

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

December 28, 1998
StID # 4447

REMEDIAL ACTION COMPLETION CERTIFICATION

Mr. Bob Cochran
Chevron USA
6001 Bollinger Canyon Rd.
San Ramon, CA 94582-0804

Mr. Robert Schwartz c/o
Mr. Micheal Osterberg
S & L Attorney
513 Independent Rd.
Oakland CA 94621

RE: Schwartz and Lindheim, 6345 Coliseum Way, Oakland 94621

Dear Messrs. Cochran, Schwartz and Osterberg:

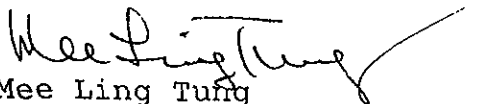
This letter confirms the completion of site investigation and remedial action for the six (6) asphalt and fuel tanks and the two (2) 3,000 gallon diesel tanks at the above described location. Thank you for your cooperation throughout this investigation. Your willingness and promptness in responding to our inquiries concerning the former underground tank is greatly appreciated.

Based upon the available information and with provision that the information provided to this agency was accurate and representative of site conditions, no further action related to the underground tank releases is required.

This notice is issued pursuant to a regulation contained in Title 23, Division 3, Chapter 16, Section 2721 (e) of the California Code of Regulations.

Please contact Barney Chan at (510) 567-6765 if you have any questions regarding this matter.

Sincerely,


Mee Ling Tung
Director, Environmental Health

c: B. Chan, Hazardous Materials Division-files
Chuck Headlee, RWQCB
Mr. Dave Deaner, SWRCB Cleanup Fund
Mr. Leroy Griffin, City of Oakland OES, 505 14th St., Suite
702, Oakland CA 94612

RACC6345

Messrs. Cochran, Schwartz and Osterberg
6345 Coliseum Way, Oakland CA 94621
StID # 4447
December 28, 1998
Page 2.

enclosures: Case Closure Letter, Case Closure Summary

c: Mr. L. Griffin, City of Oakland OES, 505 14th St., Suite
702, Oakland CA 94612
B. Chan, files (letter only)

TrLt6345

ALAMEDA COUNTY
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ENVIRONMENTAL HEALTH SERVICES
ENVIRONMENTAL PROTECTION (LOP)
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577

RE: Fuel Leak Site Case Closure, 6345 Coliseum Way, Oakland
CA 94621

Dear Messrs. Cochran, Schwartz and Osterberg:

This letter transmits the enclosed underground storage tank (UST) case closure letter in accordance with the Health and Safety Code, Chapter 6.75 (Article 4, Section 25299.37 h). The State Water Resources Control Board adopted this letter on February 20, 1997. As of March 1, 1997, the Alameda County Health Services, Local Oversight Program (LOP) is required to use this case closure letter. We are also enclosing the case closure summary. These documents confirm the completion of the investigation and cleanup of the reported release at the subject site.

Site Investigation and Cleanup Summary:

Please be advised that the following conditions exist at the site:

- 360 parts per billion (ppb) Total Petroleum Hydrocarbons as gasoline, 5100, 2.3, 4.1 and 13 ppb, BTEX (benzene, toluene, ethyl benzene and xylenes), respectively, 5100 ppb TPH as diesel and 7.3 ppb MTBE remain in groundwater at the site.
- 310 parts per million (ppm) Total Petroleum Hydrocarbons as gasoline, 3, 3.5, 75 and 40 ppm, BTEX, respectively, 4300 ppm TPH as diesel and 1400 ppm TPH as motor oil remain in soil at the site.

This site should be included in the City's permit tracking system. Please contact me at (510) 567-6765 if you have any questions.

Sincerely,

Barney M. Chan
Hazardous Materials Specialist

File # 01-1308

CALIFORNIA REGIONAL WATER
PROTECTION
NOV 30 4 1998
PM 3:45
QUALITY CONTROL BOARD
CTH

CASE CLOSURE SUMMARY
Leaking Underground Fuel Storage Tank Program

I. AGENCY INFORMATION

Date: September 29, 1998

Agency name: Alameda County-HazMat Address: 1131 Harbor Bay Parkway
Rm 250, Alameda CA 94502
City/State/Zip: Alameda Phone: (510) 567-6700
Responsible staff person: Barney Chan Title: Hazardous Materials Spec.

II. CASE INFORMATION

Site facility name: Schwartz and Lindheim
Site facility address: 6345 Coliseum Way, Oakland CA 94621
RB LUSTIS Case No: N/A Local Case No./LOP Case No.: 4447
ULR filing date: 8/25/89 from Leak Book SWEEPS No: N/A

| <u>Responsible Parties:</u> | <u>Addresses:</u> | <u>Phone Numbers:</u> |
|---|---|------------------------------------|
| 1. Mr. Bob Cochran c/o Chevron USA | 6001 Bollinger Canyon Rd. San Ramon, CA 94582-0804 | 510-842-9655 |
| 2. Mr. Robert Schwartz c/o Mr. Micheal Osterberg | S & L Attorney 513 Independent Rd. Oakland CA 94621 | 510-569-6700 or 510-562-5000 |

| <u>Tank No:</u> | <u>Size in gal.:</u> | <u>Contents:</u> | <u>Closed in-place or removed?:</u> | <u>Date:</u> |
|-----------------|----------------------|------------------|-------------------------------------|--------------|
| 1-6 | unknown size | asphalt & fuel | removed | ~1970's |
| 7-8 | 3000 gal | diesel fuel | removed | 11/9/93 |

III RELEASE AND SITE CHARACTERIZATION INFORMATION

Cause and type of release: possibly from the holes observed in tanks
Site characterization complete? Yes
Date approved by oversight agency:
Monitoring Wells installed? Yes Number: 10
Proper screened interval? Yes, based upon depth to first encountered gw

Leaking Underground Fuel Storage Tank Program

IV. CLOSURE

Does completed corrective action protect existing beneficial uses per the Regional Board Basin Plan? Undetermined

Does corrective action protect public health for current land use? YES

Site management requirements: site should be included in the City of Oakland Permit Tracking System. A site health and safety plan will be required for any subsurface work.

Should corrective action be reviewed if land use changes? Yes

Monitoring wells Decommissioned: Yes

Number Decommissioned: 4

Number Retained: 6

List enforcement actions taken: ~~none~~ 3/19/93 - Cleanup & Abatement order or 13267 letter ~~issued~~ issued to uncooperative party

List enforcement actions rescinded: ~~NA~~ Action listed above

V. LOCAL AGENCY REPRESENTATIVE DATA

Name: Barney M. Chan

Title: Hazardous Materials Specialist

Signature:

Barney M Chan

Date:

10/28/98

Reviewed by

Name: Tom Peacock

Title: Manager

Signature:

Tom Peacock

Date:

10-27-98

Name: Madhulla Logan

Title: Hazardous Materials Specialist

Signature:

Madhulla Logan

Date:

10/21/98

VI. RWQCB NOTIFICATION

Date Submitted to RB:

11/4/98

RB Response:

RWQCB Staff Name: C. Headlee

Title: EG

Date:

11/6/98

C. Headlee

Leaking Underground Fuel Storage Tank Program

VII. ADDITIONAL COMMENTS, DATA, ETC.

See attached site summary.

Site Summary for 6345 Coliseum Way, Schwartz and Lindheim, StID # 4447

The site is slightly over 1 acre in size, located just east of interstate 880 and north of the Oakland Coliseum. The site is bordered to the north by Independent Road, to the west by 66th Ave., to the east by Coliseum Way and to the south by other commercial businesses. The site is divided into two parcels, A and B. Parcel A is approximately ¼ acre in size and located in the northwest portion of the site. Within Parcel A is the location of the two former 3,000 gallon diesel tanks and the current office building for Schwartz and Lindheim Electrical Design Construction. Site closure is recommended for both parcels, which are collectively referred to as 6345 Coliseum Way. See Figure 1 for a site location map.

From 1925 to 1951 the site was part of a salt-water marsh. In 1967, when Interstate 880 was built, substantial amount of fill material was imported to bring this area to grade. Up to 1976, the site was used as an asphalt batching plant operated by Gulf Oil Co., a subsidiary of Chevron Oil Co. The plant had six underground tanks used to store asphalt located on Parcel B and two 3,000 gallon diesel tanks located on Parcel A. The asphalt tanks were presumed to have been removed in the 1970's. Baseline's Ground Penetrating Radar report dated October 31, 1988 did not identify any metal tanks.

In May 1988, Baseline Environmental Consulting performed a subsurface investigation on Parcel B. Both random and authoritative samples were taken. Soil boring samples G1 through G4, located on Parcel B and G5 and G6, located on Parcel A, were random samples. Boring samples GP-7 through GP-10 were selectively advanced around the four sides of the former asphalt underground tanks. These four samples were composited into Composite B prior to analysis. Random samples G1 through G4 were composited into Composite A prior to analysis while samples G5 and G6 were analyzed individually. These samples were collected at the groundwater interface from 3-9' bgs. The samples were analyzed for TPH and semi-volatiles via EPA Method 8270. The samples exhibited low levels (< 1ppm) PNA's in the random samples and ND for PNA's in the authoritative samples. Low levels of TPH were detected in all discrete and composite samples with the exception of sample G5, located in the northwest corner of Parcel B. This sample exhibited 320 ppm TPHg and 650 ppm TPHd. See Figure 2 for the location of these samples and Table 1 for the analytical results.

In November 1988, Blymyer Engineers Inc., (BEI), installed one monitoring well (MW-1) and one boring (B-1) near the 2-3k diesel tanks. Soil samples were taken from both borings and a groundwater sample taken from the well. TPHg, TPHd, BTEX and PNA's were analyzed in these samples. Very little soil or groundwater contamination was exhibited in these samples, albeit, these boring locations were not that strategically located.

Because Consolidated Freightways was intending to purchase Parcel B from Mr. Schwartz, Consolidated retained BEI to take additional soil and groundwater samples. On 2/7/89 monitoring wells MW-2 and MW-3 and borings SB-1 through SB-4 were advanced. The wells and the borings were located between the former diesel and asphalt tanks, near the boundary of Parcels A and B. Three soil samples from the monitoring well borings and two from the SB

borings were taken for chemical analysis. TPHg, TPHd, TPHmo/ Oil and Grease and BTEX were analyzed. The main contaminant found was TPHd which was detected up to 1200 ppm in MW-3-14' and up to 4200 ppm in SB-4-11' See Figure 3.

On March 24, 1989, monitoring well MW-4 and six borings (CFO-1 through CFO-6) were advanced at the site. The borings were randomly located near the north and south property boundaries and between the diesel and asphalt tank pits. Monitoring well MW-4 was constructed within boring CFO-7 to the south of the diesel tanks just south of the Schwartz and Lindheim office building. Three soil samples were taken from each boring/well and analyzed for TPHg, TPHd, BTEX and TPHmo. Up to 1400 ppm TPHmo was detected in CFO-3-5' and up to 3100 ppm TPHd was detected in CFO-6-5'. CFO-3 also exhibited the highest benzene concentration, 1.8 ppm, in the 15' sample. BEI reported observing free product in boring CFO-6. These two borings (CFO-3 and CFO-6) were the only ones exhibiting significant petroleum contamination. See Figure 3.

On April 12, 1989, four additional shallow borings, BB-1-5' through BB-4-5' were advanced around the sides of Consolidated Freightways' proposed future dock. This area is just north of the former asphalt USTs. These soil samples were analyzed for Oil and Grease only. Up to 490 ppm oil and grease was found in BB-1-5', while ND, ND and 150 ppm were found in BB-2-5', BB-3-5' and BB-4-5', respectively.

It is noted that groundwater was encountered at 3' in MW-2 and MW-3 in a perched zone while groundwater was encountered at approximately 12' bgs in wells MW-1 and MW-4. This is assumed to be the true depth to water at the site. Attached are Table 2, a summary of analytical results, and Figure 3, a site plan with sample locations.

Three areas of potential environmental concern were identified by these investigations. Area 1, which centers around boring CFO-3 and is within the BB- borings was not considered a problem, since only shallow contamination was found in these borings. Area 2 was identified as that area near MW-3, which is down-gradient to the former asphalt USTs. It is believed that diesel fuel was used at one time to clean asphalt off the equipment at the batch plant. This surface release may be the source of TPHd being detected in MW-3. Area 3, which consists of the west portion of Parcel B and Parcel A, is the most impacted area. BEI proposed to selectively excavate the highly contaminated soils, treat them for possible reuse and remove impacted groundwater as necessary.

Because the greatest amount of contamination was identified as being in Area 3, between the diesel and asphalt tanks, on November 20, 1989 two borings (#1 and #2) were advanced in this area near SB-3 and SB-4. The 5' samples were collected for chemical analysis. Low levels of TPHg and TPHmo were exhibited in these samples, however, TPHd up to 2059 ppm was found. These results confirmed the prior diesel problem in this area. See Table 3 and Figure 4.

Concurrent with this investigation, additional liability for site cleanup was assumed by Chevron as a past owner or operator of the asphalt plant while being operated under the Chevron subsidiary, Gulf Oil Company. Evidence existed which describes a release of diesel from one of the 3000 gallon diesel tanks in 1972 or 73 which migrated to the storm sewer and eventually entered San Francisco Bay. Therefore, Chevron prepared a work plan for further site characterization.

On **November 9, 1993**, the two 3,000 gallon diesel tanks were removed from the site. Holes were observed in both underground tanks. A band of discoloration was observed in the soil around the excavation at about 5' depth. Based on field instrument readings and visual observation, the tank pit was over-excavated approximately 1-2' in all directions. Approximately 5 feet of backfill was encountered above silty clays and sandy silts to the total depth of excavation of 12'. Nine soil samples (E-1 through E-9) were collected at a depth of 12' and 5' around the tank pit. Excavation in the west direction was limited due the presence of the office building. Diesel contamination was generally less than 600 ppm with the exception of sample E-4 which detected 4300 ppm TPHd, 310 ppm TPHg and 0.33, 0.37, 0.37, 1.6 ppm, BTEX, respectively. Sampled E-4 was taken at 5.5' and located in the southeast corner of the rectangular excavation pit. It appears that the fuel release migrated through the backfill until it reached the less permeable soils below. It also appears that there was the potential of migration of contamination southwesterly from the tank pit, towards SS-1, SS-2 and S-4. Recall these samples exhibited approximately 2000 ppm TPHd at a depth of approximately 6'. Whether this contamination came from the diesel tanks or somehow from the asphalt tanks is unclear. No groundwater was present during the tank removal, however, on **November 12, 1993 after heavy rains, a grab groundwater sample, EX-1, was collected.** This sample exhibited 1300 ppm (mg/l) TPHd and 120, 70, 92 and 220 ppb BTEX, respectively. See **Figure 5 for sample locations and Table 4 for a summary of analytical results.**

On **November 8, 1993** monitoring wells MW-5 through MW-7 were drilled at the site in accordance with the Chevron work plan. On **November 9, 1993** monitoring wells MW-8 through MW-10 were installed. These wells were installed generally around the perimeter of the site, since Chevron was considering using "Alternate Points of Compliance", the precursor of "Non-Attainment Zone" policy, at this site. Only MW-7 was located near a potential source, the former asphalt tanks.

On **November 10, 1993** soil borings GM-1 through GM-4 were advanced to the east of the diesel tanks and around the former asphalt tank pit. Interestingly, groundwater was encountered at approximately 5' in borings GM-2 through GM-4, but was encountered below 10' in boring GM-1. This is a result of either heterogenous geology or as a result of the mixtures of fill material used when back-filling this area during the construction of Interstate 880. Among these four borings, only GM-2 exhibited any TPH. TPHmo at 760 ppm, TPHg at 55 ppm and 0.014, 0.053, 0.039, 0.31 ppm BTEX, respectively was found in this boring. As expected, the soil samples from MW-5 through MW-10 found little to no TPH in their soil samples. See **Figure 6 and Tables 4 and 5 for the location and summary of analytical results, respectively.**

To complete site characterization, on **August 17, 1994**, three additional monitoring wells, MW-11-13, were installed at the site. Monitoring wells MW-12 and 13 were located north of the former diesel tanks and MW-11 was installed on the southeast side of the former asphalt tank pit. No petroleum contamination was exhibited in any of the soil samples from these wells. See **Table 6**. At this same time, Chevron was working with the RWQCB staff toxicologist, R. Arulanthanum in order to prepare a human health risk assessment (HHRA). Environmental impact to the nearby creek and San Francisco Bay was also being evaluated as part of the ecological risk assessment.

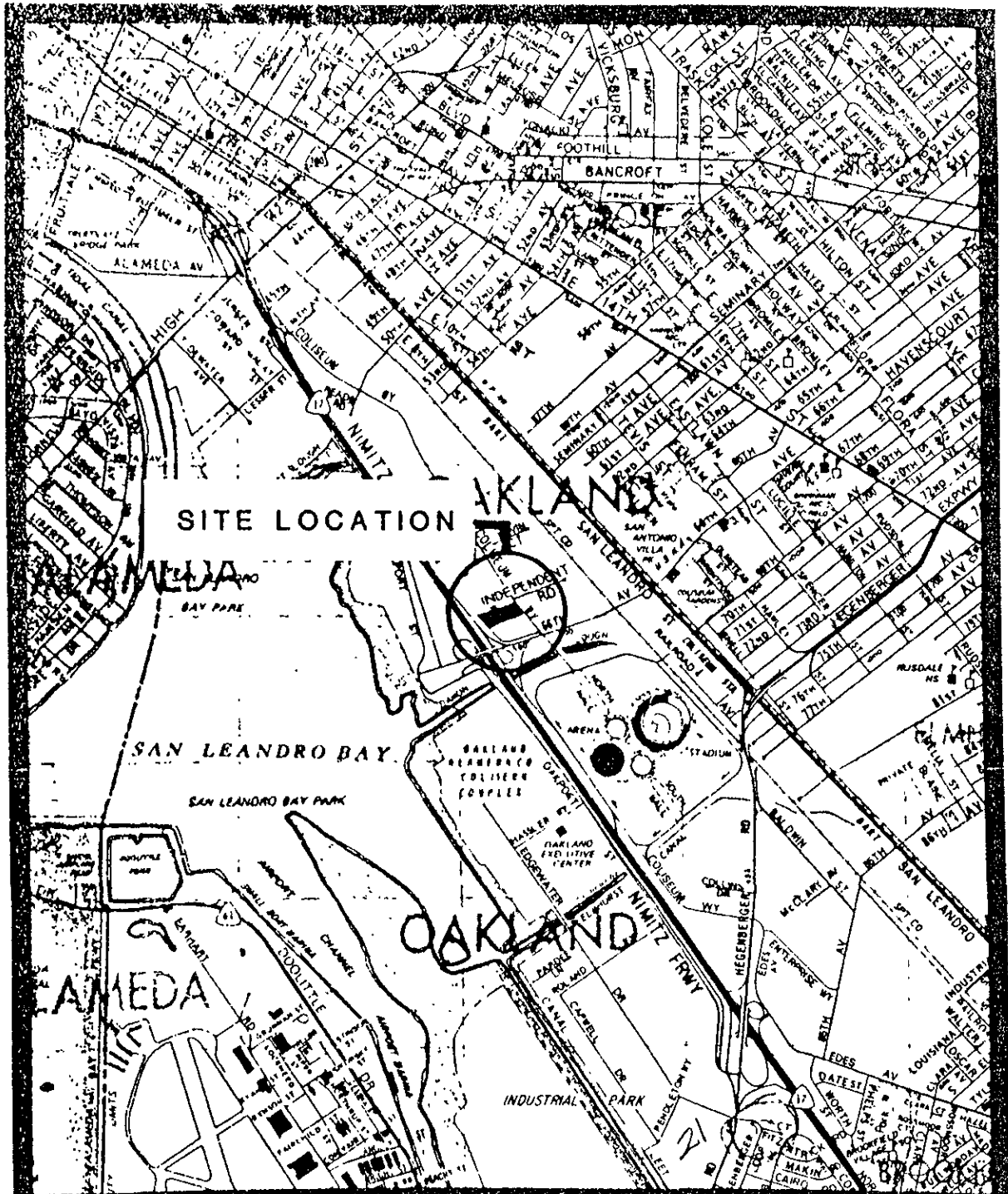
Based upon the results of on-going monitoring, the monitoring schedule was changed on some wells from quarterly to semi-annually. In addition, monitoring wells MW-2, MW-5, MW-6 and MW-10 were approved for closure due to consistently low to ND levels of constituents of concern.

Monitoring continued to 4/4/97 at which time the County risk assessor, M. Logan, reviewed the risk assessment. See **Table 7 for a summary of the cumulative monitoring data**. Her comments were addressed in Geraghty and Miller's June 20, 1997 letter. In addition, G& M prepared the attached risk management plan dated January 7, 1998. Having satisfied her comments, no apparent risk is expected at this site. Included please find:

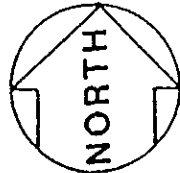
- Pertinent pages from the initial January 30, 1996 risk assessment
- Comment letter from M. Logan
- June 20, 1997 Response letter from Geraghty and Miller and the
- January 7, 1998 Risk Management Plan for the site.

Site closure is recommended based upon:

- Adequate site characterization has occurred. Numerous soil borings and monitoring wells within and around the property boundary have been advanced.
- The source, underground tanks and contaminated groundwater have been removed.
- The groundwater plume has stabilized, with evidence of bio-degradation, groundwater concentrations should continue to decline.
- The shallow groundwater at the site is not potable since the average TDS concentration for MW5 through MW-10 was found to be 16,800 mg/l in the November 1993 sampling.
- No risk is expected based on the County's evaluation of the human health risk assessment provided. A Risk Management Plan has been submitted to prevent future exposure.



SITE LOCATION



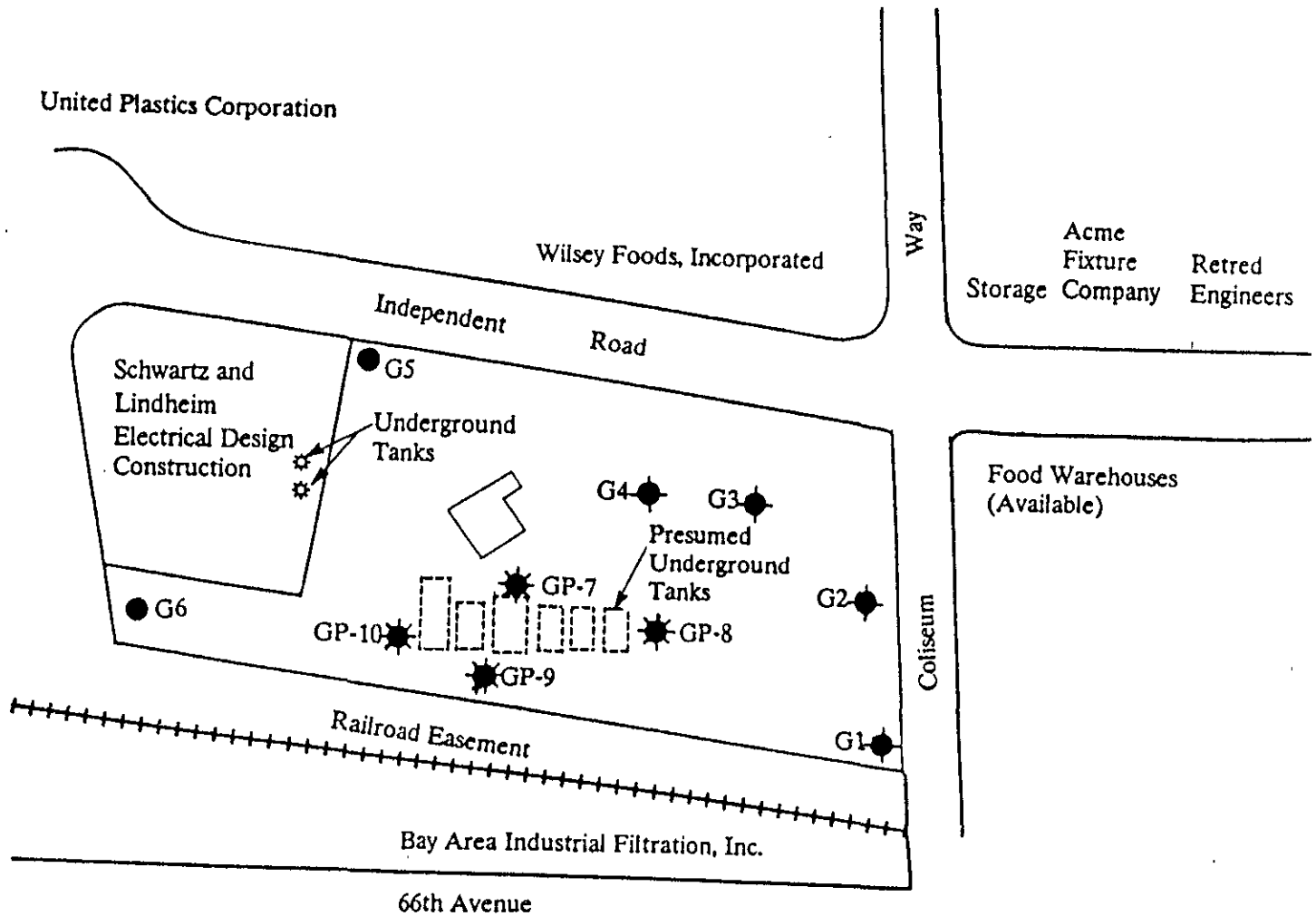
6345 COLISEUM WAY
OAKLAND, CA

SOURCE: USGS TOPO.

FIGURE 1: SITE LOCATION

SITE PLAN AND SOIL SAMPLING LOCATIONS

Figure 2



Legend:

- GP-6 Soil Sampling Location
- ⊕ GP-2 Soil Sampling Location Composite A
- ★ GP-7 Soil Sampling Location Composite B

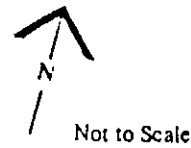


TABLE 1
ANALYTICAL RESULTS
6345 COLISEUM WAY, OAKLAND
May 1988

| Location | Composite A G1,G2,G3,G4 | G5 | G6 | Composite B GP7,GP8,GP9,GP10 |
|---|----------------------------|----------------------|-------------------|---------------------------------|
| Depth (Feet) | 6.0-9.0 | 2.5-3.0 | 3.0-3.5 | 3.0-6.0 |
| EPA Method 8270 ^{1,2} | | | | |
| Aniline | 0.050 | ND | ND | ND |
| Fluorene | ND | 0.167 | ND | ND |
| Phenanthrene | ND | 0.045 | ND | ND |
| Fluoranthene | ND | ND | 0.046 | ND |
| Pyrene | ND | ND | 0.093 | ND |
| Benzo(b)- fluoranthene | ND | ND | 0.093 | ND |
| Benzo(a)pyrene | ND | ND | 0.050 | ND |
| Indeno(1,2,3-cd)- pyrene | ND | ND | 0.059 | ND |
| Benzo(g,h,i)- perylene | ND | ND | 0.061 | ND |
| Total PNAs | (0.050) | (0.21 ²) | (0.402) | (ND) |
| Total Petroleum Hydrocarbons ¹ | | | | |
| Volatile | 0.150 | 320.0 | ND | 67.0 |
| Extractable | ND | 650.0 ³ | 33.0 ³ | 29.0 ⁴ |

¹ All results are reported in mg/kg.

² EPA Method 8270 detects extractable organics. The compounds above detection limits are shown on the table.

³ Total Petroleum Hydrocarbons detected as diesel (EPA Method 8015).

⁴ Total Petroleum Hydrocarbons detected as motor oil (EPA Method 8015).

⁵ ND = Not detected.

⁶ Sample locations are shown in Figure 2.

MONITORING WELL

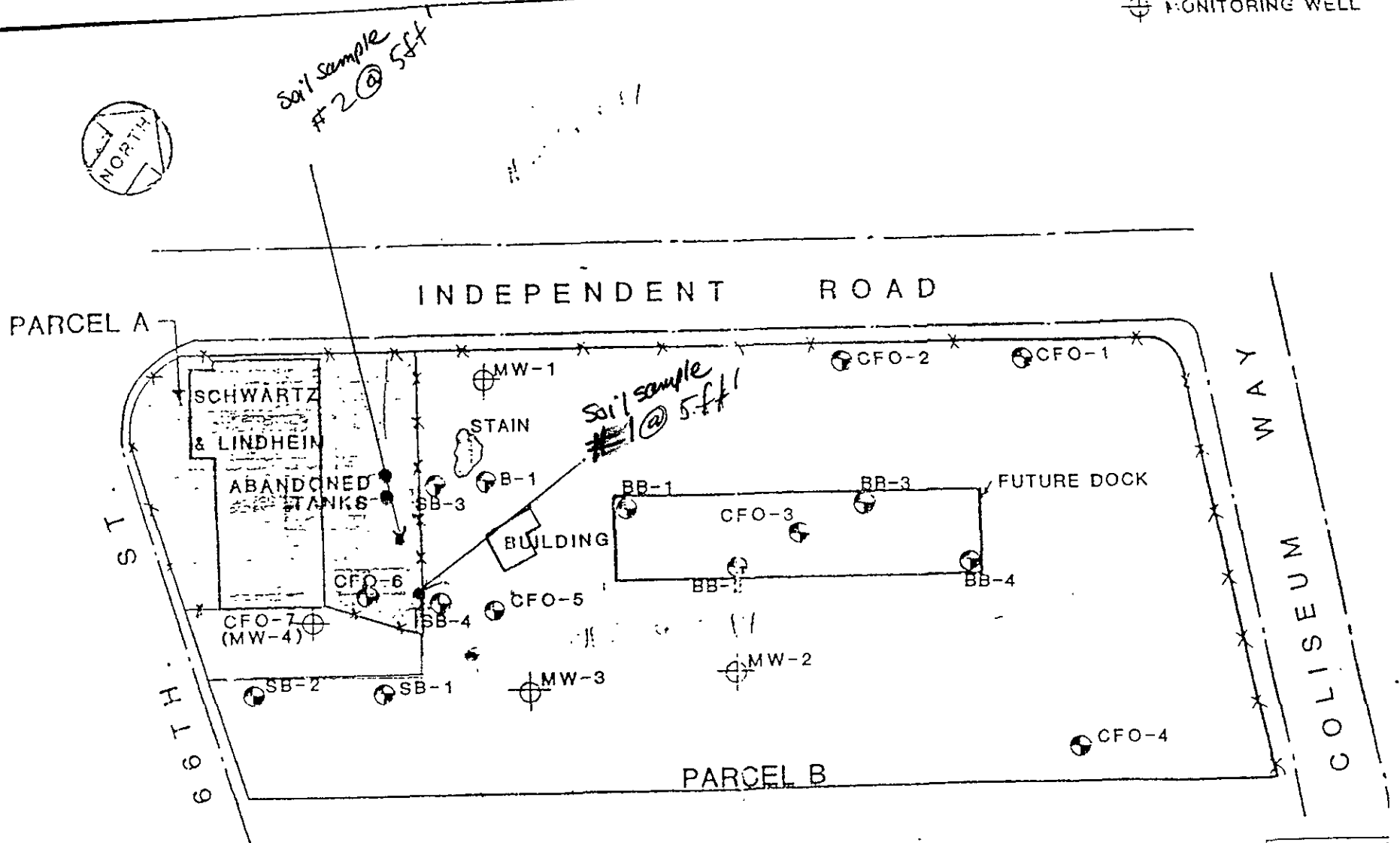


Figure 4

| |
|------------|
| BLMYE |
| SCALE NONE |

C. Gas Chromatography (G.C) - Continued

1. Organic Persistent and Bioaccumulative Substances
TTLc and STLC Values - Soil Sample 1

| <u>Substance</u> | <u>Reg. STLC (mg/l)</u> | <u>STLC found (mg/l)</u> | <u>Reg. TTLc (mg/kg)</u> | <u>TTLc found (mg/kg)</u> |
|-------------------------------------|-------------------------|--------------------------|--------------------------|---------------------------|
| Kepone | 2.1 | ND | 21 | ND |
| Lead cpds(organic) | 0.4 | ND | 13 | ND |
| Lindane | 0.4 | ND | 4.0 | ND |
| Methoxychlor | 10 | ND | 100 | ND |
| Mirex | 2.1 | ND | 21 | ND |
| Pentachlorophenol | 1.7 | ND | 17 | ND |
| PCBs | 5.0 | ND | 50 | ND |
| Toxaphene | 0.5 | ND | 5 | ND |
| Trichloroethylene | 204 | ND | 2040 | ND |
| 2,4,5-Trichloro-phenoxy acetic acid | 1.0 | ND | 10 | ND |

ND= not detected

Table 3

2. Total Petroleum Hydrocarbon Content (TPH) - chromatograms attached

Total Petroleum Hydrocarbon (TPH) Content (mg/kg)

| <u>Sample</u> | <u>TPH-g³</u> | <u>TPH-d⁴</u> | <u>TPH-mo⁵</u> | <u>Total TPH</u> |
|------------------|--------------------------|--------------------------|---------------------------|------------------|
| 1. Soil Sample 1 | 30 | 2015 | 11 | 2056 |
| 2. Soil Sample 2 | 41 | 2059 | 28 | 2128 |

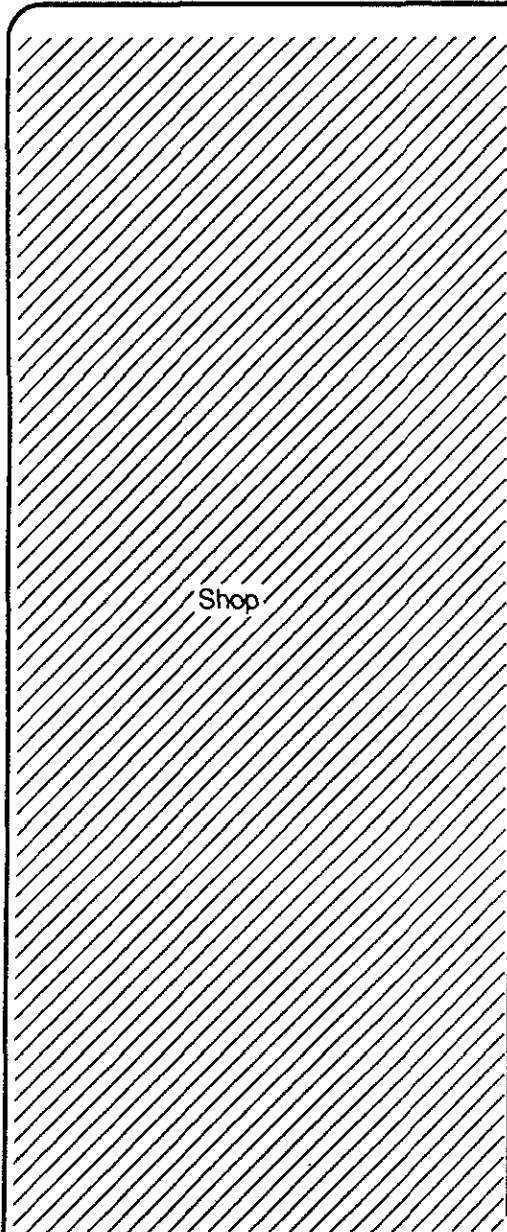
³TPH-g - total petroleum hydrocarbons due to gasoline

⁴TPH-d - total petroleum hydrocarbons due to diesel

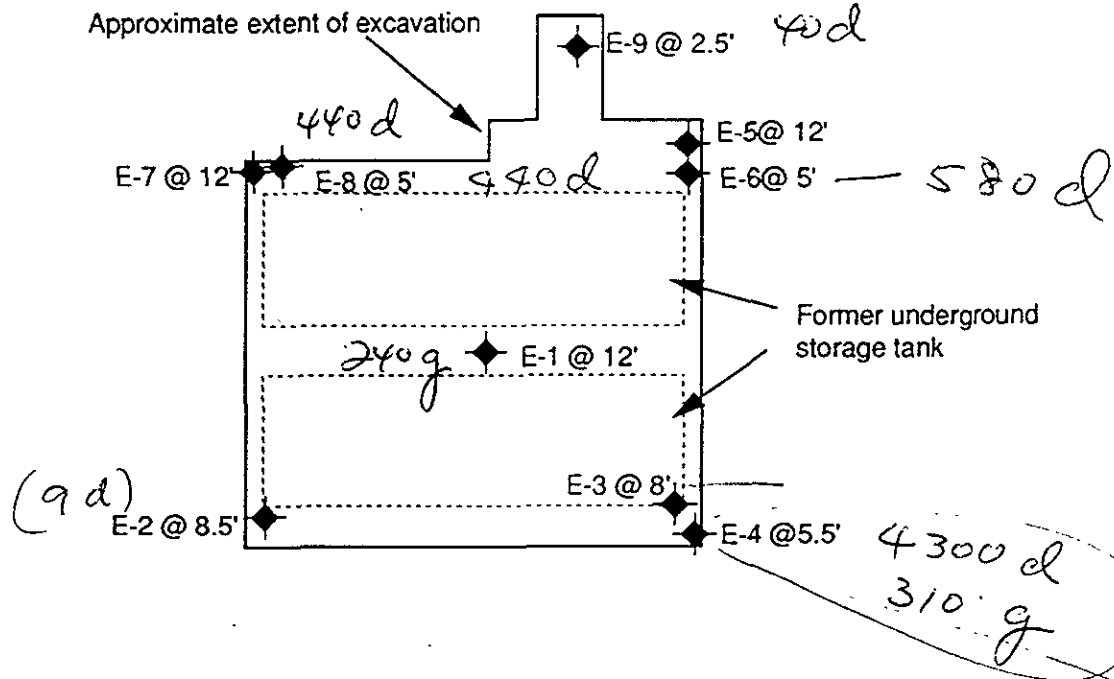
⁵TPH-mo - total petroleum hydrocarbons due to motor oil

D. Soxhlet Extraction - EPA Method 3540

| <u>Sample</u> | <u>% (w/w) Nonvolatile (NV) Residue</u> |
|---------------|---|
| Soil Sample 1 | 0.12 |
| Soil Sample 2 | 0.13 |

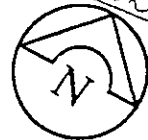


Approximate extent of excavation



EXPLANATION

◆ Approximate soil sample location
E-9 @ 2.5'



Approximate Scale
(Feet)



Project No. RC0175.000

EXCAVATION SOIL SAMPLE LOCATIONS
SCHWARTZ AND LINDHEIM PROPERTY
6345 Coliseum Way
Oakland, California

FIGURE
5

Table 4 Summary of Soil Analytical Results from Current Assessment Activities
Schwartz and Lindheim Property (Former Gulf Oil Company Bulk Asphalt Plant)
6345 Coliseum Way, Oakland, California

| Sample ID | Date Sampled | Sampling Depth (feet) | TPH as Gasoline (a) (mg/kg) | TPH as Diesel (a) (mg/kg) | TPH as Motor Oil (a) (mg/kg) | Benzene (b) (mg/kg) | Toluene (b) (mg/kg) | Ethyl-benzene (b) (mg/kg) | Total Xylenes (b) (mg/kg) | Total Organic Carbon (c) (mg/kg) |
|-----------|--------------|-----------------------|-----------------------------|---------------------------|------------------------------|---------------------|---------------------|---------------------------|---------------------------|----------------------------------|
| E-4 | 9-Nov-93 | 6 | 310 | 4,300 | N/A | 0.33 | 0.37 | 0.37 | 1.6 | N/A |
| E-6 | 9-Nov-93 | 5 | N/A | 580 | N/A | 1.3 | 0.28 | 1.8 | 1.4 | N/A |
| E-8 | 9-Nov-93 | 5 | N/A | 440 | N/A | 3. | 3.5 | 75. | 40. | N/A |
| E-9 | 9-Nov-93 | 3 | N/A | 40 | N/A | ND(0.005) | ND(0.005) | ND(0.005) | ND(0.015) | N/A |

- (a) Analysis by USEPA Method 8015, modified.
(b) Analysis by USEPA Method 8020.
(c) Analysis by USEPA Method 9060.

TPH Total petroleum hydrocarbons
mg/kg Milligrams per kilogram.
ND() Not detected; laboratory method detection limit in parentheses.
N/A Not analyzed.

Table 4 Summary of Soil Analytical Results from Current Assessment Activities
Schwartz and Lindheim Property (Former Gulf Oil Company Bulk Asphalt Plant)
6345 Coliseum Way, Oakland, California

| Sample ID | Date Sampled | Sampling Depth (feet) | TPH as Gasoline (a) (mg/kg) | TPH as Diesel (a) (mg/kg) | TPH as Motor Oil (a) (mg/kg) | Benzene (b) (mg/kg) | Toluene (b) (mg/kg) | Ethyl-benzene (b) (mg/kg) | Total Xylenes (b) (mg/kg) | Total Organic Carbon (c) (mg/kg) |
|--------------|--------------|-----------------------|-----------------------------|---------------------------|------------------------------|---------------------|---------------------|---------------------------|---------------------------|----------------------------------|
| MW-9 | 9-Nov-93 | 5 | ND(1) | ND(10) | ND(10) | ND(0.005) | ND(0.005) | ND(0.005) | ND(0.015) | N/A |
| MW-9 | 9-Nov-93 | 10 | ND(1) | ND(10) | ND(10) | ND(0.005) | ND(0.005) | ND(0.005) | ND(0.015) | N/A |
| MW-9 | 9-Nov-93 | 15 | ND(1) | ND(10) | ND(10) | ND(0.005) | ND(0.005) | ND(0.005) | ND(0.015) | N/A |
| MW-9 | 9-Nov-93 | 20 | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 170 |
| MW-10 | 9-Nov-93 | 5 | ND(1) | ND(10) | ND(10) | ND(0.005) | ND(0.005) | ND(0.005) | ND(0.015) | N/A |
| MW-10 | 9-Nov-93 | 10 | ND(1) | ND(10) | ND(10) | ND(0.005) | ND(0.005) | ND(0.005) | ND(0.015) | N/A |
| MW-10 | 9-Nov-93 | 15 | ND(1) | ND(10) | ND(10) | ND(0.005) | ND(0.005) | ND(0.005) | ND(0.015) | N/A |
| MW-10 | 9-Nov-93 | 20 | ND(1) | ND(10) | ND(10) | ND(0.005) | ND(0.005) | ND(0.005) | ND(0.015) | N/A |
| MW-10 | 9-Nov-93 | 30 | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 120 |
| SP-1-A,B,C,D | 9-Nov-93 | -- | N/A | 230 | N/A | 0.34 | 0.19 | 0.20 | 0.55 | N/A |
| SP-2-A,B,C,D | 9-Nov-93 | -- | N/A | 500 | N/A | 0.26 | ND(0.005) | 0.29 | 0.84 | N/A |
| SP-3-A,B,C,D | 9-Nov-93 | -- | N/A | 910 | N/A | 0.42 | 0.22 | 0.52 | 1.4 | N/A |
| SP-4-A,B,C,D | 9-Nov-93 | -- | N/A | 1,400 | N/A | 0.39 | 0.28 | 0.30 | 1.2 | N/A |
| SP-5-A,B,C,D | 9-Nov-93 | -- | N/A | 170 | N/A | 0.041 | 0.036 | 0.066 | 0.17 | N/A |
| SP-6-A,B,C,D | 7-Jan-94 | -- | ND(1) | 2 | N/A | ND(0.005) | ND(0.005) | ND(0.005) | ND(0.005) | N/A |
| E-1 | 9-Nov-93 | 12 | N/A | 240 | N/A | 0.33 | 0.14 | 0.57 | 0.65 | N/A |
| E-2 | 9-Nov-93 | 9 | N/A | 9 | N/A | 0.97 | 0.39 | 0.63 | 2.3 | N/A |
| E-3 | 9-Nov-93 | 8 | N/A | 34 | N/A | 0.079 | 0.013 | 0.007 | 0.030 | N/A |

SPILLS FROM TANK REMOVAL

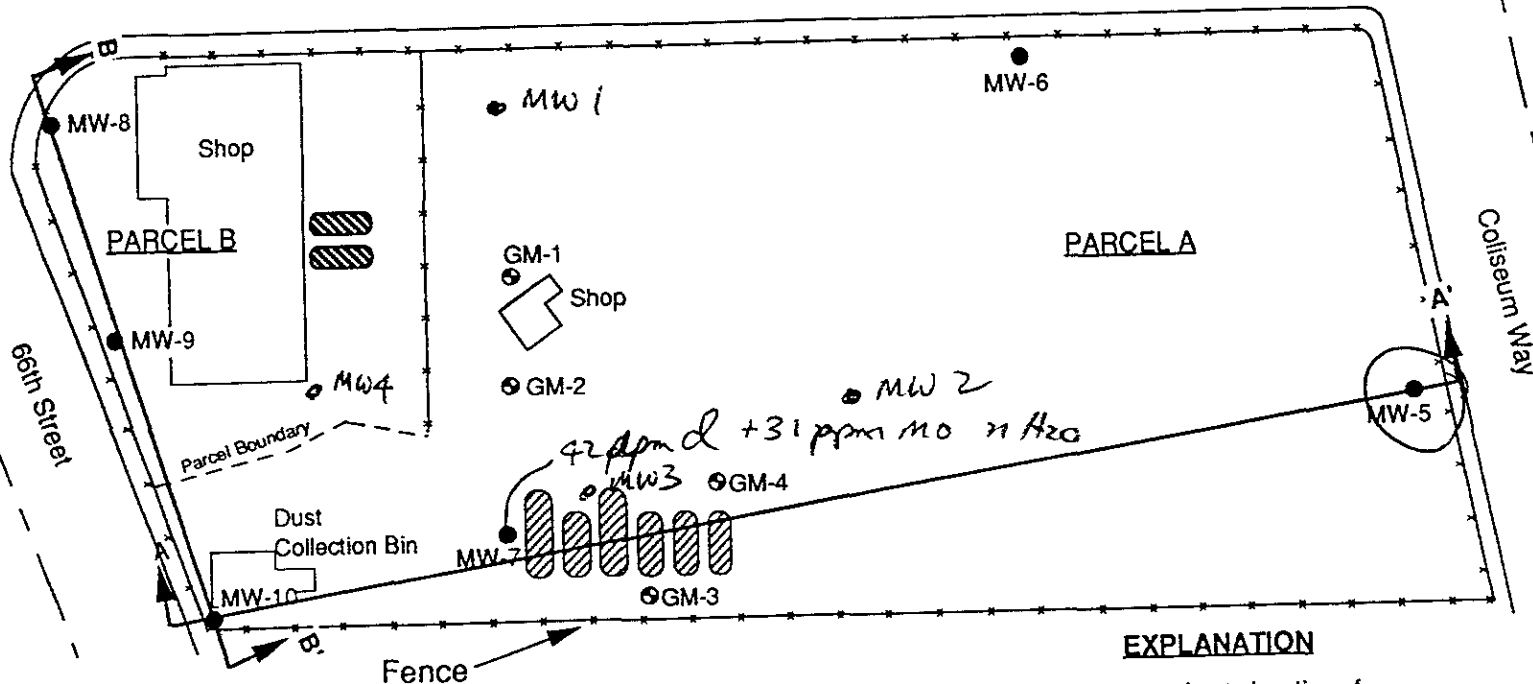
Table 5: Summary of Groundwater Analytical Results from Current Assessment Activities
 Schwartz and Lindheim Property (Former Gulf Oil Company Bulk Asphalt Plant)
 6345 Coliseum Way, Oakland, California

| Monitor Well | Date Sampled | TPH as Gasoline (µg/L)(a) | TPH as Diesel (µg/L)(a) | TPH as motor oil (µg/L)(a) | Benzene (b) (µg/L) | Toluene (b) (µg/L) | Ethyl-benzene (b) (µg/L) | Total Xylenes (b) (µg/L) | pH (c) | SC (d) (µmhos/cm) | TDS (e) (mg/L) |
|--------------|--------------|---------------------------|-------------------------|----------------------------|--------------------|--------------------|--------------------------|--------------------------|--------|-------------------|----------------|
| EX-1 | 12-Nov-93 | N/A | 1,300,000 | N/A | 120 | 70 | 92 | 220 | N/A | N/A | N/A |
| MW-5 | 17-Nov-93 | ND(50) | ND(50) | ND(500) | ND(0.5) | ND(0.5) | ND(0.5) | ND(0.5) | 6.8 | 23,000 | 16,000 |
| MW-6 | 17-Nov-93 | ND(50) | ND(50) | ND(500) | ND(0.5) | ND(0.5) | ND(0.5) | ND(0.5) | 7.0 | 23,000 | 2,200 |
| MW-7 | 17-Nov-93 | ND(50) | 42,000 | 31,000 | ND(0.5) | ND(0.5) | ND(0.5) | ND(0.5) | 7.0 | 23,000 | 1,500 |
| MW-8 | 17-Nov-93 | ND(50) | ND(50) | ND(500) | ND(0.5) | ND(0.5) | ND(0.5) | ND(0.5) | 6.8 | 43,000 | 20,000 |
| MW-9 | 17-Nov-93 | ND(50) | ND(50) | ND(500) | ND(0.5) | ND(0.5) | ND(0.5) | ND(0.5) | 7.0 | 39,000 | 16,000 |
| MW-10 | 17-Nov-93 | ND(50) | ND(50) | ND(500) | ND(0.5) | ND(0.5) | ND(0.5) | ND(0.5) | 6.8 | 70,000 | 45,000 |
| TB-LB | 12-Nov-93 | N/A | N/A | N/A | ND(0.5) | ND(0.5) | ND(0.5) | ND(0.5) | N/A | N/A | N/A |
| | 17-Nov-93 | ND(50) | N/A | N/A | ND(0.5) | ND(0.5) | ND(0.5) | ND(0.5) | N/A | N/A | N/A |

- (a) Analysis by USEPA Method 8015, modified.
- (b) Analysis by USEPA Method 8020.
- (c) Analysis by USEPA Method 150.1.
- (d) Specific conductance; analysis by USEPA Method 120.1.
- (e) Total dissolved solids; analysis by USEPA Method 160.3.

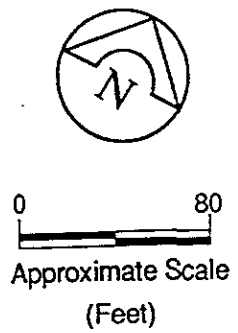
TPH Total petroleum hydrocarbons.
 ND() Not detected; laboratory method detection limit in parentheses.
 TB-LB Trip blank-laboratory blank.
 N/A Not analyzed.
 µg/L Micrograms per liter.
 mg/L Milligrams per liter.
 µmhos/cm Micromhos per centimeter.

Independent Road



EXPLANATION

- Approximate location of groundwater monitor well
- ⊙ Approximate location of soil boring
- ▨ Approximate location of former underground diesel tank
- ▧ Approximate location of former underground asphalt tank
- ▲▲ Cross-section location



Reference: Blymyer Engineers, Inc., May 1989



Project No. RC0175.000

SITE PLAN SHOWING NEW DRILLING LOCATIONS
SCHWARTZ AND LINDHEIM PROPERTY
 6345 Coliseum Way
 Oakland, California

FIGURE 6

Table 4: Summary of Soil Analytical Results from Current Assessment Activities
 Schwartz and Lindheim Property (Former Gulf Oil Company Bulk Asphalt Plant)
 6345 Coliseum Way, Oakland, California

| Sample ID | Date Sampled | Sampling Depth (feet) | TPH as Gasoline (a) (mg/kg) | TPH as Diesel (a) (mg/kg) | TPH as Motor Oil (a) (mg/kg) | Benzene (b) (mg/kg) | Toluene (b) (mg/kg) | Ethylbenzene (b) (mg/kg) | Total Xylenes (b) (mg/kg) | Total Organic Carbon (c) (mg/kg) |
|-----------|--------------|-----------------------|-----------------------------|---------------------------|------------------------------|---------------------|---------------------|--------------------------|---------------------------|----------------------------------|
| GM-1 | 10-Nov-93 | 5 | ND(1) | ND(10) | ND(10) | ND(0.005) | ND(0.005) | ND(0.005) | ND(0.015) | N/A |
| GM-1 | 10-Nov-93 | 15 | ND(1) | ND(10) | ND(10) | ND(0.005) | ND(0.005) | ND(0.005) | ND(0.015) | N/A |
| GM-2 | 10-Nov-93 | 5 | 55 | ND(10) | 760 | 0.014 | 0.053 | 0.039 | 0.31 | -- |
| GM-3 | 10-Nov-93 | 5 | ND(1) | ND(10) | ND(10) | ND(0.005) | ND(0.005) | ND(0.005) | ND(0.015) | N/A |
| GM-4 | 10-Nov-93 | 5 | ND(1) | ND(10) | ND(10) | ND(0.005) | ND(0.005) | ND(0.005) | ND(0.015) | N/A |
| MW-5 | 8-Nov-93 | 5 | 1 | ND(10) | ND(10) | ND(0.005) | ND(0.005) | ND(0.005) | ND(0.015) | N/A |
| MW-5 | 8-Nov-93 | 10 | ND(1) | ND(10) | ND(10) | ND(0.005) | ND(0.005) | ND(0.005) | ND(0.015) | N/A |
| MW-5 | 8-Nov-93 | 15 | ND(1) | ND(10) | ND(10) | ND(0.005) | ND(0.005) | ND(0.005) | ND(0.015) | N/A |
| MW-5 | 8-Nov-93 | 20 | ND(1) | ND(10) | ND(10) | ND(0.005) | ND(0.005) | ND(0.005) | ND(0.015) | N/A |
| MW-5 | 8-Nov-93 | 25 | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 800 |
| MW-6 | 8-Nov-93 | 5 | ND(1) | ND(10) | ND(10) | ND(0.005) | ND(0.005) | ND(0.005) | ND(0.015) | N/A |
| MW-6 | 8-Nov-93 | 10 | ND(1) | ND(10) | ND(10) | ND(0.005) | ND(0.005) | ND(0.005) | ND(0.015) | N/A |
| MW-6 | 8-Nov-93 | 15 | ND(1) | ND(10) | ND(10) | ND(0.005) | ND(0.005) | ND(0.005) | ND(0.015) | N/A |
| MW-7 | 8-Nov-93 | 5 | ND(1) | ND(10) | ND(10) | ND(0.005) | ND(0.005) | ND(0.005) | ND(0.015) | N/A |
| MW-7 | 8-Nov-93 | 10 | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| MW-7 | 8-Nov-93 | 15 | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 450 |
| MW-8 | 9-Nov-93 | 5 | ND(1) | ND(10) | 86 | ND(0.005) | ND(0.005) | ND(0.005) | ND(0.015) | N/A |
| MW-8 | 9-Nov-93 | 10 | ND(1) | ND(10) | ND(10) | ND(0.005) | ND(0.005) | ND(0.005) | ND(0.015) | N/A |
| MW-8 | 9-Nov-93 | 15 | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| MW-8 | 9-Nov-93 | 20 | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 170 |

Table 6

Cumulative Soil Sample Analytical Results

Schwartz and Lindheim Property (Former Gulf Oil Company Bulk Asphalt Plant)
6345 Coliseum Way, Oakland, California

| Sample ID | Date Sampled | Sampling Depth (feet) | TPH as Gasoline (a) (mg/kg) | TPH as Diesel (a) (mg/kg) | TPH as Motor Oil (a) (mg/kg) | Benzene (b) (mg/kg) | Toluene (b) (mg/kg) | Ethylbenzene (b) (mg/kg) | Total Xylenes (b) (mg/kg) | Total Carbon (c) (mg/kg) |
|-----------|--------------|-----------------------|-----------------------------|---------------------------|------------------------------|---------------------|---------------------|--------------------------|---------------------------|--------------------------|
| E-9 | 9-Nov-93 | 3 | -- | 40 | -- | ND(<0.005) | ND(<0.005) | ND(<0.005) | ND(<0.015) | -- |
| MW-11 | 17-Aug-94 | 4 | ND(<1) | ND(<1) | -- | ND(<0.005) | ND(<0.005) | ND(<0.005) | ND(<0.005) | -- |
| | 17-Aug-94 | 5.5 | ND(<1) | ND(<1) | -- | ND(<0.005) | ND(<0.005) | ND(<0.005) | ND(<0.005) | -- |
| | 17-Aug-94 | 7 | ND(<1) | ND(<1) | -- | ND(<0.005) | ND(<0.005) | ND(<0.005) | ND(<0.005) | -- |
| | 17-Aug-94 | 12.5 | ND(<1) | 5 (d) | -- | ND(<0.005) | ND(<0.005) | ND(<0.005) | ND(<0.005) | -- |
| MW-12 | 17-Aug-94 | 4 | ND(<1) | ND(<1) | -- | ND(<0.005) | ND(<0.005) | ND(<0.005) | ND(<0.005) | -- |
| | 17-Aug-94 | 7 | ND(<1) | ND(<1) | -- | ND(<0.005) | ND(<0.005) | ND(<0.005) | ND(<0.005) | -- |
| | 17-Aug-94 | 12.5 | ND(<1) | ND(<1) | -- | ND(<0.005) | ND(<0.005) | ND(<0.005) | ND(<0.005) | -- |
| | 17-Aug-94 | 17.5 | ND(<1) | 35 (d) | -- | ND(<0.005) | ND(<0.005) | ND(<0.005) | ND(<0.005) | -- |
| MW-13 | 17-Aug-94 | 3.5 | ND(<1) | 15 (d) | -- | ND(<0.005) | ND(<0.005) | ND(<0.005) | ND(<0.005) | -- |
| | 17-Aug-94 | 4.5 | ND(<1) | ND(<1) | -- | ND(<0.005) | ND(<0.005) | ND(<0.005) | ND(<0.005) | -- |
| | 17-Aug-94 | 7 | ND(<1) | ND(<1) | -- | ND(<0.005) | ND(<0.005) | ND(<0.005) | ND(<0.005) | -- |
| | 17-Aug-94 | 12.5 | ND(<1) | ND(<1) | -- | ND(<0.005) | ND(<0.005) | ND(<0.005) | ND(<0.005) | -- |
| | 17-Aug-94 | 17.5 | ND(<1) | ND(<1) | -- | ND(<0.005) | ND(<0.005) | ND(<0.005) | ND(<0.005) | -- |
| SP-1 | 17-Aug-94 | -- | ND(<1) | -- | -- | ND(<0.005) | ND(<0.005) | ND(<0.005) | ND(<0.005) | -- |

(a) Analysis by USEPA Method 8015, modified.

(b) Analysis by USEPA Method 8020.

(c) Analysis by USEPA Method 9060.

(d) Laboratory reports that chromatogram does not match typical diesel pattern—heavier hydrocarbons present.

TPH Total petroleum hydrocarbons

mg/kg Milligrams per kilogram.

ND(<) Not detected; laboratory method detection limit in parentheses.

-- Not analyzed.



Table 1. Water Level Data and Groundwater Analytical Results - Former Gulf Oil Bulk Asphalt Plant #20-6416, 6345 Coliseum Way, Oakland, California

| Well ID/ TOC (ft) | Date | DTW (ft) | GWE (msl) | Product Thickness* (ft) | TPH(G) ← | TPH(D) | Motor Oil | ppb | | | | | MTBE → |
|--------------------------|--------------------------|---------------|--------------|-------------------------------|---------------------------------------|-----------------------|--------------|-------|-------|-------|-------|------|-----------|
| | | | | | | | | B | T | E | X | | |
| MW-1/ 1.26 | 11/9/88 | — | — | 0 | <2 | | | | | | | | |
| | 9/16/93 | 8.09 | -6.83 | 0 | <2 | <70 | — | <0.1 | <0.1 | <0.1 | <0.2 | — | |
| | 1/18/94 | 8.08 | -6.82 | 0 | — | — | — | — | — | — | — | — | |
| | 4/29/94 | 7.21 | -5.95 | 0 | — | — | — | — | — | — | — | — | |
| | 9/30/94 | 7.11 | -5.85 | 0 | <50 | <50 | — | — | — | — | — | — | |
| | 11/22/94 | 7.05 | -5.79 | 0 | <50 | <50 | — | <0.5 | 0.7 | <0.5 | <0.5 | — | |
| | 1/20/95 | 5.93 | -4.67 | 0 | <50 | <50 | — | <0.5 | <0.5 | <0.5 | <0.5 | — | |
| | 4/18/95 | 5.72 | -4.46 | 0 | <50 | 200 | — | <0.5 | <0.5 | <0.5 | <0.5 | — | |
| | 7/13/95 ¹¹ | 6.06 | -4.80 | 0 | <50 | 52 | — | <0.5 | <0.5 | <0.5 | 2.0 | — | |
| | 10/5/95 ²¹ | 6.92 | -5.66 | 0 | — | 490 ^{12,13} | — | 0.7 | 2.2 | <0.5 | <0.5 | — | |
| | 10/16/95 | 6.97 | -5.71 | 0 | <50 | <100 ^{17,18} | — | — | — | — | — | — | |
| | 1/22/96 | 7.34 | -6.06 | 0 | <50 | 300 ¹⁹ | — | <0.5 | <0.5 | <0.5 | <0.5 | — | |
| | 4/15/96 | 6.33 | -5.05 | 0 | <50 | 520 ²⁴ | — | <0.50 | <0.50 | <0.50 | <0.50 | — | |
| | 10/22/96 | 7.56 | -6.28 | 0 | <50 | 640 ²⁴ | — | <0.5 | <0.5 | <0.5 | <0.5 | — | |
| 4/4/97 | Unable to access | | | — | 1 ²³ 230/100 ²⁰ | — | <0.5 | 3.1 | 1.0 | <0.5 | <0.5 | <5.0 | |
| | | | | | | | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <5.0 | |
| | | | | | | | | | | | | <2.5 | |
| MW-2/ 2.67 | 2/9/89 | — | — | — | — | — | — | — | — | — | — | — | |
| | 9/16/93 | 4.33 | -1.66 | — | <2 | 310 | — | — | — | — | — | — | |
| | 1/18/94 | 3.51 | -0.84 | 0 | — | — | — | <0.1 | <0.1 | <0.1 | <0.2 | — | |
| | 4/29/94 | 2.81 | -0.14 | 0 | — | — | — | — | — | — | — | — | |
| | 9/30/94 | 4.57 | -1.90 | 0 | 50 | 60 ⁷ | — | — | — | — | — | — | |
| | 11/22/94 | 2.28 | 0.39 | 0 | <50 | <50 | — | 3.8 | 8.5 | 1.1 | — | — | |
| | 1/20/95 | 1.89 | 0.78 | 0 | <50 | 150 | — | <0.5 | <0.5 | <0.5 | 6.2 | — | |
| | 4/18/95 | 2.64 | 0.03 | 0 | <50 | <50 | — | 0.5 | 2.5 | <0.5 | <0.5 | — | |
| | 7/13/95 ¹⁰ | — | — | 0 | <50 | <50 | — | <0.5 | 0.8 | <0.5 | 4.7 | — | |
| | 10/5/95 ^{15,21} | — | — | — | — | — | — | <0.5 | <0.5 | <0.5 | 0.5 | — | |
| | 10/16/95 ¹⁵ | — | — | — | — | — | — | — | — | <0.5 | 0.5 | — | |
| | 1/22/96 | Not Monitored | | — | — | — | — | — | — | — | — | — | |
| | 4/15/96 | Not Monitored | | — | — | — | — | — | — | — | — | — | |
| | 6/20/96 | Destroyed | | — | — | — | — | — | — | — | — | — | |
| MW-3/ 2.38 | 2/9/89 | — | — | — | — | — | — | — | — | — | — | — | |
| | 9/16/93 | 4.05 | -1.67 | 0 | 1,100 | 30,000 | — | — | — | — | — | — | |
| | 1/18/94 | 3.25 | -0.87 | 0 | — | — | — | <0.1 | <0.1 | <0.1 | <0.2 | — | |
| | 4/29/94 | 2.45 | -0.07 | 0 | — | — | — | — | — | — | — | — | |
| | 9/30/94 | 4.30 | -1.92 | 0 | 80 | 4,500 | — | — | — | — | — | — | |
| | 11/22/94 | 2.07 | 0.31 | 0 | <50 | 17,000 | — | 2.9 | 6.0 | 0.8 | — | — | |
| | 1/20/95 | 1.53 | 0.85 | 0 | <50 | 26,000 | — | <0.5 | <0.5 | <0.5 | 4.5 | — | |
| | 4/18/95 ¹⁰ | — | — | 0 | 54 ⁹ | 3,400 | — | 1.2 | 1.7 | <0.5 | <0.5 | — | |
| | 7/13/95 | 3.16 | -0.78 | — | — | — | — | <0.5 | 1.8 | <0.5 | 2.3 | — | |
| 10/5/95 ^{15,21} | — | — | 0 | 400 | 10,000 ²² | — | <0.5 | <0.5 | <0.5 | 2.6 | — | | |
| | | | | | | | | | | | | <1.5 | |



Table 1. Water Level Data and Groundwater Analytical Results - Former Gulf Oil Bulk Asphalt Plant #20-6416, 6345 Coliseum Way, Oakland, California
(continued)

| Well ID/ TOC (ft) | Date | DTW (ft) | GWE (msl) | Product Thickness* (ft) | TPH(G) | TPH(D) | Motor Oil | ppb | | | | |
|----------------------------------|--------------------------|------------------|--------------|-------------------------------|-------------------|---|--------------|-------|-------|-------|-------|------|
| | | | | | | | | B | T | E | X | MTBE |
| MW-3(cont) 2.73 ²² | 10/16/95 | 4.07 | -1.69 | 0 | 78 ²⁰ | 3,400 ¹⁹ | — | <0.50 | <0.50 | <0.50 | <0.50 | — |
| | 1/22/96 | 1.48 | 1.25 | 0 | 120 | 3,900 ²⁴ | — | <0.5 | <0.5 | <0.5 | <0.5 | — |
| | 4/15/96 | 2.75 | -0.02 | 0 | 100 | 5,100 ²⁴ | — | <0.5 | <0.5 | <0.5 | <0.5 | <5.0 |
| | 10/22/96 | 4.33 | -1.60 | 0 | 360 ²⁵ | ²⁶ 12,000/ ⁵ 100 ^{24,27} | — | <0.50 | <0.50 | <0.50 | <0.50 | <5.0 |
| | 4/4/97 | Unable to access | | — | — | — | — | <0.50 | <0.50 | <0.50 | <0.50 | <2.5 |
| | | | | | | <i>Silica Gel cleanup (3x)</i> | | | | | | |
| MW-4/ 2.19 | 3/29/89 | — | — | — | 81 | 140 | — | <0.1 | 640 | <0.1 | <0.2 | — |
| | 9/16/93 | 8.98 | -6.79 | 0 | — | — | — | — | — | — | — | — |
| | 1/18/94 | 9.45 | -7.26 | 0 | — | — | — | — | — | — | — | — |
| | 4/29/94 | 8.59 | -6.40 | 0 | <50 | <50 | — | <0.5 | <0.5 | <0.5 | <0.5 | — |
| | 9/30/94 | 7.96 | -5.77 | 0 | <50 | <50 | — | <0.5 | <0.5 | <0.5 | <0.5 | — |
| | 11/22/94 | 8.00 | -5.81 | 0 | <50 | <50 | — | <0.5 | <0.5 | <0.5 | <0.5 | — |
| | 1/20/95 | 6.81 | -4.62 | 0 | <50 | <50 | — | <0.5 | <0.5 | <0.5 | 0.7 | — |
| | 4/18/95 | 7.07 | -4.88 | 0 | <50 | <50 | — | <0.5 | 0.7 | <0.5 | 0.8 | — |
| | 7/13/95 | 7.20 | -5.01 | 0 | <50 | <50 | — | <0.5 | <0.5 | <0.5 | <0.5 | — |
| | 10/5/95 ²¹ | 7.75 | -5.56 | 0 | <50 | 170 ^{22,13} | — | <0.5 | <0.5 | <0.5 | <1.5 | — |
| | 10/16/95 | 7.92 | -5.73 | 0 | <50 | <100 ^{17,18} | — | <0.5 | <0.5 | <0.5 | <0.5 | — |
| 2.20 ²² | 1/22/96 | 7.72 | -5.52 | 0 | <50 | 160 ¹⁹ | — | <0.50 | <0.50 | <0.50 | <0.50 | — |
| | 4/15/96 | 7.16 | -4.96 | 0 | <50 | <50 ²³ | — | <0.5 | <0.5 | <0.5 | <0.5 | — |
| | 10/22/96 | 8.22 | -6.02 | 0 | <50 | 170 ²⁴ | — | <0.5 | <0.5 | <0.5 | <0.5 | <5.0 |
| | 4/4/97 | 7.55 | -5.35 | 0 | <50 | ¹⁹ 200/ ⁷⁵ 10 ¹⁹ | — | <0.50 | <0.50 | <0.50 | <0.50 | <5.0 |
| | | | | | | ³ 250/ ¹ 100 | — | <0.5 | <0.5 | <0.5 | <0.5 | <5.0 |
| MW-5/ 2.51 | 11/17/93 ¹ | 10.83 | -8.32 | 0 | <50 | <50 | <500 | <0.5 | <0.5 | <0.5 | <0.5 | — |
| | 1/18/94 | 9.94 | -7.43 | 0 | — | — | — | — | — | — | — | — |
| | 4/29/94 | 9.04 | -6.53 | 0 | <50 | <50 | — | — | — | — | — | — |
| | 9/30/94 | 10.19 | -7.68 | 0 | <50 | <50 | — | 1.8 | 2.5 | <0.5 | 1.9 | — |
| | 11/22/94 | 8.71 | -6.20 | 0 | <50 | <50 | — | <0.5 | <0.5 | <0.5 | <0.5 | — |
| | 1/20/95 | 9.78 | -7.27 | 0 | <50 | <50 | — | <0.5 | <0.5 | <0.5 | <0.5 | — |
| | 4/18/95 ¹⁰ | — | — | — | — | — | — | <0.5 | <0.5 | <0.5 | <0.5 | — |
| | 7/13/95 | 8.68 | -6.17 | 0 | <50 | <50 | — | <0.5 | <0.5 | <0.5 | <0.5 | — |
| | 10/5/95 ^{16,21} | — | — | — | — | — | — | <0.5 | <0.5 | <0.5 | <1.5 | — |
| | 10/16/95 | 8.32 | -5.81 | 0 | <50 | <50 | — | — | — | — | — | — |
| | 1/22/96 | Not Monitored | | — | <50 | 140 ¹⁹ | — | <0.50 | <0.50 | <0.50 | <0.50 | — |
| | 4/15/96 | Not Monitored | | — | — | — | — | — | — | — | — | — |
| | 6/20/96 | Destroyed | | — | — | — | — | — | — | — | — | — |
| MW-6/ 2.00 | 11/17/93 ² | 8.25 | -6.25 | 0 | <50 | <50 | <500 | <0.5 | <0.5 | <0.5 | <0.5 | — |
| | 1/18/94 | 7.45 | -5.45 | 0 | — | — | — | — | — | — | — | — |
| | 4/29/94 | 7.80 | -5.80 | 0 | <50 | <50 | — | <0.5 | <0.5 | <0.5 | <0.5 | — |



Table 7. Water Level Data and Groundwater Analytical Results - Former Gulf Oil Bulk Asphalt Plant #20-6416, 6345 Coliseum Way, Oakland, California
(continued)

| Well ID/ TOC (ft) | Date | DTW (ft) | GWE (msl) | Product Thickness* (ft) | TPH(G) | TPH(D) | Motor Oil | B | T | E | X | MTBE | |
|----------------------|--------------------------|---------------|--------------|-------------------------------|-----------|------------------------|---------------------|-------|-------|-------|-------|------|------|
| | | | | | ← ppb → | | | | | | | | |
| MW-6 (cont) | 9/30/94 | 9.23 | -7.23 | 0 | <50 | <50 | — | <0.5 | <0.5 | <0.5 | <0.5 | — | |
| | 11/22/94 | 5.38 | -3.38 | 0 | <50 | <50 | — | <0.5 | <0.5 | <0.5 | 4.1 | — | |
| | 1/20/95 | 4.15 | -2.15 | 0 | <50 | 250 | — | <0.5 | <0.5 | 0.7 | 3.8 | — | |
| | 4/18/95 | 5.73 | -3.73 | 0 | <50 | 55 | — | <0.5 | <0.5 | <0.5 | <0.5 | — | |
| | 7/13/95 | 8.94 | -6.94 | 0 | <50 | 420 ¹² | — | <0.5 | <0.5 | <0.5 | <1.5 | — | |
| | 10/5/95 ²¹ | 9.35 | -7.35 | 0 | <50 | <100 ^{17,18} | — | <0.5 | <0.5 | <0.5 | <0.5 | — | |
| | 10/16/95 | 7.56 | -5.56 | 0 | <50 | 450 ¹⁹ | — | <0.50 | <0.50 | <0.50 | <0.50 | — | |
| | 1/22/96 | Not Monitored | | | | | | | | | | | |
| | 4/15/96 | Not Monitored | | | | | | | | | | | |
| 6/20/96 | Destroyed | | | | | | | | | | | | |
| MW-7/ 1.87 | 11/17/93 ³ | 4.19 | -2.32 | 0 | <50 | 42,000 | 31,000 | <0.5 | <0.5 | <0.5 | <0.5 | — | |
| | 1/18/94 | 4.02 | -2.15 | 0 | — | — | — | — | — | — | — | — | |
| | 4/29/94 | 2.83 | -0.96 | 0 | <50 | 120 | — | <0.5 | 0.8 | <0.5 | <0.5 | — | |
| | 9/30/94 | 6.46 | -4.59 | 0 | <50 | <50 | — | <0.5 | <0.5 | <0.5 | <0.5 | — | |
| | 11/22/94 | 2.08 | -0.21 | 0 | <50 | <50 | — | <0.5 | <0.5 | <0.5 | 3.7 | — | |
| | 1/20/95 | 1.63 | 0.24 | 0 | <50 | 680 | — | 0.9 | 2.9 | 0.7 | 3.6 | — | |
| | 4/18/95 ¹⁰ | — | — | — | — | — | — | — | — | — | — | — | |
| | 7/13/95 | 5.47 | -3.60 | 0 | 210 | 2,400 ^{12,13} | — | <0.5 | <0.5 | <0.5 | <1.5 | — | |
| | 10/5/95 ^{16,21} | — | — | — | — | — | — | — | — | — | — | — | |
| | 10/16/95 ¹⁶ | — | — | — | — | — | — | — | — | — | — | — | |
| | 1.91 ²² | 1/22/96 | 3.42 | -1.51 | 0 | 100 | 1,700 ²⁴ | — | <0.5 | <0.5 | <0.5 | 0.9 | <5.0 |
| | 4/15/96 | 2.45 | -0.54 | 0 | 80 | 1,900 ²⁴ | — | <0.5 | 1.3 | 0.5 | 3.8 | <5.0 | |
| | 10/22/96 ¹⁶ | — | — | — | — | — | — | — | — | — | — | — | |
| 4/4/97 | Unable to access | | | — | — | — | — | — | — | — | — | | |
| MW-8/ 1.54 | 11/17/93 ⁴ | 8.78 | -7.24 | 0 | <50 | <50 | <500 | <0.5 | <0.5 | <0.5 | <0.5 | — | |
| | 1/18/94 | 8.27 | -6.92 | 0 | — | — | — | — | — | — | — | — | |
| | 4/29/94 | 8.85 | -7.31 | 0 | <50 | <50 | — | <0.5 | <0.5 | <0.5 | <0.5 | — | |
| | 9/30/94 | 7.35 | -5.81 | 0 | <50 | <50 | — | <0.5 | <0.5 | <0.5 | <0.5 | — | |
| | 11/22/94 | 7.40 | -5.86 | 0 | <50 | <50 | — | <0.5 | <0.5 | <0.5 | 2.0 | — | |
| | 1/20/95 | 6.24 | -4.70 | 0 | <50 | <50 | — | 0.7 | 1.5 | <0.5 | 1.8 | — | |
| | 4/18/95 | 6.30 | -4.76 | 0 | <50 | <50 | — | <0.5 | <0.5 | <0.5 | <0.5 | — | |
| | 7/13/95 | 6.63 | -5.09 | 0 | <50 | <50 ¹⁴ | — | <0.5 | <0.5 | <0.5 | <1.5 | — | |
| | 10/5/95 ²¹ | 7.03 | -5.49 | 0 | <50 | <100 ^{17,18} | — | <0.5 | <0.5 | <0.5 | <0.5 | — | |
| | 10/16/95 | 7.23 | -5.69 | 0 | <50 | 56 ¹⁹ | — | <0.50 | <0.50 | <0.50 | <0.50 | — | |
| | 1.57 ²² | 1/22/96 | 7.54 | -5.97 | 0 | <50 | <50 ²³ | — | <0.5 | <0.5 | <0.5 | <0.5 | <5.0 |
| | 4/15/96 | 6.84 | -5.27 | 0 | — | — | — | — | — | — | — | — | |
| | 10/22/96 | 7.92 | -6.35 | 0 | <50 | 1956/95 ¹⁹ | — | <0.50 | <0.50 | <0.50 | <0.50 | <2.5 | |
| 4/4/97 | 7.29 | -5.72 | 0 | <50 | 2951 <100 | — | <0.5 | <0.5 | <0.5 | <0.5 | <5.0 | | |



Table 1. Water Level Data and Groundwater Analytical Results - Former Gulf Oil Bulk Asphalt Plant #20-6416, 6345 Coliseum Way, Oakland, California (continued)

| Well ID/ TOC (ft) | Date | DTW (ft) | GWE (msl) | Product Thickness* (ft) | TPH(G) | TPH(D) | Motor Oil | B | T | E | X | MTBE | |
|----------------------|-----------------------|-------------|--------------|-------------------------------|--|--|---------------------|-------|-------|-------|-----------------------|------|------|
| | | | | | ←-----ppb-----> | | | | | | | | |
| MW-12 ^s | 1/20/95 | 1.81 | — | 0 | <50 | 210 | — | <0.5 | <0.5 | <0.5 | <0.5 | — | |
| | 4/27/95 | 2.31 | — | 0 | <50 | 88 | — | <0.5 | <0.5 | <0.5 | <0.5 | — | |
| | 7/13/95 | 3.67 | — | 0 | <50 | 740 ^{12,13} | — | <0.5 | <0.5 | <0.5 | <1.5 | — | |
| | 10/5/95 ²¹ | 4.30 | — | 0 | <50 | <100 ^{17,18} | — | <0.5 | <0.5 | <0.5 | <0.5 | — | |
| | 10/16/95 | 3.95 | — | 0 | <50 | 460 ¹⁹ | — | <0.50 | <0.50 | <0.50 | <0.50 | — | |
| | 1.31 ²² | 1/22/96 | 1.70 | -0.39 | 0 | <50 | 1,000 ²⁴ | — | <0.5 | <0.5 | <0.5 | <0.5 | <5.0 |
| | 4/15/96 | 2.80 | -1.49 | 0 | — | — | — | — | — | — | — | — | |
| | 10/22/96 | 4.60 | -3.29 | 0 | <50 | ¹⁹ 420/ ⁹³ ¹⁹ | — | <0.50 | <0.50 | <0.50 | <0.50 | <2.5 | |
| 4/4/97 | 3.79 | -2.48 | 0 | <50 | [*] 1,500/ ^{<100} | — | <0.5 | <0.5 | <0.5 | <0.5 | 5.1/7.3 ²³ | | |
| MW-13 ^s | 1/20/95 | 6.12 | — | 0 | <50 | 490 | — | 0.6 | 1.5 | <0.5 | 2.3 | — | |
| | 4/27/95 | 6.49 | — | 0 | <50 | <50 | — | <0.5 | <0.5 | <0.5 | <0.5 | — | |
| | 7/13/95 | 6.63 | — | 0 | <50 | 1,000 ^{12,13} | — | <0.5 | <0.5 | <0.5 | <1.5 | — | |
| | 10/5/95 ²¹ | 7.13 | — | 0 | <50 | 100 ^{17,18} | — | 1.1 | <0.5 | <0.5 | <0.5 | — | |
| | 10/16/95 | 6.97 | — | 0 | <50 | 680 ¹⁹ | — | 1.0 | <0.50 | <0.50 | <0.50 | — | |
| | 1.63 ²² | 1/22/96 | 7.65 | -6.02 | 0 | <50 | 980 ²⁴ | — | 0.5 | <0.5 | <0.5 | <0.5 | <5.0 |
| | 4/15/96 | 6.77 | -5.14 | 0 | <50 | 1,300 ²⁴ | — | <0.5 | <0.5 | <0.5 | <0.5 | <5.0 | |
| | 10/22/96 | 7.76 | -6.13 | 0 | <50 | ¹⁹ 700/ ⁷⁹ ¹⁹ | — | <0.50 | <0.50 | <0.50 | <0.50 | <2.5 | |
| 4/4/97 | 6.81 | -5.18 | 0 | <50 | [*] 1,800/ ^{<100} | — | <0.5 | <0.5 | <0.5 | <0.5 | <5.0 | | |
| Trip Blank TB-LB | 4/29/94 | — | — | — | <50 | — | — | <0.5 | <0.5 | <0.5 | <0.5 | — | |
| | 9/30/94 | — | — | — | <50 | — | — | <0.5 | <0.5 | <0.5 | <0.5 | — | |
| | 11/22/94 | — | — | — | <50 | — | — | <0.5 | <0.5 | <0.5 | <0.5 | — | |
| | 1/20/95 | — | — | — | <50 | — | — | <0.5 | <0.5 | <0.5 | <0.5 | — | |
| | 4/18/95 | — | — | — | <50 | — | — | <0.5 | <0.5 | <0.5 | <0.5 | — | |
| | 4/27/95 | — | — | — | <50 | — | — | <0.5 | <0.5 | <0.5 | <0.5 | — | |
| | 7/13/95 | — | — | — | <50 | — | — | <0.5 | <0.5 | <0.5 | <1.5 | — | |
| | 10/5/95 ²¹ | — | — | — | <50 | — | — | <0.5 | <0.5 | <0.5 | <0.5 | — | |
| | 10/16/95 | — | — | — | <50 | — | — | <0.50 | <0.50 | <0.50 | <0.50 | — | |
| | 1/22/96 | — | — | — | <50 | — | — | <0.5 | <0.5 | <0.5 | <0.5 | <5.0 | |
| | 4/15/96 | — | — | — | <50 | — | — | <0.5 | <0.5 | <0.5 | <0.5 | <5.0 | |
| | 10/22/96 | — | — | — | <50 | — | — | <0.50 | <0.50 | <0.50 | <0.50 | <2.5 | |
| | 4/4/97 | — | — | — | <50 | — | — | <0.5 | <0.5 | <0.5 | <0.5 | <5.0 | |
| Bailer Blank BB | 4/29/94 | — | — | — | <50 | — | — | <0.5 | <0.5 | <0.5 | <0.5 | — | |



Table 7. Water Level Data and Groundwater Analytical Results - Former Gulf Oil Bulk Asphalt Plant #20-6416, 6345 Coliseum Way, Oakland, California (continued)

EXPLANATION:

TOC = Top of casing elevation
(ft) = feet
DTW = Depth to water
GWE = Groundwater elevation
msl = Measurements referenced relative to mean sea level
TPH(G) = Total Purgeable Petroleum Hydrocarbons as Gasoline
TPH(D) = Total Extractable Hydrocarbons as Diesel
B = Benzene
T = Toluene
E = Ethylbenzene
X = Xylenes
MTBE = Methyl-tertiary-butyl ether
ppb = Parts per billion
-- = Not analyzed/Not applicable

NOTES:

Water level data and groundwater analytical results prior to April 1995 were compiled from the quarterly groundwater monitoring reports prepared for Chevron by Sierra Environmental Services.

Analytical results reported as follows indicate: TPH(D)/TPH(G) w/silica-gel cleanup.

- * Product thickness was measured on and after April 29, 1994 with an MMC flexi-dip interface probe.
- 1 Total dissolved solids were analyzed and detected at 16,000 ppm.
- 2 Total dissolved solids were analyzed and detected at 2,200 ppm.
- 3 Total dissolved solids were analyzed and detected at 1,500 ppm.
- 4 Total dissolved solids were analyzed and detected at 20,000 ppm.
- 5 Total dissolved solids were analyzed and detected at 16,000 ppm.
- 6 Total dissolved solids were analyzed and detected at 45,000 ppm.
- 7 Lab reports lighter end hydrocarbons present in diesel range which did not resemble a diesel pattern.
- 8 TOC elevation not available.
- 9 Laboratory reports hydrocarbons were found in the range of gasoline, but do not resemble a gasoline fingerprint.
- 10 Well not accessible due to on-site construction activities.
- 11 Due to laboratory error (GTEL), sample MW-1 was not analyzed for TPH(G)/BTEX.

NOTES: (continued)

- 12 Laboratory report indicates hydrocarbon pattern is not characteristic of laboratory's diesel standard, but is within fuel range.
- 13 Laboratory report indicates that surrogate recovery is greater than upper control limits due to target compound interference.
- 14 Laboratory report indicates that surrogate recovery is greater than upper control limits due to spiking error during extraction.
- 15 Unable to locate well.
- 16 Unable to locate well due to railroad construction materials.
- 17 This sample was analyzed using the ASTM Method D3328 - Hydrocarbon Screen in Water. TPH as Gasoline and TPH as Mineral Spirits were non-detectable at a detection limit of <100 ppb.
- 18 This sample was analyzed using the ASTM Method D3328 - Hydrocarbon Screen in Water. TPH as Lubricating Oil was not detected in MW-10 at the detection limit of 200 ppb, but was detected in MW-1 at 1,600, MW-4 at 460, MW-5 at 2,100, MW-8 at 200, MW-9 at 1,700, MW-12 at 2,700, and MW-13 at 2,700 ppb, respectively. This analytical method cannot quantify lubricating oils by a type because of the chromatogram likeness of different oil types.
- 19 Laboratory report indicates chromatogram pattern of C9-C24; Unidentified.
- 20 Laboratory report indicates chromatogram pattern; Unidentified hydrocarbon >C12.
- 21 Laboratory analyses for 10/5/95 were performed by GTEL of Concord, CA. Confirmation samples taken on 10/16/95 were analyzed by Sequoia Analytical of Concord, CA.
- 22 Resurveyed by Virgil Chavez, License #6323. The benchmark used was a City of Oakland Benchmark Ref. 19SE10. Benchmark elevation = 1.53 feet, U.S.G.S. datum.
- 23 Laboratory report indicates material heavier than diesel fuel.
- 24 Laboratory report indicates the material present is qualitatively uncertain. Therefore, all material in the C9 to C22 range was quantitated against diesel fuel without respect to pattern. Material heavier than C22 is also present in the sample.
- 25 Laboratory report indicates unidentified hydrocarbon C10-C12.
- 26 Laboratory report indicates chromatogram pattern of C9-C24; weathered diesel.
- 27 Additional silica-gel cleanup performed on sample. First result 8300, second result 7600, third result 5100 ppb. See actual laboratory analytical results for additional information.
- 28 MTBE by EPA Method 8240B.
- 29 Laboratory report indicates the material present is qualitatively uncertain. Therefore, all material in the C9-C22 range was quantitated against diesel fuel without respect to pattern.
- 30 Laboratory report indicates the material present is qualitatively uncertain. Therefore, all material in the C9-C22 range was quantitated against diesel fuel without respect to pattern. Chromatographic data indicates the presence of material, which is heavier than diesel fuel.

Table 3-1: Occurrence Summary for Surface and Subsurface Soil Samples, Schwartz and Lindheim Property (Former Gulf Oil Company Bulk Asphalt Plant), 6345 Coliseum Way, Oakland, California

| Constituent | Frequency Detects / Total | Range of SQLs Min - Max | Range of Detects Min - Max | Average Detect | Mean | UCL | EPC |
|-----------------------------|------------------------------|----------------------------|-------------------------------|-------------------|------|------|------|
| <u>VOCs</u> | | | | | | 0.19 | 0.19 |
| Benzene | 10 / 78 | 0.005 - 0.01 | 0.014 - 3 | 0.8 | 0.11 | 0.19 | 0.19 |
| Ethylbenzene | 11 / 78 | 0.005 - 0.2 | 0.01 - 75 | 7.2 | 1.1 | 2.7 | 2.7 |
| Toluene | 10 / 78 | 0.005 - 0.01 | 0.01 - 3.7 | 0.9 | 0.12 | 0.23 | 0.23 |
| Xylenes | 11 / 78 | 0.005 - 0.6 | 0.03 - 40 | 5 | 0.82 | 1.7 | 1.7 |
| <u>Hydrocarbons</u> | | | | | | | |
| TPH as Gasoline | 10 / 78 | 0.5 - 1 | 0.15 - 320 | 87 | 12 | 21 | 21 |
| TPH as Diesel | 23 / 87 | 1 - 10 | 3.4 - 4,300 | 980 | 260 | 410 | 410 |
| TPH as Motor Oil | 11 / 60 | 10 - 10 | 11 - 1,400 | 270 | 53 | 98 | 98 |
| <u>Total Organic Carbon</u> | 7 / 9 | 50 - 50 | 120 - 800 | 340 | 270 | 430 | 430 |

Concentrations are reported in milligrams per kilogram (mg/kg).

- EPC Exposure point concentration; lesser of the UCL and the maximum detected concentration.
- Mean Arithmetic average of the total number of samples, using proxy concentrations for non-detects.
- SQLs Practical sample quantitation limits for the non-detects.
- TPH Total petroleum hydrocarbons.
- UCL 95 percent upper confidence limit (one-tailed) on the mean, assuming a normal distribution.

From January 1996 Risk Assessment

Table 3-2: Occurrence Summary for Groundwater Samples, Schwartz and Lindheim Property (Former Gulf Oil Company Bulk Asphalt Plant), 6345 Coliseum Way, Oakland, California.

| Constituent | Frequency | Range of SQLs | Range of Detects | Average | Mean | UCL | EPC |
|-------------------------------|-----------------|-----------------|------------------|---------|--------|--------|--------|
| | Detects / Total | Min - Max | Min - Max | Detect | | | |
| <u>VOCs</u> | | | | | | | |
| Benzene | 0 / 13 | 0.0001 - 0.0005 | ND * | ND | ND | ND | ND |
| Ethylbenzene | 0 / 13 | 0.0001 - 0.0005 | ND * | ND | ND | ND | ND |
| Toluene | 1 / 13 | 0.0001 - 0.0005 | 0.64 - 0.64 | 0.64 | 0.049 | 0.14 | 0.14 |
| Xylenes | 0 / 13 | 0.0002 - 0.0005 | ND * | ND | ND | ND | ND |
| <u>Hydrocarbons</u> | | | | | | | |
| TPH as Gasoline | 2 / 13 | 0.002 - 0.05 | 0.081 - 1.1 | 0.59 | 0.11 | 0.26 | 0.26 |
| TPH as Diesel | 5 / 13 | 0.05 - 0.07 | 0.14 - 42 | 15 | 6 | 12 | 12 |
| TPH as Motor Oil | 1 / 9 | 0.5 - 0.5 | 31 | 31 | 3.7 | 10 | 10 |
| <u>Total Dissolved Solids</u> | 6 / 6 | NA | 1,500 - 45,000 | 17,000 | 17,000 | 30,000 | 30,000 |

Concentrations are reported in milligrams per liter (mg/L).

- EPC Exposure point concentration; lesser of the UCL and the maximum detected concentration.
Mean Arithmetic average of the total number of samples, using proxy concentrations for non-detects.
SQLs Practical sample quantitation limits for the non-detects.
TPH Total petroleum hydrocarbons.
UCL 95 percent upper confidence limit (one-tailed) on the mean, assuming a normal distribution.

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January 7, 1998
Project No. RC0175.006

Ms. Madhulla Logan
Alameda County Health Care Services Agency
1131 Harbor Bay Parkway
Alameda, California 94502-6577

(510) 567-6764

SUBJECT: RISK MANAGEMENT PLAN, SCHWARTZ AND LINDHEIM PROPERTY, 6345 COLISEUM WAY, OAKLAND, CALIFORNIA.

Dear Ms. Logan:

This risk management plan summarizes the extent of risks and appropriate precautions for workers during current and future work activity at the above-referenced site (Figure 1). Petroleum hydrocarbons have been historically detected in soil and groundwater at the site. Geraghty & Miller prepared a human health risk assessment dated January 30, 1995, analyzing the risks for on-site office workers and construction workers associated with petroleum hydrocarbons in soil and groundwater. All applicable pathways for exposure to subsurface petroleum hydrocarbons were considered for office workers and construction workers.

The assessment of health risks for on-site office workers determined that no significant risk existed either now or in the future from petroleum hydrocarbons found in the subsurface. The only precaution recommended for future activities at the site was the use of dermal protection for construction workers who would work in contact with groundwater.

Geraghty & Miller produced two additional documents dated December 12, 1996, and June 20, 1997, to answer questions posed by the Alameda County Health Care Services Agency (ACHCSA) regarding the risk assessment. The June 20, 1997 document also provided a more accurate estimate of risk for construction-worker dermal exposure to groundwater. This calculation used a more appropriate surrogate and exposure scenario to estimate risks. All documents are available for review at the ACHCSA.

Geraghty & Miller determined that the existing risk for dermal contact of workers with groundwater was negligible during normal construction activities. Excessive dermal contact due to exposure time (over 2 hours per day) or excessive surface area (exposure



of the entire upper body) should be prevented to minimize the possibility of irritation due to dissolved hydrocarbons found in groundwater. Groundwater at the site should not be ingested or used as a water supply source.

Geraghty & Miller recommends the use of gloves when in direct contact with soil or groundwater that is suspected, due to odor or coloring, of containing petroleum hydrocarbons. Some individuals are sensitive to low levels of petroleum hydrocarbons in soil or groundwater; precautions should be taken by those individuals to prevent irritation.

Geraghty & Miller also recommends that contractors for future construction activities be prepared to encounter soil and/or groundwater that may contain petroleum hydrocarbons. A construction plan should include the possibility of removing soil and/or groundwater if excavation is required. A health and safety plan should be prepared to ensure that all workers are aware of safety requirements.

If you have any questions regarding this risk management plan, please contact Geraghty & Miller at (510) 233-3200.

Sincerely,
GERAGHTY & MILLER, INC.



Aaron O'Brien
Staff Engineer/Project Manager



Jeffrey W. Hawkins, R.G.
Senior Scientist



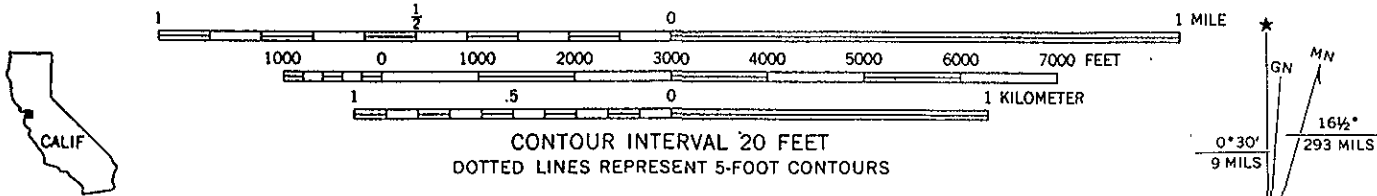
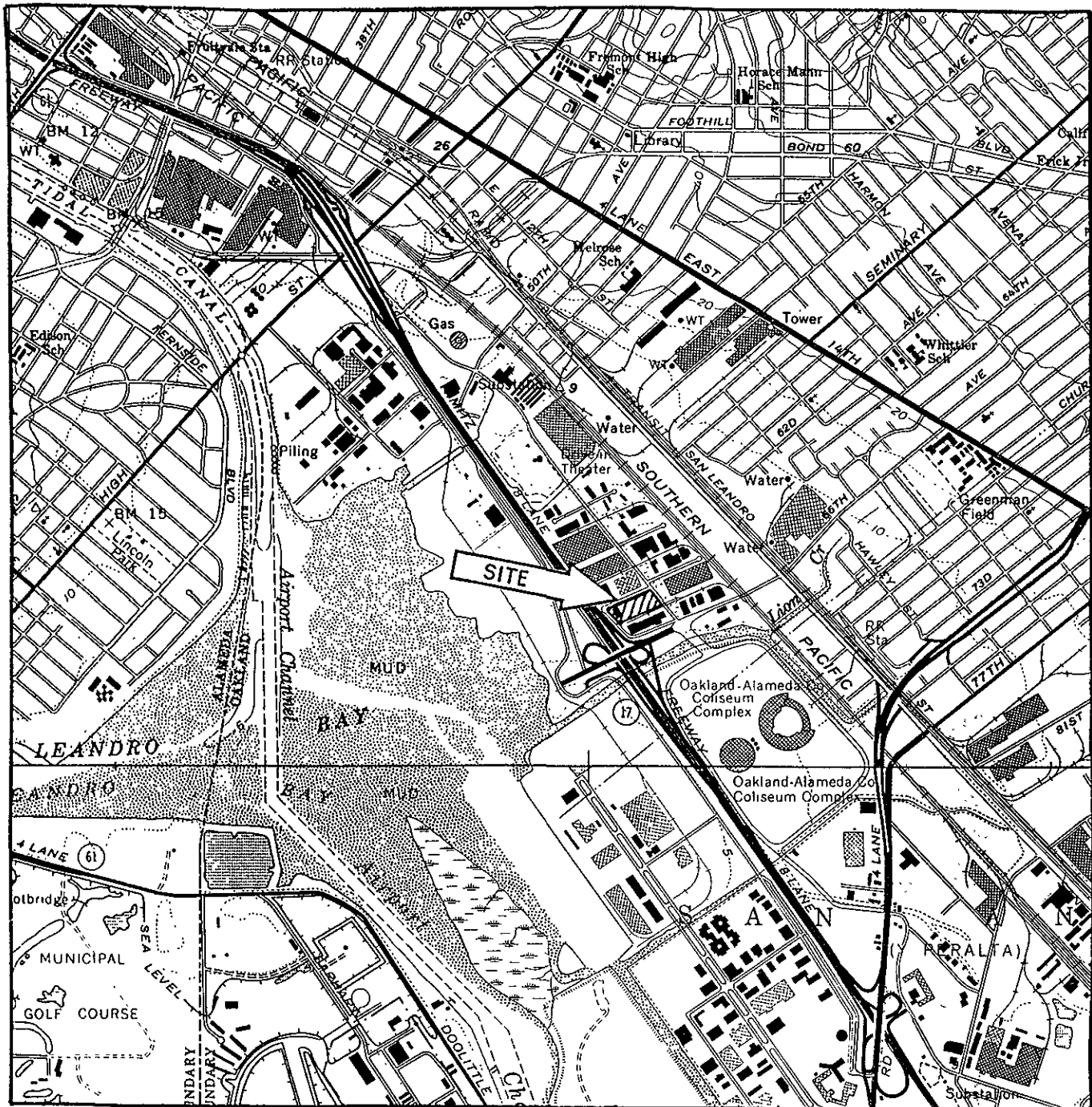
Gary W. Keyes
Principal Engineer
Vice President



Attachment: Figure 1 Site Location Map

cc: Bob Cochran, Chevron Products Company
Bob Schwartz, Schwartz & Lindheim





OAKLAND EAST, CALIF. SAN LEANDRO, CALIF. 1959
 SW/4 CONCORD 15' QUADRANGLE NW/4 HAYWARD 15' QUADRANGLE PHOTOREVISED 1980

 **GERAGHTY & MILLER, INC.**
Environmental Services
 Project No. RC17500

SITE VICINITY MAP
SCHWARTZ AND LINDHEIM PROPERTY
 6345 Coliseum Way
 Oakland, California

FIGURE
1

**Table 8-1: Remediation Goal Summary - Soil and Groundwater
Schwartz and Lindheim Property, Oakland, CA**

| Constituent | Soil Goals (mg/kg) | | | Groundwater Goals (mg/L) | | |
|-----------------|--|---------------------------------------|---------------------|--|---------------------------------------|---------------------------|
| | Excavation Worker HBG (Table 6-3) | Indoor Vapor HBG (Table 6-6) | Csat (Table 6-6) | Excavation Worker HBG (Table 6-5) | Indoor Vapor HBG (Table 6-7) | Solubility (Table 3-1) |
| <u>VOCs</u> | | | | | | |
| Benzene | 10.2 | 3.5 | 800 | ND | ND | 1,780 |
| Ethylbenzene | 6,100 | 16,000 | 160 | ND | ND | 152 - 208 |
| Toluene | 40,300 | 29,000 | 390 | 170 | 42,000 | 490 - 627 |
| Xylenes | 21,200 | 27,000 | 690 | ND | ND | 162 - 200 |
| <u>TPH</u> | | | | | | |
| n-Hexane [a] | 2,420 | NAP | NAP | 44 | NAP | 18 |
| Naphthalene [b] | 6,600 | NAP | NAP | 1.9 | NAP | 30 - 34 |

[a] n-Hexane used as a surrogate for TPH as gasoline.
 [b] Naphthalene used as a surrogate for TPH as diesel and TPH as motor oil.

Csat Estimated soil saturation level.
 NAP Not applicable.
 TPH Total petroleum hydrocarbons.
 VOCs Volatile organic compounds.

**Table 8-2: Summary of Maximum Constituent Levels in Soil and Groundwater
Schwartz and Lindheim Property, Oakland, California**

| Constituent | Constituent Concentration in Soil (mg/kg) | Constituent Concentration in Groundwater (mg/L) | Most Conservative Health-Based Goal (HBG) (c) | | Does Existing Concentration Exceed Most Conservative Goal? | |
|--------------------------------------|--|--|--|-----------------------|--|---------|
| | EPC | EPC | Soil (mg/kg) | Groundwater (mg/L) | Soil | Water |
| <u>Volatile Organic Compounds:</u> | | | | | | |
| Benzene | 0.19 | ND | 3.5 | NA | No | NA |
| Ethylbenzene | 2.7 | ND | 160 | NA | No | NA |
| Toluene | 0.23 | 0.14 | 390 | 170 | No | No |
| Xylenes | 1.7 | ND | 690 | NA | No | NA |
| <u>Total Petroleum Hydrocarbons:</u> | | | | | | |
| as Gasoline (a) | 21 | 0.26 | 2.42 | 44 | No | No |
| as Diesel (b) | 410 | 12. | 6,600 | 1.9 | No | Yes (d) |
| as Motor Oil (b) | 98 | 10. | 6,600 | 1.9 | No | Yes (d) |

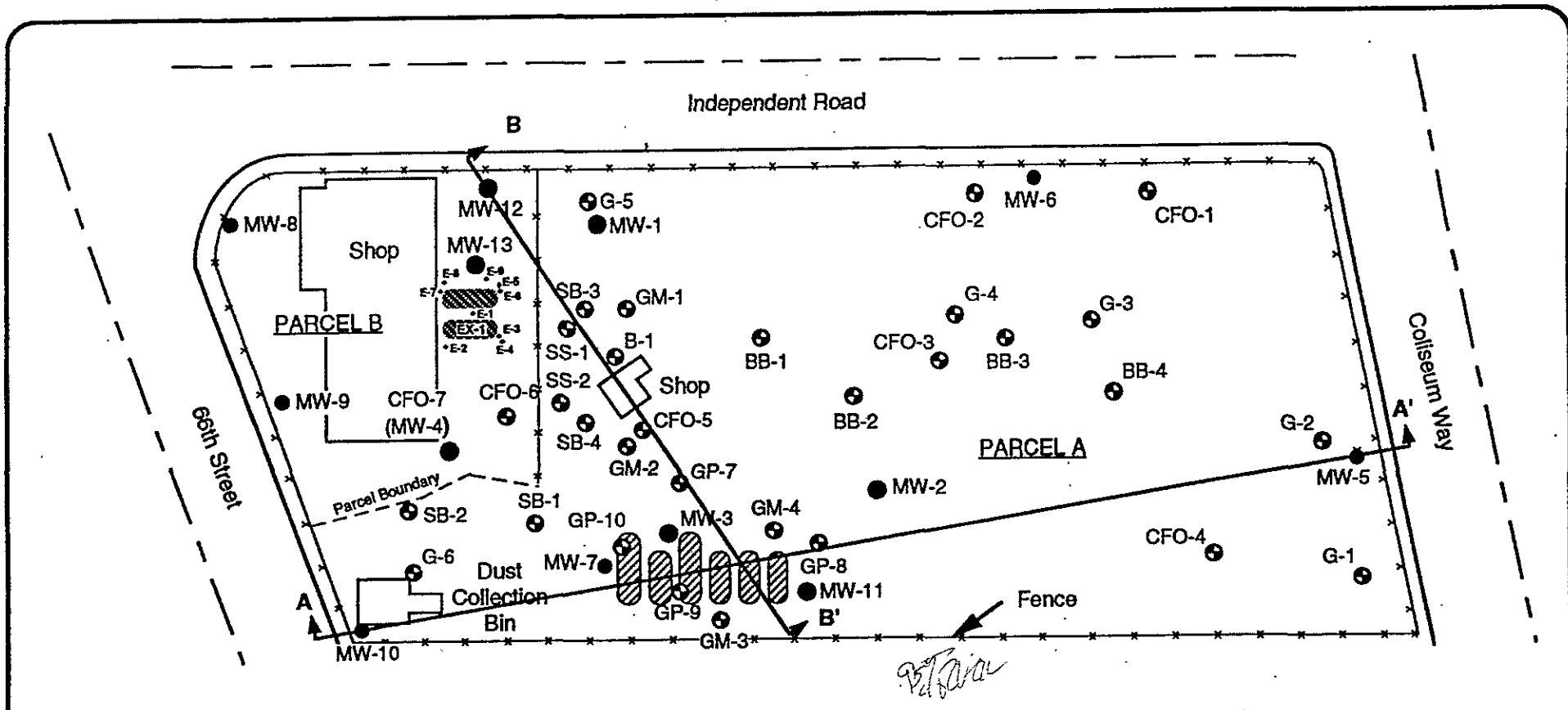
- (a) n-Hexane used as surrogate for TPH-G.
 (b) Naphthalene used as surrogate for TPH-D and TPH-MO.
 (c) Most conservative/most protective health-based goal (HBG) selected from indoor occupational or excavation worker exposure; or Csat, a calculated theoretical soil saturation limit.
 (d) The EPC exceeds the most conservative goal for an excavation worker's dermal exposure to groundwater. Therefore, until groundwater concentrations drop below 1.9 mg/L, personnel working in an excavation should avoid contact with groundwater. Dermal contact with groundwater can be avoided through dewatering of excavations, or through the use of personal protective equipment.

mg/kg Milligrams per kilogram (= ppm)

mg/L Milligrams per liter (= ppm)

EPC Exposure point concentration; lesser of the UCL (95 percent upper confidence limit [one-tailed] on the mean, assuming normal distribution) and the maximum detected concentration (Tables 3-1 and 3-2).

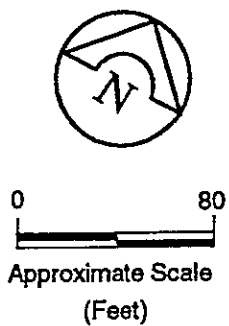
NA Not analyzed



EXPLANATION

- Approximate location of groundwater monitor well
MW-7
- ⊙ Approximate location of soil boring
G-6
- E-1 Approximate location of hand augered soil samples
- ▨ Approximate location of former underground diesel tank
- ▤ Approximate location of former underground asphalt tank
- EX-1 Approximate location of water sample collected from open tank pit

A ——— A'
Line of cross section

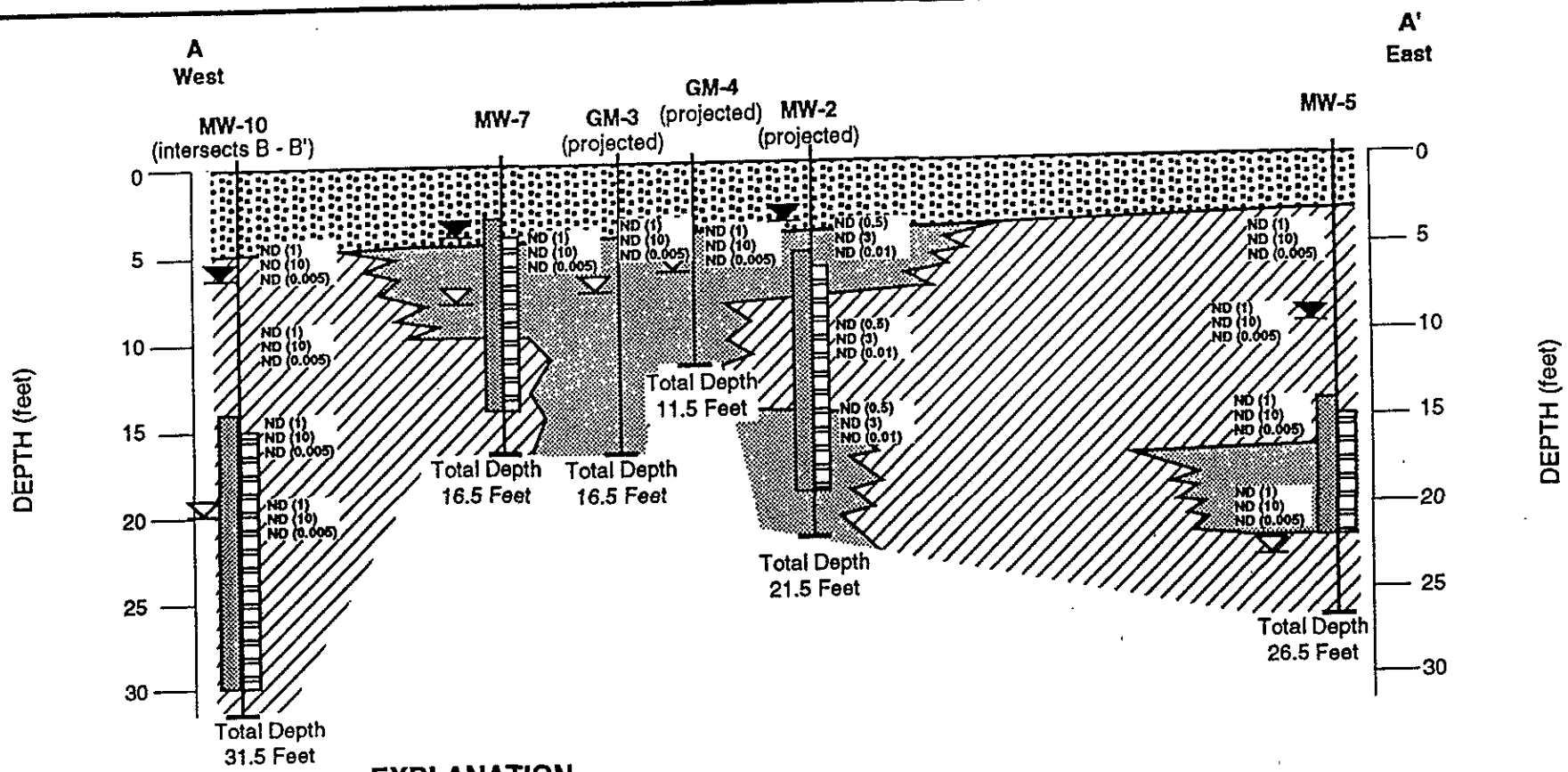


Reference: Blymyer Engineers, Inc., May 1989



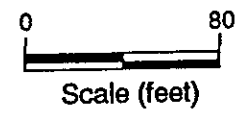
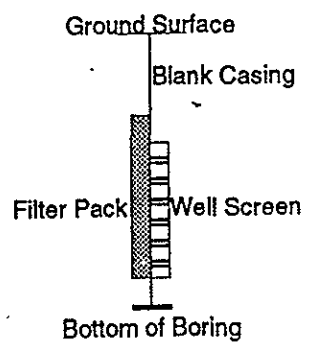
SITE PLAN
Schwartz and Lindheim Property
6345 Coliseum Way
Oakland, California

FIGURE
2



EXPLANATION

- Sand/Gravel
- Silt/Clay
- Asphalt/Gravel backfill
- Groundwater surface measured 01/18/94
- Depth groundwater encountered during drilling
- Soil analytical results listing TPH-G, TPH-D, and benzene (top to bottom) in mg/kg. Detection limit in parentheses



Horizontal Scale 1" = 80'
Vertical Exaggeration: 8X



CROSS SECTION A - A'
SCHWARTZ AND LINDHEIM PROPERTY
 6345 Coliseum Way
 Oakland, California

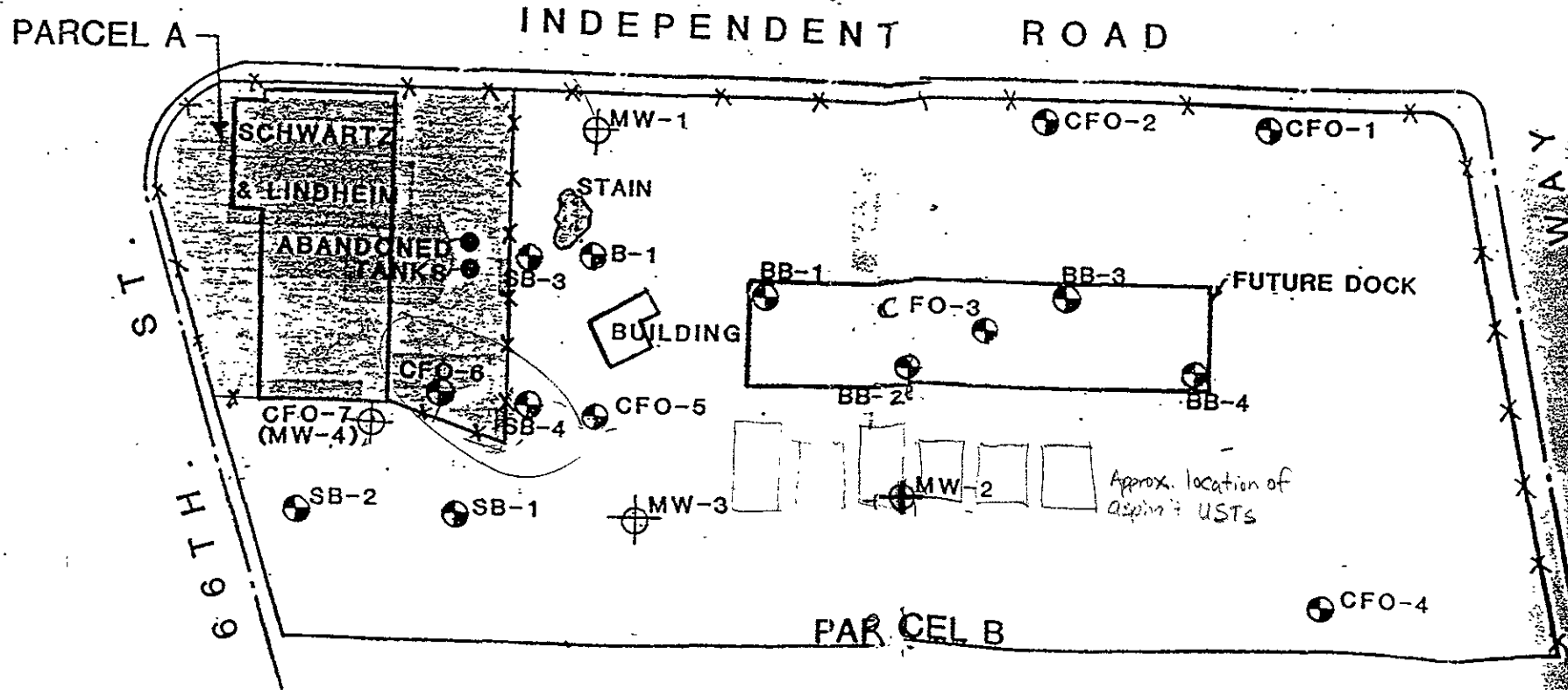
FIGURE
3



LEGEND

- ⊕ SOIL BORE
- ⊕ MONITORING WELL

Approximate Scale: 1" = 60'



| | |
|--|--------------------------|
| POLYMER ENGINEERS, INC. 1000 W. 10TH ST., OAKLAND, CALIF. 94612 | |
| SCALE: NOXEN | CONSOLIDATED FREIGHTWAYS |
| DRAWN BY: LW 4/4/88 | SITE PLAN |
| DATE: 4/4/88 | SP-1A |
| CHECKED BY: | |
| APPROVED BY: | |
| JOB NO: 88063 | |

FIGURE 3

Schwartz and Lindheim,
6345 Coliseum Way,
Oakland, CA

STID# - 4447

Review of the updated risk assessment, dated December 12, 1996

Comment #3.

I wanted to know if the distribution was normal or lognormal as the 95% UCL calculation differs based on the distribution.

Comment #4

What they have mentioned is not right. The Cal EPA potency factor is 0.1 and the US EPA's potency factor is .029. Since risk for carcinogens = Lifetime dose factor x potency factor, the greater the potency factor, the greater the risk.

Comment #5

In the final health based goal, it looks like they used soil to indoor pathway results, Is it because it is more conservative than the groundwater to indoor air pathway results. Also where is the table showing the cleanup levels for groundwater to indoor air pathway ?

8/15/97 Review - Comment

They responded to the above questions in a document dated 6/2/0/97

They re-calculated the indoor air scenario using CAL-EPA's slope factor and now the UCL that they calculated i.e is 0.19 mg.kg is less than the new SSTL value of 1 mg/kg . Also, they did the risk assessment for a construction worker scenario which appears to be O.K. However, I asked them to send me a document that supports the use of nonane instead of naphthalene as a surrogate for diesel. Aaron O.Brian agreed to send us a copy of the reference document. Now the pending documentation is the risk management plan and Aaron wants to look at sample risk management plans prior to preparing one for us.

June 20, 1997
Project No. RC0175.006

Ms. Madhulla Logan
Alameda County Health Care Services Agency
1131 Harbor Bay Parkway
Alameda, California 94502-6577

(510) 567-6764

SUBJECT: Response to Alameda County Request for Additional Information, Schwartz and Lindheim Property, 6345 Coliseum Way, Oakland, California.

Dear Ms. Logan:

This letter provides clarification of two issues raised by the Alameda County Health Care Services Agency (ACHCSA) regarding the Geraghty & Miller Risk Assessment dated January 30, 1995, for the above-referenced property. The two issues relate to the type of distribution used in the determination of the Upper Confidence Limit (UCL) for subsurface samples used in the risk assessment, and calculations to show new Health-Based Goals (HBGs) and associated risks from benzene in soil using California EPA cancer-slope factors.

In addition to the responses to the two issues, a new HBG for construction worker exposure to groundwater is calculated. Nonane and eicosane are used as surrogates for TPH as diesel and TPH as motor oil. Naphthalene is used to calculate a new HBG for polycyclic aromatic hydrocarbons (PAHs) as a percentage of TPH concentrations.

FORMAL RESPONSE TO ACHCSA COMMENTS

- 1) **ACHCSA Comment:** "Was normal or log normal distribution used in the risk assessment?"

Response: UCLs in the risk assessment were based on a normal distribution.

- 2) **ACHCSA Comment:** "The slope factor for benzene used was from the USEPA standards; need to use Cal EPA standard."

Response: Previously, the Federal Cancer Slope Factor for benzene (0.029 kg-day/mg) was used in evaluating the carcinogenic risks from benzene in soil. The California EPA standard (0.1 kg-day/mg) is used to calculate the new HBGs for

Excavation Worker Exposure to Constituents in Soil and Hypothetical Soil Gas Exposure for Building Occupants, as shown in Attachment 1. The UCL calculated for benzene (0.19 mg/kg) is less than the new HBGs for benzene in soil (55 mg/kg and 1 mg/kg).

NEW GROUNDWATER HBGs

In addition to the new HBGs calculated for construction-worker exposure to benzene in soil, new HBGs were calculated for construction-worker exposure to groundwater using different surrogates to estimate risks from total petroleum hydrocarbons. Previously, an HBG of 1.9 mg/L was calculated using naphthalene as a surrogate to estimate risks for hydrocarbons in the TPH-as-diesel and TPH-as-motor-oil ranges. Naphthalene comprises a small fraction of TPH contaminants. Measurements of total naphthalenes range from 0.4% to 6.4% as a fraction of TPH (Calabrese and Kostecki, 1993). A new HBG is calculated for exposure to naphthalene as 6.4% of the total TPH-as-diesel and TPH-as-motor-oil exposure (1.4 mg/L). This results in an exposure-point concentration of 1.4 mg/L for naphthalene.

Region IV of the USEPA and the State of Massachusetts have adopted a policy that uses hexane, nonane, and eicosane as surrogates for the estimation of risks associated with different weight fractions of petroleum hydrocarbons. The oral reference doses (RfD_o) for nonane and eicosane were calculated by comparing the toxicities of these compounds with that of hexane, which has an RfD of $0.06 \frac{\text{mg}}{\text{kg-day}}$. The RfD_os for nonane and eicosane are $0.6 \frac{\text{mg}}{\text{kg-day}}$ and $6.0 \frac{\text{mg}}{\text{kg-day}}$, respectively.

Nonane was used as a surrogate to calculate a new HBG for construction-worker exposure to TPH as diesel in groundwater. Eicosane was used as a surrogate to calculate a new HBG for construction-worker exposure to TPH as motor oil in groundwater. Hydrocarbons in the TPH-as-diesel analytical range have chain lengths from 8 to 27 carbon atoms (Suthersan, 1997). Hydrocarbons in the TPH-as-motor-oil analytical range have chain lengths greater than 20 carbon atoms (Suthersan). Therefore, nonane (9 carbon atoms) and eicosane (20 carbon atoms) are appropriate surrogates to estimate risks associated with TPH encountered at the site.

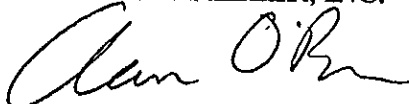
The exposure criteria (8 hours/day, 5 days/week, 13 weeks) used in the calculation of the new Duration Averaged Daily Dose (DADD) were the same as those used in the January 1995 report, with the exception of skin surface area. The new calculation assumes that only

the hands will be exposed to groundwater for the duration of exposure. The original exposure-point concentrations in groundwater (12 mg/L for TPH as diesel; 10 mg/L for TPH as motor oil) are used, even though current monitoring data indicate that concentrations are decreasing. The DADD and HBG calculations are shown in Attachment 2.


The new HBG calculated for exposure to naphthalene is 6.6 mg/L, above the exposure-point concentration of 1.4 mg/L. The new HBG calculated using nonane as a surrogate for construction-worker exposure to TPH as diesel in groundwater under the above-mentioned assumptions is 22.6 mg/L, which is above the exposure-point concentration of 12 mg/L. The new HBG calculated using eicosane as a surrogate for construction-worker exposure to TPH as motor oil in groundwater is 105 mg/L, which is above the exposure-point concentration of 10 mg/L. Therefore, TPH in shallow groundwater does not pose a risk to excavation workers.

If you have any questions regarding this report, please do not hesitate to call.

Sincerely,
GERAGHTY & MILLER, INC.



Aaron O'Brien
Staff Engineer/Project Manager



Jeffrey W. Hawkins, R.G.
Senior Scientist



Gary W. Keyes
Principal Engineer
Richmond, California Office Manager

Attachments: References

Attachment 1 New Calculations Using California EPA Risk Standards
Attachment 2 New Calculations for Construction Worker Exposure to
Groundwater

cc: Bob Cochran, Chevron Products Company