grading & Paving, Inc.
 1119 Greenville Rd., Livermore, CA
 Boring B-1, Drilled 7/5/90
 Method: 8" Hollow Stem Auger
DESCRIPTION

Depth in feet

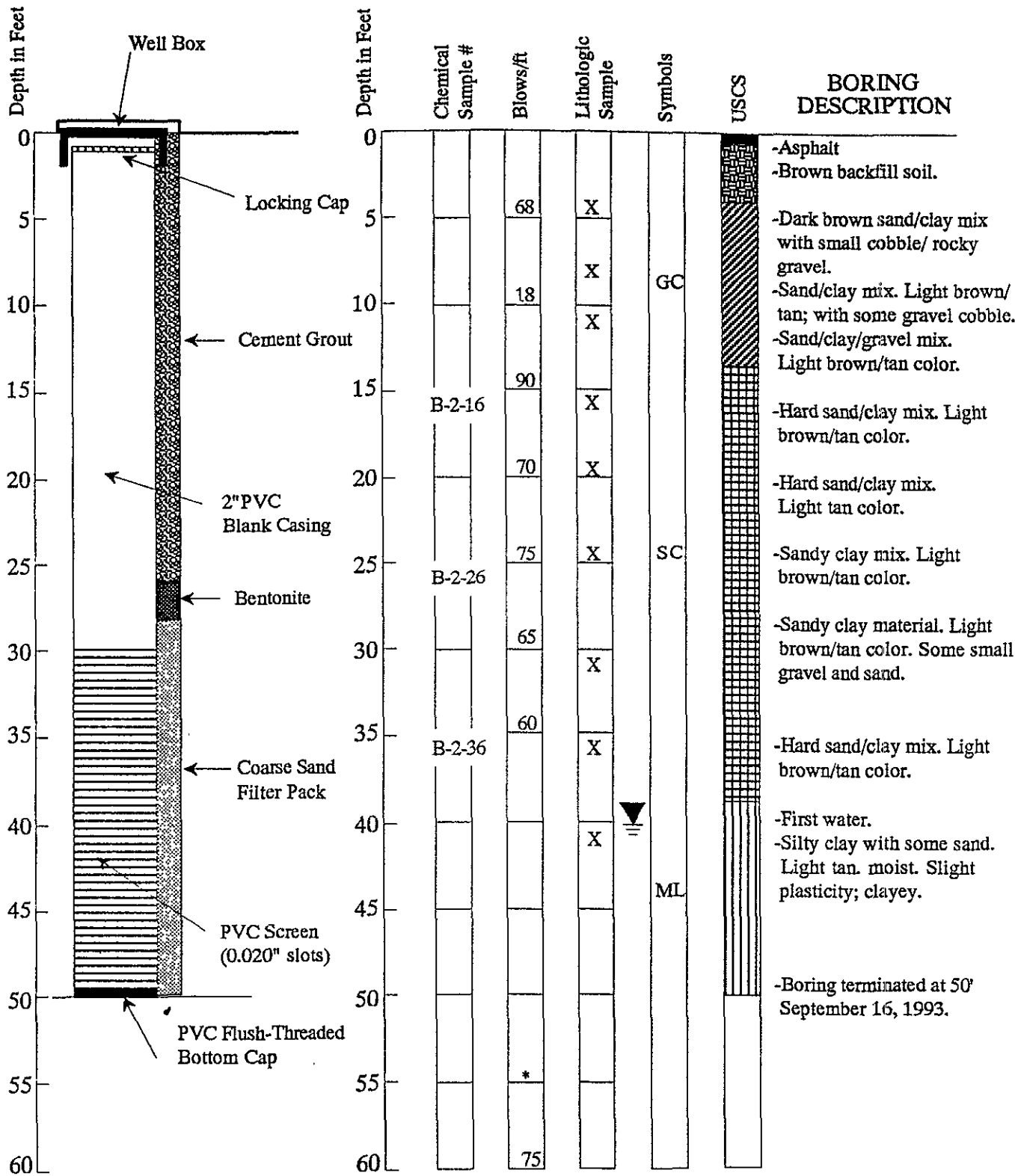
0
5
10
15
20
25
30
35
40
45
50



Boring logged and drawn by
 James A. Jacobs, R.G. # 4815;

PARKER
Environmental Services

4185 Rialto Court
 Pittsburg, CA 94565
 (415) 439-1024



*50 blows failed to yield a 6" sample

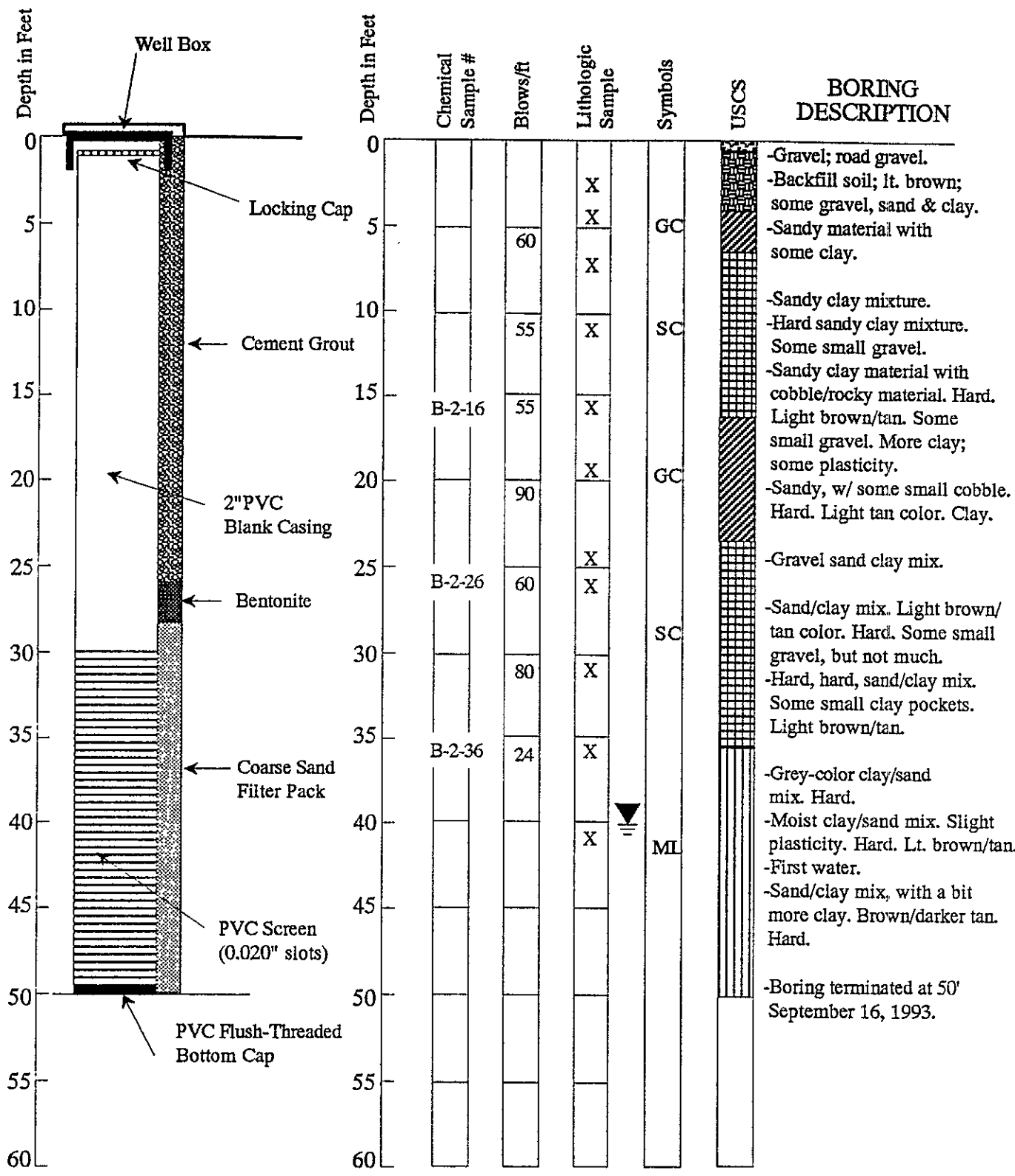
PARKER
Environmental
Services

Project 101-03

190 East 7th Street
Pittsburg, CA 94565
(510) 439-1024

CALDEIRA PAVING AND GRADING
1119 Greenville Road, Livermore, CA
MW-2 Bore Log and
Well Construction Details

10/93



*50 blows failed to yield a 6" sample

PARKER Environmental Services	190 East 7th Street Pittsburg, CA 94565 (510) 439-1024	CALDEIRA PAVING AND GRADING 1119 Greenville Road, Livermore, CA MW-3 Bore Log and Well Construction Details
Project 101-03	10/93	



A GROUND WATER CONSULTANCY

BOREHOLE LITHOLOGIC LOG

BOREHOLE No. MW-4 Sheet 1 of 2

Project No.: _____	Date: <u>03/15/96</u>	Drilling Co. <u>V & W Drilling</u>	Drill Model <u>Mobil B-61</u>
Client: <u>Parker Environmental Services, Inc.</u>		Drilling Method <u>HSA</u>	Borehole Diameter <u>9.25-in</u>
Location: <u>Calderia Grading and Paving</u>		Ground Surface Elevation <u>unknown</u>	Datum: <u>ground surface</u>
<u>1119 Greenville Road, Livermore, California</u>		Borehole MW-4 was completed as a monitoring well MW-4	
Logged by: <u>GDL</u>	Driller: <u>Robert Vickery</u>		

Water Level				
Time				
Date				

Sampling Blowcounts	PID/FID HNU/OVA reading	Depth test	Sample	Soil Sample Number	Graphic Soil Symbol	USCS Soil Symbol
		1				GC
		2				CL
		3				ML
		4				
39		5	■			
50		6	■			
		7				
		8				
		9				SM
17		10	■			
23		11	■			
26		12				
		13				
		14				
20		15	■			
25		16	■			ML
30		17				
		18				
		19				
29		20	■			SM
75		21	■			
3		22				
		23				
		24				
		25	■			SM

Field Soil Description

Dark brown 10YR 4/3, clayey sandy gravel, pebbles to 25 mm (Fill).

Light Olive Brown 2.5Y 5/4 sandy stiff clay. No odor.

Light Olive Brown 2.5Y 5/4 clayey silt. No odor.

Neat Cement Grout

Yellowish brown 10YR 5/4, silty fine sand. No odor.

Light olive brown 2.5Y 5/6, silty fine to medium sand. No odor.

Light brownish gray 2.5Y 7/2, stiff clayey silt. No odor.

10 to 20 mm caliche nodules.

Light brownish gray 2.5Y 7/2, silt fine to medium sand, well indurated. Intense fracturing. Fracture surfaces of well indurated sand coated calcium carbonate, 0.25 mm. Soft caliche horizon. No Odor.

Hard caliche horizon.

Hard caliche horizon to 6 inches thick.

Light brownish gray 2.5Y 7/2, silt fine to medium sand.

2-inch PVC casing and screen.

Bentonite Seal



A GROUND WATER CONSULTANCY

BOREHOLE LITHOLOGIC LOG

BOREHOLE No. MW-5 Sheet 1 of 2

Project No.:	Date:	03/15/96	Drilling Co.	V & W Drilling	Drill Model	Mobil B-61
Client:	Parker Environmental Services, Inc.		Drilling Method	HSA	Borehole Diameter	9.25-in
Location:	Calderia Grading and Paving		Ground Surface Elevation	unknown	Datum:	ground surface
	1119 Greenville Road, Livermore, California		Borehole MW-5 was completed as a monitoring well MW-5			
Logged by:	GDL	Driller:	Robert Vickery			

Water Level				
Time				
Date				

Sampling Blowcounts	PID/FID HN/OVA reading	Depth test	Sample	Soil Sample Number	Graphic Soil Symbol	USCS Soil Symbol	Field Soil Description
		1				CL	Asphalt, 1.5 inches.
		2				CL	Dark brown 7.5YR 4/4 to brown 7.5 YR 5/4 silty clay. No odor.
		3				CL	Dark brown 7.5YR 4/4 to brown 7.5 YR 5/4 silty clay. No odor.
		4				ML	Light Olive Brown 2.5Y 5/4 clayey silt. No odor.
		5				ML	Neat Cement Grout
		6				ML	
		7				ML	
		8				ML	
		9				ML	Light Olive Brown 2.5Y 5/4 clayey silt. No odor.
		10				ML	
		11				ML	
		12				ML	
		13				ML	Distinct pebbly horizons, depths uncertain.
		14				ML	
30		15				ML	Light Olive Brown 2.5Y 5/4 very stiff pebbly sandy silt. No odor.
29		16				ML	
--		17				ML	
		18				ML	
		19				ML	
36		20				ML	Light Olive Brown 2.5Y 5/4 very silty fine sand. No odor.
40		21				ML	
--		22				ML	
		23				ML	
		24				ML	
		25				ML	
31						SM	Light Olive Brown 2.5Y 5/4 very silty fine to medium sand. No odor.

2-inch PVC casing and screen.

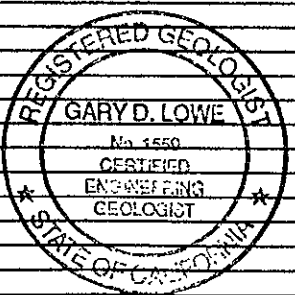
Bentonite Seal

BOREHOLE LITHOLOGIC LOG

Location: Caldera Grading and Paving
1119 Greenville Road, Livermore, California
 BOREHOLE No. MW-4 Sheet 2 of 2

Sampling Blowcounts	PID/FID H ₂ N ₂ /O ₂ A reading	Depth test	Sample Soil Sample Number	Graphic Soil Symbol	USCS Soil Symbol	Field Soil Description
40		26				Light brownish gray 2.5Y 7/2, silt fine to medium sand. Bentonite Seal
42					SM	Slightly pebbly (to 10 mm). No odor.
		27				
		28				
		29				
21		30			SP	Light olive brown 2.5 Y 5/6 pebbly fine to medium sand.
24		31				Pebbles to 20 mm. No odor.
25						
		32				
		33			GP	Olive gray 5 Y 5/2 sandy gravel. SRI No. 8 Sand
		34				
		35				
24		36	B4 35.5-36			First Encountered Water at 36.6 Feet. ▽ Light olive brown 2.5 Y 5/6 pebbly fine to medium sand laminated with olive gray 5Y 5/2 medium sand. No odor.
30						
38		37				
		38				
		39				
14		40				Olive gray 5 Y 5/2 fine to medium sand. No odor.
23		41			SP	
32						
		42				
		43				
		44				
5		45				Olive gray 5 Y 5/2 fine to medium sand. No odor.
5		46				
5						
		47				
		48				
		49				Total Well Depth = 48.34 Feet bct
		50				Caved borehole wall material.
		51				Total Depth 50
		52				
		53				
		54				
		55				

Screen openings = 0.020 inch

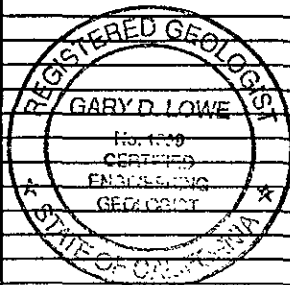


BOREHOLE LITHOLOGIC LOG

Location: Calderia Grading and Paving
1119 Greenville Road, Livermore, California
 BOREHOLE No. MW-5 Sheet 2 of 2

Sampling Blowcounts	PID/FID HNU/CVA reading	Depth test	Sample Soil Sample Number	Graphic Soil Symbol	USCS Soil Symbol	Field Soil Description
		26			SM	Light Olive Brown 2.5Y 5/4 very silty fine to medium sand. Bentonite Seal
		27				
		28				Light Olive Brown 2.5Y 5/4 silt. Highly fractured with calcium carbonate coatings.
		29				
24		30			ML	Light Olive Brown 2.5Y 5/4 very sandy (fine to medium) silt. No odor.
		31				
		32				
		33				SRI No. 8 Sand
		34				
10		35				Light Olive Brown 2.5Y 5/4 very sandy (fine to medium) silt.
13		36	66-36.5-36		SW	First Encountered Water at 36 Feet. ▽
16		36				Olive gray 5 Y 5/2 fine to medium sand. No odor.
		37				
		38				
		39				
13		40			SW	Olive gray 5 Y 5/2 slightly pebbly fine to medium sand with caliche nodules to 10 mm. Pebbles to 8 mm. No odor.
14		41				
16		41				
		42				
		43				
		44				
26		45			SP	Olive gray 5 Y 5/2 very pebbly fine to medium sand with caliche nodules to 20 mm. Pebbles to 12 mm. No odor.
32		46				
--		46				
		47				
		48				
		49				Total Well Depth = 47.77 Feet bcl.
		50				Caved borehole wall material.
		51				
		52				
		53				
		54				
		55				

Total Depth 51.6



Total Well Depth = 47.77 Feet bcl.