Phase I Subsurface Investigation

K/D Cedar Supply Company

Hayward, California

August 2, 1991 BEI No. 91020

Prepared By:

Blymyer Engineers, Inc.
1829 Clement Avenue
Alameda, CA 94501-1396

Site:

22008 Meekland Avenue
Hayward, CA 94541-3895

JMO\91020SUB.RPT

LIMITATIONS

The conclusions and recommendations presented herein were prepared in accordance with generally accepted professional engineering and/or geologic practices and principles. The scope of work for the project was conducted within the limitations prescribed by the client. Our opinions were based upon observations made at the site; review of available environmental, climatological, and geological data pertaining to the site; review of boring logs and subsurface data obtained during the investigation; and evaluation of analytical soil and/or groundwater data provided by an approved testing laboratory. All data obtained from investigations of this type are reviewed by state or local regulatory agencies for conformance with their criteria. Therefore, there is no guarantee that additional borings, soil or groundwater analytical tests, or remedial work will not be required at the site. This warranty is in lieu of all other warranties either expressed or implied pertaining to this project.

John Morrison
Project Geologist

Harry W. Short, R.G., C.E.G.
Senior Geologist

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SUMMARY

Blymyer Engineers was retained by K/D Cedar Supply Company to perform a Phase I Subsurface Investigation at its office and warehouse located at 22008 Meekland Avenue in Hayward, California. This report, documenting the investigation, is prepared for the Alameda County Health Care Services Agency (ACHCSA) and the San Francisco Bay Regional Water Quality Control Board (RWQCB).

The investigation was initiated by the discovery of petroleum-contaminated soil during the removal of two 550-gallon underground gasoline storage tanks in November 1989. One soil sample of the four collected from beneath the two former gasoline tanks contained an elevated level of petroleum hydrocarbons (1,300 parts per million (ppm) Total Petroleum Hydrocarbons (TPH) as gasoline). Two of the remaining three soil samples contained 130 ppm and 1 ppm TPH as gasoline.

Three soil bores were installed to an approximate depth of 49 feet. Soil samples were collected every 5 feet and were analyzed for TPH as gasoline (modified EPA Method 8015) and benzene, toluene, ethylbenzene, and xylenes (BTEX, EPA Method 8020) on a standard 5-day turnaround.

The soil bores were converted to 2-inch diameter groundwater monitoring wells. The wells were sampled and the samples analyzed for TPH as gasoline and BTEX. The groundwater sample analytical results indicated no concentrations of TPH as gasoline or BTEX above respective method detection limits.

Groundwater at the site is found at a depth of 38 feet below grade surface and is confined by approximately 37 feet of clay alluvium. Groundwater flows to the northwest.

Due to the remote location of the groundwater table beneath approximately 37 feet of clay alluvium, the limited extent of contamination originally discovered beneath the tanks, and the fact that the site is completely paved with concrete and asphalt, Blymyer Engineers believes it is highly unlikely that groundwater would be impacted by the elevated level of petroleum contamination discovered at the bottom of the tank pit in December 1990. This is confirmed by the current analytical data. Based on this conclusion, Blymyer Engineers recommends that four rounds (1 year) of quarterly monitoring be performed at the site. Provided that the analyses continue to reveal no detectable levels of TPH as gasoline or BTEX, Blymyer Engineers would recommend no further work be performed at this site.

1.0 INTRODUCTION

1.1 Background

Blymyer Engineers was retained by K/D Cedar Supply Company to perform a Phase I Subsurface Investigation at its office and warehouse located at 22008 Meekland Avenue in Hayward, California. This report is prepared for the Alameda County Health Care Services Agency (ACHCSA) and the San Francisco Bay Regional Water Quality Control Board (RWQCB).

The following background information is Blymyer Engineers' understanding of prior site work as based on telephone conversations, letters, and laboratory reports provided by the client.

On November 20, 1989, R. L. Stevens Company removed two 550-gallon underground gasoline storage tanks from the warehouse yard of K/D Cedar Supply Company in Hayward, California (Figures 1 and 2). Available information revealed that the two tanks held only gasoline, however, the tanks were empty when removed. The ages of the tanks are not known.

Blaine Tech Services, Inc. collected four soil samples from the excavation after the tank removal. Two of the samples (#1 and #2) were collected from beneath the middle of each tank at the interface of the backfill and native soil. Samples #1 and #2 were collected at an approximate depth of 8.5 feet below grade surface. The remaining two samples (#3 and #4) were collected at the bottom of the excavation at a depth of 13.5 feet below grade surface. No groundwater was encountered in the excavation.

Samples #1 and #2 were analyzed for Total Petroleum Hydrocarbons (TPH) as gasoline using modified EPA Method 8015, and benzene, toluene, ethylbenzene, and

xylenes (BTEX) using EPA Method 8020. The December 7, 1990 laboratory report, included in Blaine Tech Services' Tank Removal Sampling Report 891120-A-1 (Appendix A), showed TPH as gasoline levels of 130 parts per million (ppm) in sample #1 and 1 ppm in sample #2. Xylenes were also detected in sample #1. Sample #4 was subsequently analyzed because of the analytical results of sample #1. Sample #4 was collected 5 feet below sample #1. The December 12, 1990 laboratory report, also included in Appendix A, showed sample #4 to contain 1,300 ppm of TPH as gasoline, 0.24 ppm of benzene, 8.7 ppm of toluene, 14 ppm of ethylbenzene, and 130 ppm of xylenes.

sample #4 is lower than #1

Due to the documented presence of petroleum-contaminated soil remaining in the ground at the site, the ACHCSA required that a Preliminary Site Assessment (Phase I Subsurface Investigation) be performed to assess the extent of petroleum contamination in soil and groundwater beneath the site.

1.2 Site Conditions

K/D Cedar Supply Company currently operates the facility at 22008 Meekland Avenue in Hayward, in a mixed residential, industrial, and commercial area. The site is bounded to the north by residential homes and vacant commercial offices, to the west by a construction supply company (Nave's Supply Co.) and a countertop manufacturer (Versital Enterprises), to the south by a fenced empty lot and an unoccupied warehouse, and to the east by residential homes and an automobile repair shop (Vargas Performance). The subject site is located on Meekland Avenue between Sunset Boulevard and Poplar Avenue and is surrounded by high cinder block walls on three sides. The entire site is paved with concrete, with several small asphalt-patched areas.

1.3 Objectives

The primary objectives of this preliminary site assessment were:

1. To assess the horizontal and vertical extent of soil contamination by petroleum hydrocarbons released from the former underground storage tanks;
2. To assess the extent of potential groundwater contamination by petroleum hydrocarbons released from the former underground storage tanks;
3. To determine the local direction of groundwater flow; and
4. To locate potential sensitive receptors (local water supply wells) in the area.

1.4 Scope of Work

In order to achieve the objectives of the project, the following scope of work was performed:

1. Three soil bores were installed to an approximate depth of 49 feet;
2. Soil samples were collected at five foot intervals just into the water table;
3. The soil samples were analyzed for TPH as gasoline and BTEX;
4. The soil bores were converted to 2-inch diameter groundwater monitoring wells which were developed by surging and bailing;
5. Groundwater samples were collected from each well;
6. The groundwater samples were analyzed for TPH as gasoline and BTEX;
7. The top of casing (TOC) elevations were surveyed to allow the calculation of groundwater flow direction;

8. A sensitive receptor survey was performed to search for potentially sensitive users of groundwater within a ½-mile radius of the site.

2.0 ENVIRONMENTAL SETTING

2.1 Regional Geology

The K/D Cedar Supply Company facility is located in the gently sloping East Bay Plain, approximately 3½-miles east of San Francisco Bay at an approximate elevation of 65 feet based on the National Geodetic Vertical Datum (NGVD). The San Francisco Bay Area is a northwest-southeast trending region enclosed in the Coast Range Province of California. Rocks in the region range from a Jurassic sedimentary, metamorphic, and plutonic basement to Holocene alluvium. The topography of the region is dominated by a major fault system which includes the San Andreas Fault on the west side of San Francisco Bay and the Hayward Fault at the base of the Berkeley Hills on the east side of the Bay. These faults are a reflection of the forces which have uplifted the Coast Range and dropped the section now covered by the open water of San Francisco Bay and Quaternary alluvium (Goldman, 1967). A cross section of the generalized stratigraphy underlying the area in the vicinity of the subject site is illustrated in Figure 3. The site is situated approximately 1 mile west of the Hayward Fault.

The generalized local stratigraphy from the surface down is described as follows: Holocene and younger alluvium up to 50 feet thick is composed of unconsolidated sand and silt. The alluvium has been brought down by streams from the nearby hills. The younger alluvium yields little water. Pleistocene and older alluvium, approximately 650 feet thick, is composed of clay, silt, sand, and gravel. The regional aquifer is contained in the older alluvium, and is confined. The site is located in the San Lorenzo Cone and local groundwater flow is generally directed toward the west. Groundwater recharge for this aquifer is along the Hayward fault to the east (Hickenbottom and Muir, 1988).

When the underground storage tanks were removed in November 20, 1989, groundwater was not encountered. Research of water depths from nearby monitoring wells show that groundwater was at approximately 30 feet in August 1986.

2.2 Climate

The East Bay Plain exhibits a Mediterranean-type climate with cool, wet winters and warmer, dry summers. Mean annual precipitation in Oakland is 25.42 inches. Mean monthly rainfall is 5.13 inches in January and 0.04 inches in August. At the time of this writing the entire Bay Area has experienced below-normal precipitation for the past five years. The mean monthly temperature in Hayward is 47.6 degrees (°) Fahrenheit in January and 64.1° Fahrenheit in August (Soil Conservation Service, 1981).

3.0 METHODS OF INVESTIGATION

3.1 Soil Investigation

3.1.1 Soil Sample Collection

Gregg Drilling & Testing, Inc., under the supervision of Blymyer Engineers, installed three soil bores (MW-1, MW-2, and MW-3 on Figure 2) to an approximate depth of 49 feet each using a Mobile Drill B-61 hollow-stem auger drill rig on July 10 and 11, 1991. The 8-inch diameter bores were placed around the former tank location (including one bore within 10 feet of the tank in the presumed downgradient direction, to the west) in order to assess the horizontal and vertical extent of soil containing TPH as gasoline and BTEX. These bores were later converted into 2-inch diameter groundwater monitoring wells.

Soil samples were collected at 5-foot intervals below grade surface in each bore. The augers were advanced to the desired sampling depth and a California split-spoon sampler, lined with three clean 6-inch long brass sleeves, was driven 18 inches ahead of the augers. The sampler was retrieved and the brass sleeves removed. The desired sample was sealed in its brass sleeve with aluminum foil, plastic end caps, and duct tape. The samples were then labeled and placed on ice for transportation to the analytical laboratory. All proper chain-of-custody procedures were observed. The soils were logged using the United Soils Classification System. Soil samples were field-screened for organic vapors using a photoionization detector (PID) and the results are found in the bore logs (Appendix B). The split-spoon sampler was decontaminated between samples with a trisodium phosphate (TSP) wash and clean water rinse.

Drill cuttings were stored on-site in labeled D.O.T.-approved, 55-gallon drums for later disposal by the client.

3.1.2 Analytical Methods and Results

The soil samples were sent to NET Pacific, Inc., a California-certified laboratory. The samples were analyzed for TPH as gasoline (modified EPA Method 8015) and BTEX (EPA Method 8020) on a standard 5-day turnaround. The results are summarized in Table I and the full analytical laboratory report is found as Appendix C.

3.2 Groundwater Investigation

3.2.1 Monitoring Well Installation

The 8-inch diameter, 49-foot soil bores were converted to 2-inch diameter monitoring wells at the locations indicated in Figure 2. One well was located within 10 feet of the former tank excavation in the presumed downgradient direction (west). The well construction details are found as Appendix D.

The wells were constructed of schedule 40 PVC casing in threaded, 10-foot sections. The casing was factory slotted with 0.020-inch slots from the bottom of the bore to the approximate location of the water table. The remainder of the casing was blank. A threaded cap or a slip cap with machine screws was attached to the bottom of the casing.

The annulus between the borehole wall and the casing was backfilled with #2 Monterey sand from the bottom of the borehole to 2 feet above the screened interval. Two feet of bentonite pellets were placed in the annulus and then hydrated to form a seal. The remainder of the annulus was backfilled to grade with a neat cement slurry. The top of the casing was secured with a locking well cap, and a flush-mounted traffic box was installed over each well.

Each well was developed by surging and pumping approximately 6 to 10 well casing volumes of water on July 12, 1991. Development water was stored on-site in labeled, DOT-approved, 55-gallon drums for later disposal by the owner.

3.2.2 Groundwater Sample Collection

A groundwater sample was collected from each well on July 16, 1991. At least three well volumes were removed prior to sampling using a decontaminated PVC hand pump or a Teflon® bailer. Water temperature, pH, and conductivity were measured prior to and after the removal of each well volume. The well was sampled using a Teflon® bailer only after these measurements were within 15% of each other for three consecutive well volumes. The water samples were placed in appropriate containers provided by the laboratory, labeled, and placed on ice for transportation to the analytical laboratory. The well purging and sampling data are found in Appendix E. All proper chain-of-custody procedures were observed.

3.2.3 Analytical Methods and Results

The groundwater samples were analyzed for TPH as gasoline (modified EPA Method 8015) and BTEX (EPA Method 602) at NET Pacific, Inc., a California-certified laboratory, on a standard 5-day turnaround. The results are summarized in Table II and the full analytical laboratory report is found in Appendix F.

3.2.4 Groundwater Elevation Survey

The water levels in all of the wells at the site were measured from the top-of-casing (TOC). The TOC elevation for each well was surveyed with a rod and level to a local benchmark based on the Alameda County Datum, which approximately represents mean sea level. The results of the groundwater elevation survey are found in Table

III. This allowed the determination of the local groundwater gradient direction which is depicted in Figure 4.

3.2.5 Sensitive Receptor Survey

A survey of all existing wells within a ½-mile radius was performed to determine potential sensitive receptors in the area. The results are found in Appendix G.

4.0 DATA INTERPRETATION

4.1 Site Stratigraphy

As determined during the installation of the three monitoring wells, the upper 14 to 19 feet of alluvial deposits consist of brown, stiff clay and silty clay. A relatively thin (approximately 1-foot-thick) stringer of dry to moist sand or clayey sand/sandy clay is found beneath the clay at 14 to 19 feet of depth. Eighteen to 20 feet of clay, with varying concentrations of silt and sand, underlie this thin sand layer. Water was found at 38 feet of depth in all three bores in a wet sand with interbedded thin wet clays to a depth of 45 feet. The water later rose to an approximate depth of 35.5 feet, indicating that the aquifer is confined. A moist gravelly clay was found at 45 feet at the bottom of the bore for well MW-1.

4.2 Discussion of Soil Sample Analytical Results

The laboratory analytical data revealed no evidence of soil contamination by petroleum hydrocarbons.

4.3 Discussion of Groundwater Sample Analytical Results

The laboratory analytical data revealed no evidence of groundwater contamination by petroleum hydrocarbons. This would be expected considering the depth of the confined aquifer below 38 feet of predominately clay alluvium.

4.4 Groundwater Flow Direction

Figure 4 illustrates the presumed direction of groundwater flow on July 16, 1991. This northwest gradient is somewhat different from the assumed westward direction indicated by local topography and the site's geographical relationship to San

Francisco Bay. Another survey was performed which confirmed that the originally measured flow direction was correct. A report filed at the San Francisco Bay Regional Water Quality Control Board concerning a fuel leak site 4 blocks to the north (Durham Transportation, 19984 Meekland Avenue) stated that groundwater flow was directed westward to northwestward. The aquifer below the K\D Cedar site is confined by the overlying clay layers, having risen approximately 3.5 feet from the depth at which it was first found.

4.5 Discussion of Sensitive Receptor Survey

The results of the sensitive receptor survey revealed a variety of wells of varying uses and depths within a ½-mile radius of the site. Four wells are found from the west to north quadrant within a ½-mile radius of the site. They are all irrigation wells and are found at least 1000 feet away. Two domestic wells are found approximately 200 feet away to the northeast and east, not in a downgradient direction from the site.

5.0 CONCLUSIONS

- The site is located in a mixed residential, industrial, and commercial area of Hayward in Alameda County.

- One soil sample of the four collected in December 1990 from beneath the former 550-gallon gasoline tanks (at a depth of approximately 13.5 feet) contained an elevated level of petroleum hydrocarbons (1,300 ppm TPH as gasoline). This indicates that the extent of elevated petroleum contamination is limited.

- Groundwater at the site is found at an approximate depth of 38 feet below grade surface and is confined beneath predominately clay alluvium.

- Soil samples collected during the installation of the three monitoring wells at the site in July 1991 contained no detectable levels of petroleum hydrocarbons.

- Groundwater samples collected from the monitoring wells in July 1991 contained no detectable levels of petroleum hydrocarbons.

- Due to the remote location of the groundwater table beneath approximately 38 feet of predominately clay alluvium, it is unlikely that groundwater would be impacted by the limited petroleum contaminated soil discovered at the bottom of the tank excavation in December 1990.

6.0 RECOMMENDATIONS

- This report should be submitted to:

  Pamela J. Evans
  Alameda County Health Care Services Agency
  Department of Environmental Health
  Hazardous Materials Program
  80 Swan Way, Room 200
  Oakland, California 94621

  Richard Hiett
  Regional Water Quality Control Board
  2101 Webster Street, 5th Floor
  Oakland, California 94612

- There is a limited areal extent of soil with elevated levels (130 ppm and 1,300 ppm beneath one of the tanks) of TPH as gasoline in the former tank location. Due to the thickness of 38 feet of overlying clay soils and the fact that the site is completely paved with asphalt, it is Blymyer Engineers' opinion that groundwater is not at risk from the petroleum-contaminated soil discovered beneath the former gasoline tanks. Therefore, Blymyer Engineers recommends no further action relative to the petroleum contamination in the soil.

- Blymyer Engineers recommends that four rounds (1 year) of quarterly groundwater monitoring be performed at the site. If no detectable levels of TPH as gasoline or BTEX are detected in samples from the monitoring wells, Blymyer Engineers would recommend that no further work be performed at this site.

7.0 REFERENCES

Goldman, Harold B., 1967. *Geology of San Francisco Bay*; California Division of Mines and Geology, prepared for the San Francisco Bay Conservation and Development Commission, 58 p.

Hickenbottom, Kelvin, and Kenneth Muir, 1988. *Geohydrology and Groundwater Quality Overview of the East Bay Plain Area, Alameda County, California, 205(J) Report*, submitted to the San Francisco Bay Regional Water Quality Control Board.

United States Department of Agriculture, Soil Conservation Service, 1981. *Soil Survey of Alameda County, California, Western Part.*

Tables

TABLE I, SUMMARY OF SOIL SAMPLE ANALYTICAL RESULTS
BEI Job No. 91020, K\D Cedar,
22008 Meekland Avenue, Hayward, California

Sample Identification	modified EPA Method 8015 (ppm)	EPA Method 8020 (ppb)			
	TPH as gasoline	Benzene	Ethylbenzene	Toluene	Xylenes
MW-1 5.0-5.5 feet bgs	<1	<2.5	<2.5	<2.5	<2.5
MW-1 9.0-9.5 feet	<1	<2.5	<2.5	<2.5	<2.5
MW-1 14.5-15.0 feet	<1	<2.5	<2.5	<2.5	<2.5
MW-1 19.5-20.0 feet	<1	<2.5	<2.5	<2.5	<2.5
MW-1 24.5-25.0 feet	<1	<2.5	<2.5	<2.5	<2.5
MW-1 29.5-30.0 feet	<1	<2.5	<2.5	<2.5	<2.5
MW-1 34.0-35.5 feet	<1	<2.5	<2.5	<2.5	<2.5
MW-1 39.5-40.0 feet	<1	<2.5	<2.5	<2.5	<2.5
MW-2 4.0-5.5 feet	<1	<2.5	<2.5	<2.5	<2.5
MW-2 9.0-10.5 feet	<1	<2.5	<2.5	<2.5	<2.5
MW-2 16.0-16.5 feet	<1	<2.5	<2.5	<2.5	<2.5
MW-2 19.5-20.0 feet	<1	<2.5	<2.5	<2.5	<2.5
MW-2 24.5-25.0 feet	<1	<2.5	<2.5	<2.5	<2.5
MW-2 29.5-30.0 feet	<1	<2.5	<2.5	<2.5	<2.5
MW-2 34.5-35.0 feet	<1	<2.5	<2.5	<2.5	<2.5
MW-2 39.5-40.0 feet	<1	<2.5	<2.5	<2.5	<2.5
MW-3 4.5-5.0 feet	<1	<2.5	<2.5	<2.5	<2.5
MW-3 9.5-10.0 feet	<1	<2.5	<2.5	<2.5	<2.5
MW-3 15.0-15.5 feet	<1	<2.5	<2.5	<2.5	<2.5
MW-3 19.5-20.0 feet	<1	<2.5	<2.5	<2.5	<2.5
MW-3 24.5-25.0 feet	<1	<2.5	<2.5	<2.5	<2.5
MW-3 29.5-30.0 feet	<1	<2.5	<2.5	<2.5	<2.5
MW-3 34.5-35.0 feet	<1	<2.5	<2.5	<2.5	<2.5
MW-3 39.5-40.0 feet	<1	<2.5	<2.5	<2.5	<2.5

bgs = below grade surface TPH = Total Petroleum Hydrocarbons

ppm = parts per million ppb = parts per billion

For results presented as <x, x represents the detection limit of the analytical equipment.

TABLE II, SUMMARY OF GROUNDWATER SAMPLE ANALYTICAL RESULTS
BEI Job No. 91020, K/D Cedar
22008 Meekland Avenue, Hayward, California

Sample Identification	modified EPA Method 8015 (ppm)	EPA Method 602 (ppb)			
	TPH as gasoline	Benzene	Ethylbenzene	Toluene	Xylenes
MW-1	<0.05	<0.5	<0.5	<0.5	<0.5
MW-2	<0.05	<0.5	<0.5	<0.5	<0.5
MW-3	<0.05	<0.5	<0.5	<0.5	<0.5

bgs = below grade surface TPH = Total Petroleum Hydrocarbons

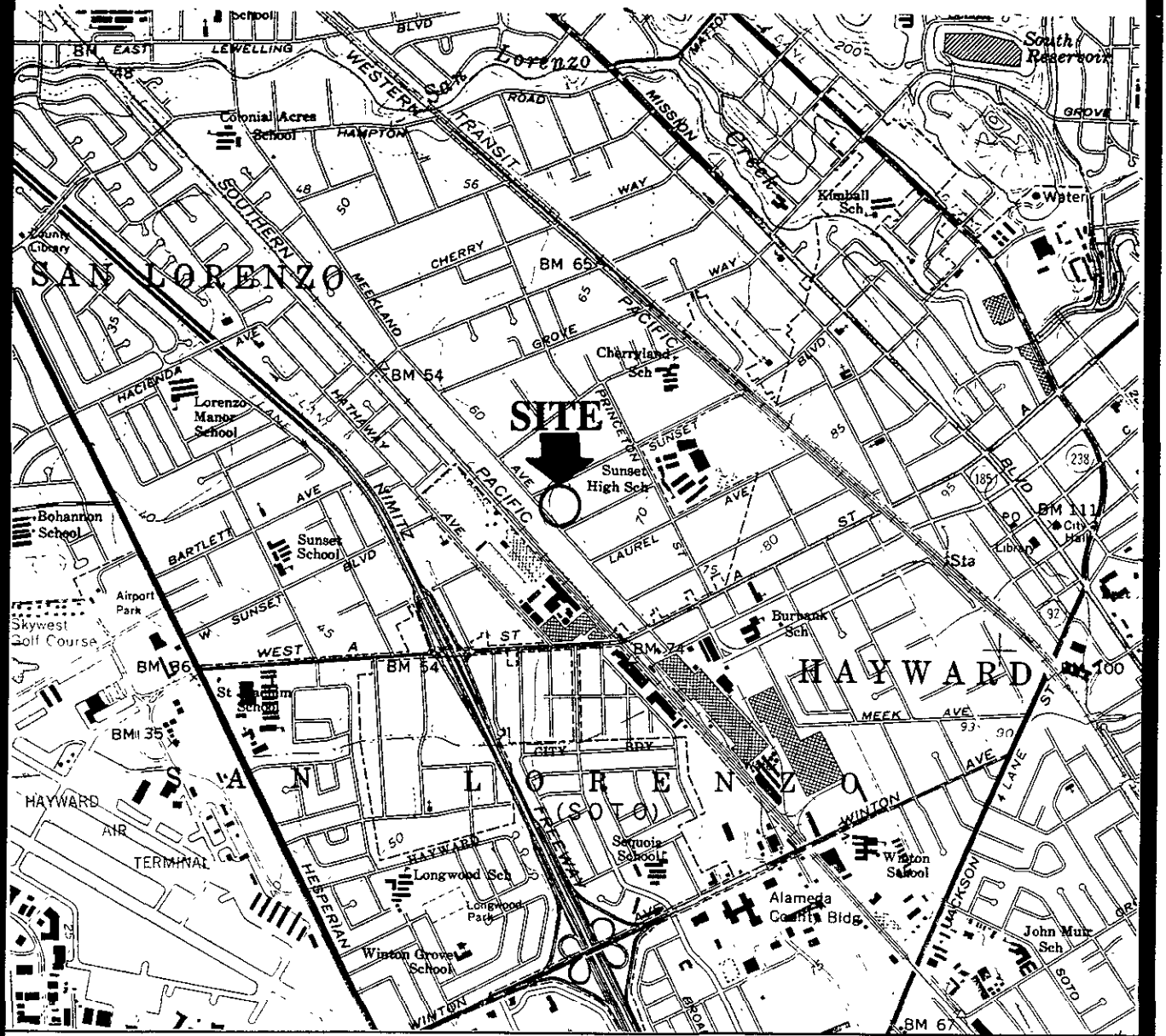
ppm = parts per million ppb = parts per billion

For results presented as <x, x represents the detection limit of the analytical equipment.

TABLE III, GROUNDWATER ELEVATION SURVEY DETAILS July 16, 1991 BEI Job No. 91020, K/D Cedar 22008 Meekland Avenue, Hayward, California			
	TOC ELEVATION (feet)*	DEPTH TO WATER (feet from TOC)	WATER SURFACE ELEVATION (feet)*
MW-1	63.77	35.54	28.23
MW-2	63.61	35.41	28.20
MW-3	63.63	35.49	28.14

TOC = Top of Well Casing * = based on Alameda County Datum

Figures

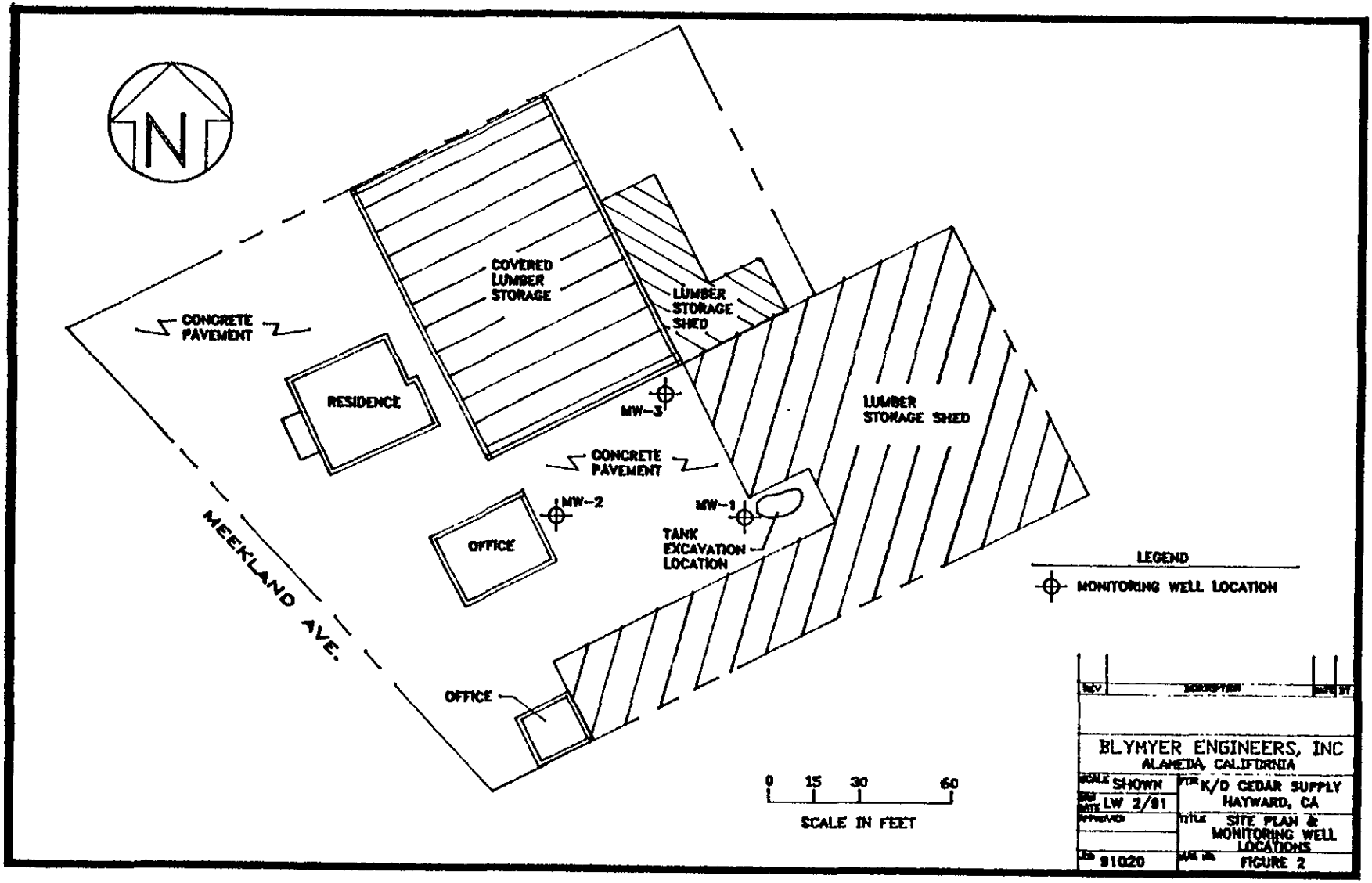


Source: United States Geological Survey, "Hayward, CA", photorevised 1980

K/D CEDAR SUPPLY

22008 MEEKLAND AVE.
HAYWARD, CA

FIGURE 1 **JOB #91020**


N
COVERED LUMBER STORAGE
LUMBER STORAGE SHED
CONCRETE PAVEMENT
RESIDENCE
MW-3
LUMBER STORAGE SHED
CONCRETE PAVEMENT
MW-2
MW-1
OFFICE
TANK EXCAVATION LOCATION
MEEKLAND AVE.
OFFICE
LEGEND
MONITORING WELL LOCATION
0 15 30 60
SCALE IN FEET
REV
DESCRIPTION
DATE BY
BLYMYER ENGINEERS, INC
ALAMEDA, CALIFORNIA
SCALE SHOWN
DRN LW
DATE 2/91
APPROVED
FOR K/D CEDAR SUPPLY
HAYWARD, CA
TITLE SITE PLAN & MONITORING WELL LOCATIONS
JOB 91020
SUB NO. FIGURE 2

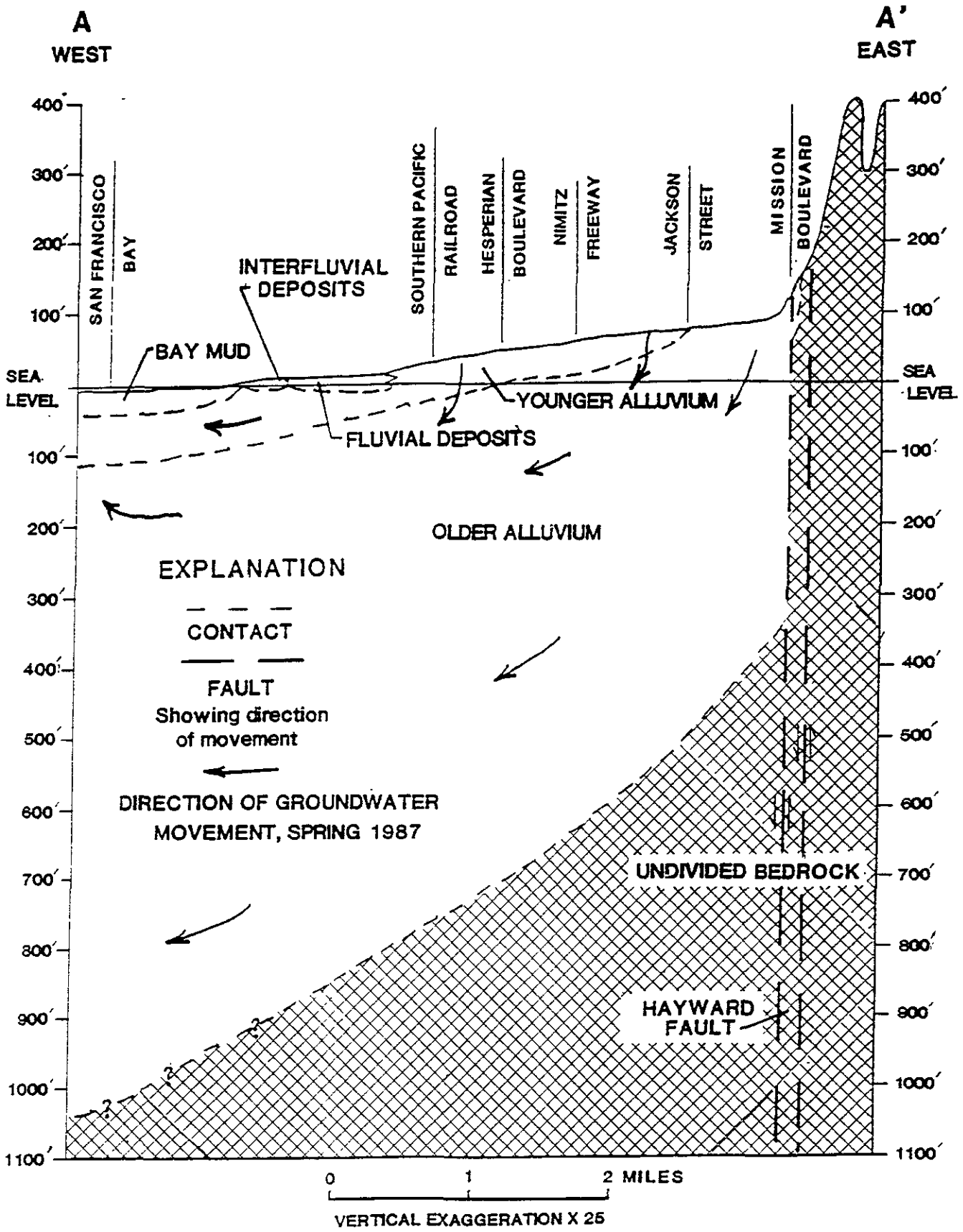
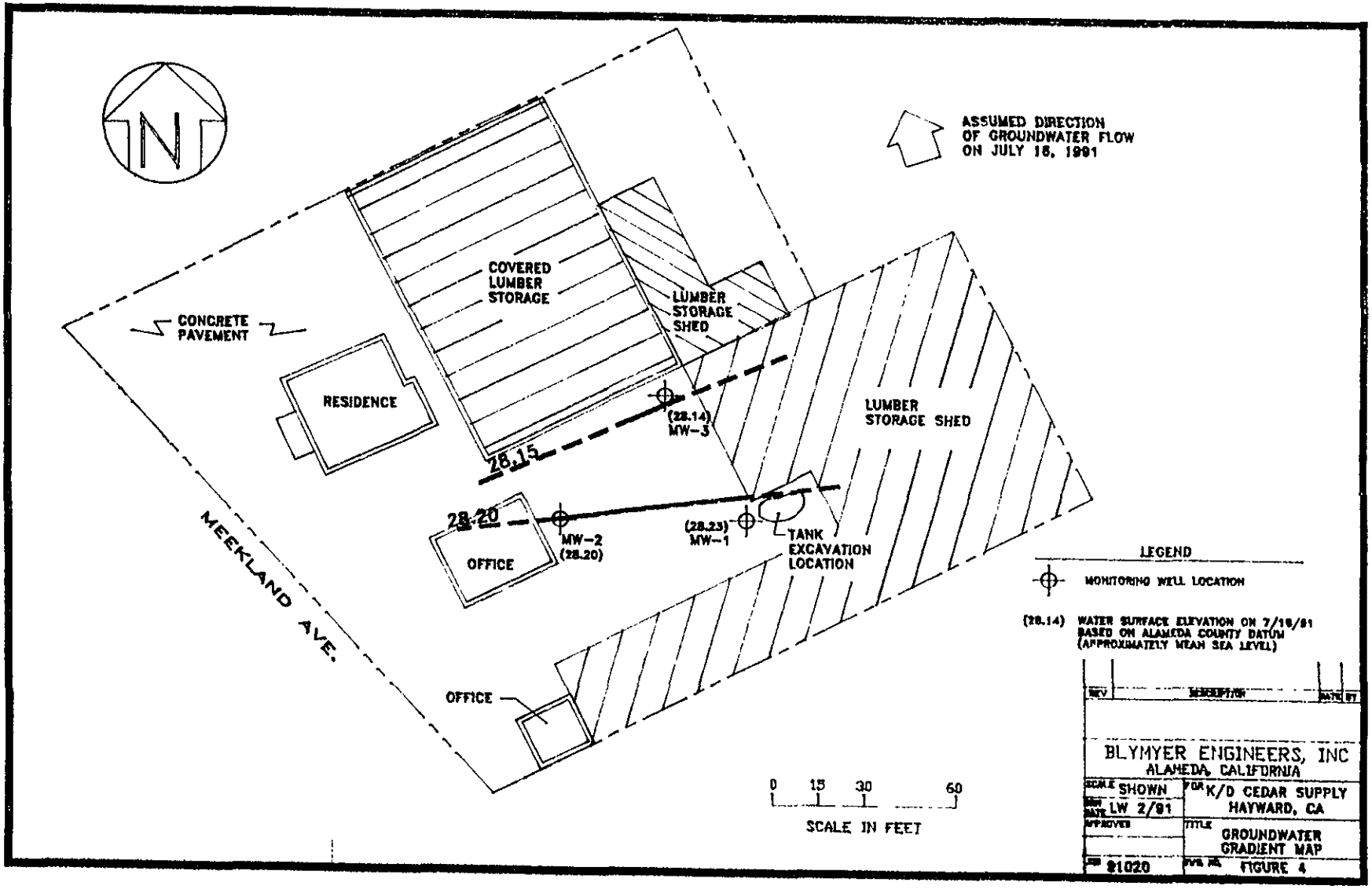


Figure 3: Regional Geologic Cross Section (Hickenbottom and Muir, 1988)


N
ASSUMED DIRECTION
OF GROUNDWATER FLOW
ON JULY 15, 1991
COVERED
LUMBER
STORAGE
LUMBER
STORAGE
SHED
CONCRETE
PAVEMENT
RESIDENCE
(28.14)
MW-3
28.15
LUMBER
STORAGE SHED
28.20
MW-2
(28.20)
(28.23)
MW-1
TANK
EXCAVATION
LOCATION
OFFICE
MEEKLAND AVE.
OFFICE
LEGEND
MONITORING WELL LOCATION
(28.14) WATER SURFACE ELEVATION ON 7/15/91
BASED ON ALAMEDA COUNTY DATUM
(APPROXIMATELY MEAN SEA LEVEL)
0 15 30 60
SCALE IN FEET
REV
DESCRIPTION
DATE
BY
BLYMYER ENGINEERS, INC
ALAMEDA, CALIFORNIA
SCALE SHOWN
DRN LW
DATE 2/91
APPROVED
JOB 91020
FOR K/D CEDAR SUPPLY
HAYWARD, CA
TITLE
GROUNDWATER
GRADIENT MAP
DWG NO. FIGURE 4

Appendix A

BLAINE
TECH SERVICES INC.

1370 TULLY RD., SUITE 505
SAN JOSE, CA 95122
(408) 995-5535

December 6, 1989

R.L. Stevens
22240 Meekland Avenue
Hayward, CA 94541

Attn: Bob Stevens

SITE:
K.D. Cedar Company
22008 Meekland Avenue
Hayward, California

PROJECT:
Tank Removal

SAMPLED ON:
November 20, 1989

TANK REMOVAL SAMPLING REPORT 891120-A-1

Blaine Tech Services, Inc. performs specialized environmental sampling and documentation as an independent third party. In order to avoid compromising the objectivity necessary for the proper and disinterested performance of this work, Blaine Tech Services, Inc. does not participate in the interpretation of analytical results or become involved with the marketing or installation of remedial systems. The interpretation of results should be performed by representatives of interested regulatory agencies and/or those professionals who are engaged as paid consultants in the business of providing opinions and proposals for further investigation or clean-up activities.

This report describes the initial environmental sampling and documentation performed by our firm on this project. In addition to the text of the Sampling Report, supporting documents are provided as attachments. These include the chain of custody and the certified analytical laboratory report. All of these documents should be kept together and preserved as a file of interrelated records which, together, comprise the documentation of the work performed at the site.

Scope of Requested Services

In accordance with your request, field personnel would be dispatched to the site to observe the tank removal, collect samples, arrange for the proper analyses of the samples, and maintain adequate documentation resulting in the issuance of a formal Sampling Report. The collection of environmental samples was to be performed in accordance with the requirements of the State Water Resources Control Board and the specific directions of the Local Implementing Agency (LIA) inspector present at the site at the time of removal.

Execution of the Tank Removal Sampling

The subject site is located within the overall jurisdiction of the Regional Water Quality Control Board -- San Francisco Bay Region. Initial inspection and evaluation of the site is customarily conducted by the local implementing agency (LIA), which was the Alameda County Health Department and Eden Consolidated Fire Protection District. The Alameda County Health Department was represented by Mr. Thomas F. Peacock and Eden Consolidated Fire Protection District was represented by Mr. James Ferdinand. Both representaives were present for the tank removal and sampling.

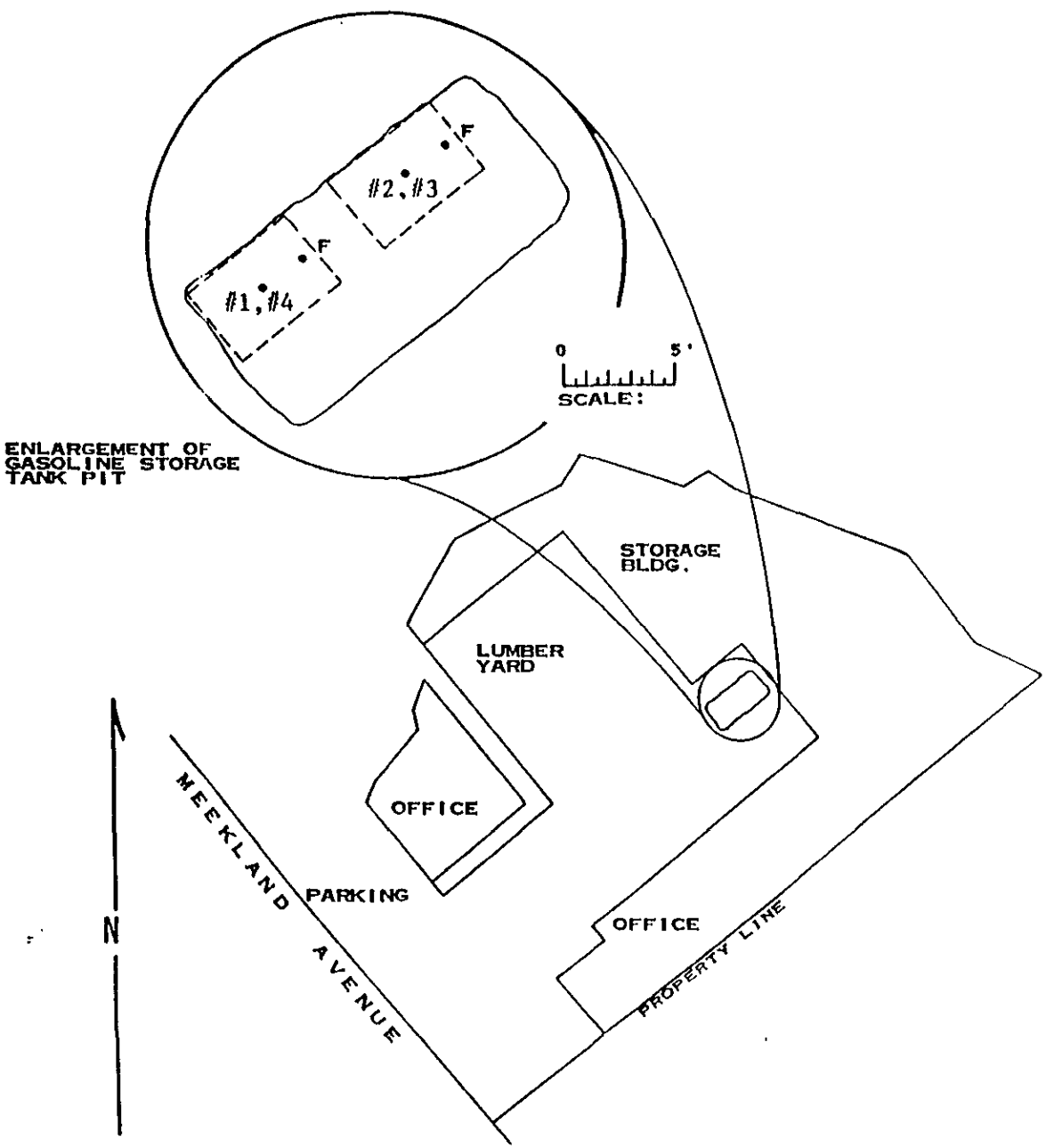
Personnel were dispatched from our office and arrived at K.D. Cedar Company on Monday, November 20, 1989. Mr. Bob Stevens of R.L. Stevens was present for a portion of the sampling activity.

In accordance with the local regulations and the field judgment of the LIA representative, a brief inspection was made of the tanks following their removal from the subsurface. No holes were observed in either of the tanks.

TANK I.D.	SIZE IN GALLONS	TANK CONTENT	MATERIAL OF CONSTRUCTION	INSPECTION FOUND
A	550	GASOLINE	STEEL	NO HOLES
B	550	GASOLINE	STEEL	NO HOLES

In accordance with the direction of LIA representative, Mr. Peacock, a standard interface sample was obtained from beneath the middle of each tank. Sample #1 was obtained from beneath the middle of Tank A at a depth of eight and a half feet (8.5') and sample #2 was obtained from beneath the middle of Tank B at a depth of eight and a half feet (8.5') below grade. Mr. Stevens of R.L. Stevens also requested the collection of deeper samples in the same location as the interface samples. Sample #3 was obtained from beneath the middle of Tank A and sample #4 was obtained from beneath the middle of Tank B. Both samples were obtained at a depth of thirteen and a half feet (13.5') below grade. Samples #3 and #4 were placed on hold at the laboratory pending the results of samples #1 and #2.

The location of individual sampling points is shown on the diagram on page three. Additional information on the exact method of sample collection will be found in the **Sampling Methodology** section of this report.



SCALE: 0 50'

MAP REF: THOMAS BROS. ALAMEDA COUNTY P.58 B-1

LEGEND: F = FILL END

#1 SOIL SAMPLE FROM 8.5' ANALYSIS FOR TOTAL PETROLEUM HYDROCARBONS(TPH) AS GASOLINE, AND BENZENE, TOLUENE, XYLENES AND ETHYLBENZENE(BTXE) AT SEQUOIA ANALYTICAL LABORATORY SEQUOIA LAB NO. 911-2660

#2 SOIL SAMPLE FROM 8.5' ANALYSIS FOR TPH AS GASOLINE AND BTXE SEQUOIA LAB NO. 911-2661

#3 SOIL SAMPLE FROM 13.5' PLACED ON HOLD

#4 SOIL SAMPLE FROM 13.5' ANALYSIS FOR TPH AS GASOLINE AND BTXE SEQUOIA LAB NO. 912-1111

SAMPLING PERFORMED BY BRENT ADAMS

DIAGRAM PREPARED BY BRENT ADAMS

After completion of the field work, the sample containers were delivered to Sequoia Analytical Laboratory in Redwood City, California. Sequoia Analytical Laboratory is a California Department of Health Services certified Hazardous Materials Testing Laboratory and is listed as DOHS HMTL #145.

It was requested that the analytical procedures used for these analyses be those specified by the Regional Water Quality Control Board -- San Francisco Bay Region. The methods are defined in attachments to the San Francisco RWQCB (Region 2) publication, Guidelines For Addressing Fuel Leaks and in documents issued to clarify the Board's interpretation of the California LUFT Manual.

SAMPLING METHODOLOGIES USED ON THIS PROJECT

Standard RWQCB Interface Samples: Samples taken immediately following a tank removal are required to conform to criteria established by the Regional Water Quality Control Boards. Interpretation of these criteria is usually entrusted to the discretion of the local implementing agency inspector, but are widely known and conformance with these criteria is expected even when no regulatory agency personnel are present to direct the procedures. Accordingly, "Standard Interface samples" are those which have been taken in accordance with the standard protocol for obtaining interface samples. These samples fall into the category of samples which are known to be of primary concern to the interested regulatory agencies for determining if additional action will be required at a site and the methodology has been closely defined in state and RWQCB publications, supplements, and presentations. These specify both the acceptable depth and lateral situation of sample collection points. In accordance with these specifications, sample collection is executed as close as possible to the center line (longitudinal axis) of the tank and on a vertical axis with the fill pipe. A corresponding location is also found at the opposite end of the tank whenever standard interface samples are being collected.

Briefly, the method consists of digging up native soil from directly below the fill pipe and the corresponding opposite end of the tank and obtaining a sample from the backfill/native soil interface or a short distance below the interface. A short distance has been defined by Region 2 Board engineers as not greater than twenty-four inches below the backfill/native soil interface and is generally taken to be one foot below the backfill/native soil interface. This soil is brought up in the backhoe bucket. A shovel or trowel is used to cut away surface soil and backfill material which may have been included in the bucket, and the sample is taken by pushing or driving a brass sample liner into the newly exposed soil from the designated depth and location. Additional clarifications by Region 2 Board engineers have indicated that when there is an obvious difference in the relative contamination of soil brought up from the interface depth, then it is the relatively more contaminated soil that should be selected for inclusion in the sample.

Elective Exploratory Samples: This type of sampling employs the same sample collection and handling procedures as are used in standard RWQCB interface sampling, but soil is typically obtained at a greater depth or from a position that is laterally offset from the interface location.

SAMPLE CONTAINERS

Our firm uses new sample containers of the type specified by either EPA or the RWQCB for the collection of samples at sites where underground storage tanks are involved. Soil samples for volatile, semivolatile and nonvolatile analyses are all collected in properly prepared new brass liners which are 2 inches in diameter by 4 inches in length. Closure is accomplished with press fit plastic end caps which are fitted to the open ends of brass tube liners after a sheet of aluminum foil is wrapped over the exposed sample material. A noncontributing/nonsubtractive tape is wrapped completely around the joint areas where the plastic caps meet the outer wall of the brass tube. No preservative other than cold storage is used on samples captured in sample containers of this type.

SAMPLE HANDLING PROCEDURES

Solid sample material is captured by advancing the liner into the soil. This may be done by pushing the liner into soft soils or by containing the liner in a drive shoe which can be advanced and then retracted by means of a slide hammer. The open ends of the sample liner are covered with aluminum foil and plastic end caps. Excess aluminum foil is removed and the edge of the plastic end caps is tightly sealed against the outer surface of the brass liner with an unbroken wrap made with a tape which has been tested to confirm that it does not contribute compounds that would be detected in the type of analyses intended for the sample contained inside of the brass liner. The brass liner is then labeled with the appropriate identification numbers which specify the sampling activity designation number, sample collection area, depth etc. that apply to that particular sample. The sample liner is then placed in an ice chest which contains pre-frozen blocks of an inert ice substitute such a Blue Ice or Super Ice.

SAMPLE DESIGNATIONS

All sample containers are identified with both a sampling event number and a discrete sample identification number. Please note that the sampling event number is the number that appears on our chain of custody. It is roughly equivalent to a job number, but applies only to work done on a particular day of the year rather than spanning several days as jobs and projects often do. This is followed by the sample I.D. number which is usually a simple number such as #1, #2, #3.

CHAIN OF CUSTODY

Samples are continuously maintained in either a chilled ice chest, refrigerator, or freezer from the time of collection until acceptance by the State certified Hazardous Materials Testing Laboratory selected to perform the analytical procedures. If the samples are taken charge of by a different party (such as another person from our office, a courier, etc.) prior to being delivered to the laboratory, appropriate release and acceptance records are made on the chain of custody (time, date, and signature of person releasing the samples followed by the time, date and signature of the person accepting custody of the samples).

LABORATORY IDENTIFICATION NUMBERS

Following receipt of the samples and completion of the Chain of Custody form, the laboratory then assigns their own identification numbers to the samples. Different laboratories use different numbering systems and, according to their own internal conventions, may or may not assign sequential numbers to samples which are placed on temporary "hold", pending the results of other analyses. Laboratory identification numbers (if assigned and available) are included on the DIAGRAM page, and will be found on the certified analytical report by the analytical laboratory.

CERTIFIED ANALYTICAL REPORT

The certified analytical report generated by the laboratory is the official document in which they issue their findings. The certified analytical report is included as an attachment at the close of this report.

GENERAL ADVISORY ON POSITIVE RESULTS

Blaine Tech Services, Inc. provides sampling and documentation. The proper technical execution of this work demands a high level of dedication to the principle that data gathering should be performed by impartial individuals who are also disinterested in the outcome of the analytical procedures. To function as a disinterested and independent third party Blaine Tech Services, Inc. makes it a policy to not become involved in either the interpretation of results or the sale of any consulting services or remediation packages. There are an ample number of firms who can provide consulting services and make proposal on whatever level of work they feel should be undertaken.

Even though we do not engage in the interpretation of analytical results, the making of recommendations, or the issuance of proposals on how best to remediate environmental conditions, we have been asked by the engineering staff of the Regional Water Quality Control Board to include in our reports an advisory section outlining the general type of additional actions which may be required when contamination is found. This advisory is not intended to characterize conditions at this particular site or replace the services of a consulting firm specializing in the investigation, characterization and remediation of such conditions as may exist. Rather, it is intended to advise you that such additional actions may be required even though some time may elapse before you are contacted by one of the interested regulatory agencies.

In Region 2 (which is regulated by the San Francisco Regional Water Quality Control Board), the thresholds are readily defined in the Board's publication, Guidelines For Addressing Fuel Leaks. According to this document, soil which has less than 100 parts per million total petroleum fuel hydrocarbon (TPH) contamination does not generally require immediate additional action. Board engineers emphasize that this does not mean that some action might not be required in the future. Still, the site is assigned a low priority unless it is situated in an area of high hydrogeologic concern.

The detection of more than 100 ppm TPH in the native soil beneath a tank is generally considered grounds for requiring an additional investigation in the form of soil borings and installation of at least one groundwater monitoring well followed by periodic monitoring. The

detection of 1000 ppm TPH is usually viewed by the Board as an unacceptable level of fuel saturation which will mandate excavation of the effected ground down to the furthest practicable reach of conventional excavating machinery followed by soil borings and installation of groundwater monitoring wells.

Other regions use different standards for determining when a groundwater investigation will be required. For example benzene is often used in lieu of TPH. Even very low levels of benzene are often seen as grounds for requiring a subsurface investigation. This criteria may be relaxed or stiffened depending on the location of the site in relation to different groundwater systems, the depth to water, type of soil, and the concentrations of benzene involved.

The above standards apply only to fuels. When samples taken in connection with a waste oil tank or a solvent tank are found to contain even small amounts of any of the EPA priority pollutants (such as TCE, PCE, DCE etc. which are detected by EPA methods 8010, 8020, and 8240) more stringent standards are often applied. In these cases, soil borings and monitoring well installation may be required if there is any detectable amount of any of the EPA priority pollutant compounds.

When contaminants are found to have reached the water underlying a site, the Board customarily requires that additional work be undertaken in order to define the extent of the contamination.

REPORTAGE

Submission to the Regional Water Quality Control Board and the local implementing agency should include copies of the sampling report, the chain of custody, and the certified analytical report issued by the Hazardous Materials Testing Laboratory. The property owner should attach a cover letter and submit all documents together in a package.

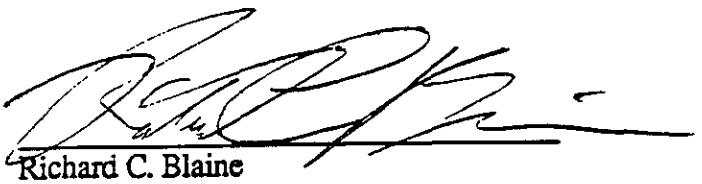
The following addresses have been listed here for your convenience:

Water Quality Control Board
San Francisco Bay Region
1111 Jackson Street
Room 6040
Oakland. CA 94607
ATTN: Greg Zentner

Alameda County Health
Hazardous Materials Management
420 27th Street
Oakland, CA 94612
ATTN: Thomas F. Peacock

Eden Consolidated Fire Protection District
427 Paseo Grande
San Lorenzo, CA 94580
ATTN: James Ferdinand, Battalion Chief

Please call if we can be of any further assistance.



Richard C. Blaine

RCB/dmp

attachments: supporting documents

BLAINE
TECH SERVICES INC.

1370 TULLY ROAD, SUITE 505
SAN JOSE, CA 95122
(408) 995-5535

CHAIN OF CUSTODY # 8911204

SITE SPECIFICATION R.L. Stevens @
K.D. Cedar Co.
2406 Meekland Ave.
Hayward, CA

(✓) Bill BLAINE TECH SERVICES, Inc.
( ) Bill

SPECIAL INSTRUCTIONS

SAMPLE I.D.	QUANTITY	TYPE	OK	ANALYSIS TO DETECT	STATUS	RESULTS	LAB NUMBER
#1	1	S		GAS, BTEX	ROUTINE		
#2	1	S		GAS, BTEX	ROUTINE		
#3	1	S		HOLD			
#4	1	S		HOLD			

Field sampling was performed by Brad Clum

Sampling was completed at 11:00 AM/PM 11-20-1988

RELEASE OF SAMPLES FROM (name,time,date) ——>>>>> INTO THE CUSTODY OF (name,time,date)

from Brad Clum @ 1300 AM/PM 11-20-88 -> to Brenda L. Clum @ 1:05 AM/PM 11-20-88

from _____ @ : AM/PM -88 -> to _____ @ : AM/PM -88

from _____ @ : AM/PM -88 -> to _____ @ : AM/PM -88

The laboratory designated to perform these analyses is: SEQUOIA DHS HMTL # 145
NOTE: Procedures and detection limits must confrom to RWQCB Region IV specifications.
Please include chain of custody number and site specification on reports and invoices.

SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

Blaine Tech Services	Client Project ID:	R.L. Stevens @ K.D. Cedar Co.	Sampled:	Nov 20, 1989
1370 Tully Rd., Suite 505	Matrix Descript:	Soil	Received:	Nov 20, 1989
San Jose, CA 95122	Analysis Method:	EPA 5030/8015/8020	Analyzed:	Dec 4, 1989
Attention: Richard Blaine	First Sample #:	911-2660	Reported:	Dec 7, 1989

TOTAL PETROLEUM FUEL HYDROCARBONS with BTEX DISTINCTION (EPA 8015/8020)

Sample Number	Sample Description	Low/Medium B.P. Hydrocarbons mg/kg (ppm)	Benzene mg/kg (ppm)	Toluene mg/kg (ppm)	Ethyl Benzene mg/kg (ppm)	Xylenes mg/kg (ppm)
911-2660	#1	130	N.D.	N.D.	N.D.	0.40
911-2661	#2	1.0	N.D.	N.D.	N.D.	N.D.
Detection Limits:		**1.0**	**0.05**	**0.1**	**0.1**	**0.1**

Low to Medium Boiling Point Hydrocarbons are quantitated against a gasoline standard.
Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL

Elizabeth W. Hackl
Project Manager

SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

Blaine Tech Services	Client Project ID:	#891120A1, R.L. Steven	Sampled: Nov 20, 1989
1370 Tully Rd., Suite 505	Matrix Descript:	Soil, #4	Relogged: Dec 7, 1989
San Jose, CA 95122	Analysis Method:	EPA 5030/8015/8020	
Attention: Richard Blaine	First Sample #:	912-1111	Reported: Dec 12, 1989

TOTAL PETROLEUM FUEL HYDROCARBONS with BTEX DISTINCTION (EPA 8015/8020)

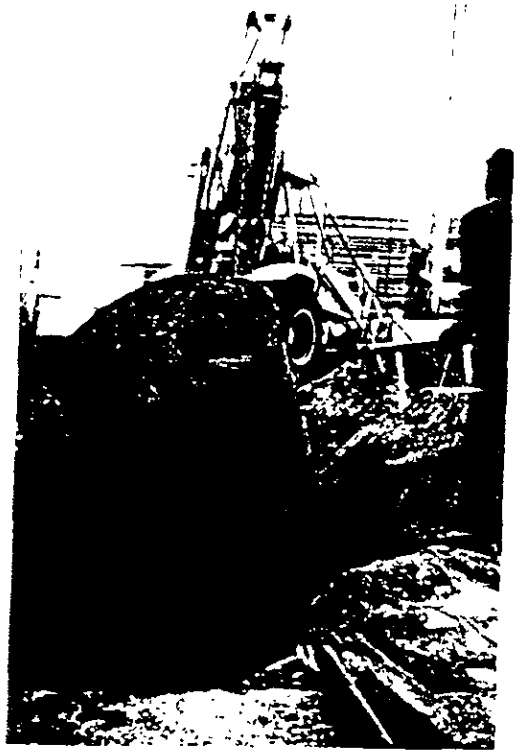
Sample Number	Sample Description	Low/Medium B.P. Hydrocarbons mg/kg (ppm)	Benzene mg/kg (ppm)	Toluene mg/kg (ppm)	Ethyl Benzene mg/kg (ppm)	Xylenes mg/kg (ppm)
912-1111	#4	1,300	0.24	8.7	14	130
Detection Limits:		1.0	0.05	0.1	0.1	0.1

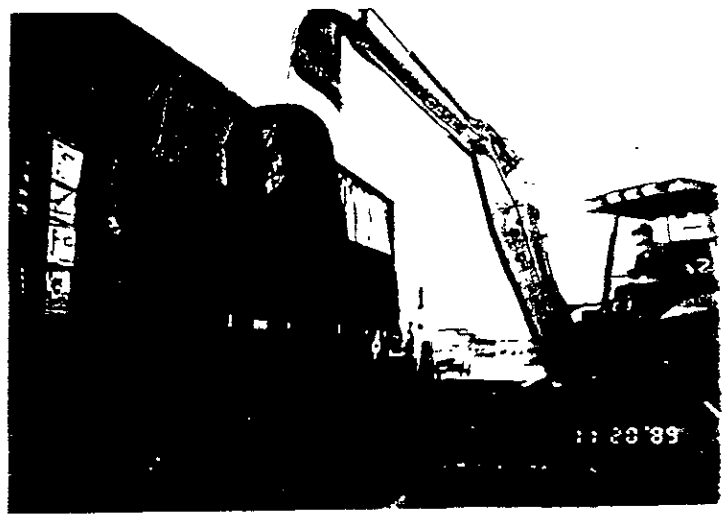
Low to Medium Boiling Point Hydrocarbons are quantitated against a gasoline standard.
Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL

Arthur G. Burton
Laboratory Director

9121111.BLA <1>





Appendix B

BLYMYER ENGINEERS, INC.

JOB#: 91020
SITE: 22008 MEEKLAND AVE.

LOG OF BORING NO.: MW-1
CLIENT: K/D CEDAR
DRILLER: GREGG DRILLING
LOGGED BY: JOHN MORRISON

DATE: 7/11/91
RIG: B-61
DIAMETER: 8-INCH

EXPLANATION
▽ INITIAL WATER LEVEL
▼ STABILIZED WATER LEVEL

DEPTH (FT.)	BLOWS/6 IN.	P.I.D. (PPM)	SAMPLE TYPE AND DEPTH	UNIFIED SOIL CLASSIFICATION	DESCRIPTION
0				F	0.0–0.5' CONCRETE
				CL	0.5–14.0' CLAY, BROWN, STIFF, DAMP, NO ODOR
	12-24-34				
	8-13-25				
10		0.0			
	8-12-15	0.0		CL	14.0–19.0' SILTY CLAY, BROWN, VERY PLASTIC, STICKY, NO ODOR
	6-12-30			SW	19.0–20.0' SAND, WELL GRADED, FINE TO MEDIUM, NO ODOR, MOIST
20		0.0		CL	20.0–38.0' SILTY, SANDY CLAY, BROWN TO GREEN/GRAY, FINE SAND
	10-21-35				
	8-12-22				
30		0.0			
	15-25-25				
		0.0			
	6-8-15			SP	38.0–45.0' SAND, POORLY GRADED FINE SAND, CLAYEY, SILTY, WET
40					
				CL	45.0–48.0' GRAVELLY CLAY, FINE GRAVEL, MOIST
50					

GRAPHIC LOG

WATER DEPTH: 35.5' ▼ 38.0' ▽

BLYMYER ENGINEERS, INC.

JOB#: 91020
SITE: 22008 MEEKLAND AVE.

LOG OF BORING NO.: MW-2
CLIENT: K/D CEDAR
DRILLER: GREGG DRILLING
LOGGED BY: JOHN MORRISON

DATE: 7/10/91
RIG: B-61
DIAMETER: 8-INCH

EXPLANATION
▽ INITIAL WATER LEVEL
▼ STABILIZED WATER LEVEL

DEPTH (FT.)	BLOWS/6 IN.	P.I.D. (PPM)	SAMPLE TYPE AND DEPTH	UNIFIED SOIL CLASSIFICATION	DESCRIPTION
0					
		0.0		F	0.0-0.3' ASPHALT COVERING
		0.0			0.3-1.0' GRAVEL BASE, ROCK
	8-16-24			CL	1.0-14.0' CLAY, DARK BROWN-ORANGE BROWN, MODERATELY STIFF- PLASTIC, SLIGHTLY SILTY, NO ODOR
10	7-9-14	0.0			
	6-8-15			SC	14.0-15.0' FINE, SANDY CLAY/CLAYEY, FINE SAND, ORANGE BROWN, PLASTIC, DAMP
		0.0		CL	15.0-19.0' SILTY CLAY, ORANGE BROWN, PLASTIC, FEW FINE ROUNDED GRAVELS, NO ODOR
20	8-12-25				
		0.0		CL	19.0-30.0' CLAY, ORANGE BROWN, STIFF, DAMP, NO ODOR
	10-12-25				
		0.0			
30	5-10-14				
		0.0		CL	30.0-34.0' FINE, SANDY CLAY, LIGHT ORANGE BROWN, PLASTIC, SLIGHTLY WET, NO ODOR
	8-16-24			CL	34.0-38.0' SILTY CLAY, BROWN WITH GRAY MOTTLING, DRY, DAMP, STIFF
40	5-11-15				38.0-48.5' FINE SAND, WET, NO ODOR
				SP	
50					

GRAPHIC LOG / WATER DEPTH

35.5'
38.0'

BLYMYER ENGINEERS, INC.

JOB#: 91020

SITE: 22008 MEEKLAND AVE.

LOG OF BORING NO.: MW-3

CLIENT: K/D CEDAR

DRILLER: GREGG DRILLING

LOGGED BY: JOHN MORRISON

DATE: 7/10/91

RIG: B-61

DIAMETER: 8-INCH

EXPLANATION

▽ INITIAL WATER LEVEL

▼ STABILIZED WATER LEVEL

DEPTH (FT.)	BLOWS/6 IN.	P.I.D. (PPM)	SAMPLE TYPE AND DEPTH	UNIFIED SOIL CLASSIFICATION	DESCRIPTION
0				F	0.0–0.5' CONCRETE
	6-1-25	0.0		CL	0.5–15.0' SILTY CLAY, BROWN–DARK BROWN, STIFF, PLASTIC, DAMP
10	5-10-12	0.0			
		0.0		SP	15.0–16.0' FINE SAND, DRY/DAMP
20	6-11-20	0.0		CL	16.0–34.0' SILTY, SANDY CLAY, BROWN, SLIGHTLY PLASTIC–PLASTIC, DAMP
	10-10-20				
30	6-10-16	0.0			
	8-16-16	0.0		CL	34.0–38.0' SILTY CLAY, BROWN, STIFF, DAMP, NO ODOR
40	4-4-8	0.0		SP & SC	38.0–49.0' FINE SAND, BROWN, POORLY GRADED, SOME COARSE SAND INTERBEDDED WITH WET SANDY CLAY/CLAYEY SAND, NO ODOR
50					

GRAPHIC LOG

WATER DEPTH: 35.5' ▼, 38.0' ▽

Appendix C

NET NATIONAL ENVIRONMENTAL TESTING, INC.®

NET Pacific, Inc.
435 Tesconi Circle
Santa Rosa, CA 95401
Tel: (707) 526-7200
Fax: (707) 526-9623

Ramon Khu
Blymyer Engineers, Inc
1829 Clement Ave
Alameda, CA 94501

Date: 07-20-91
NET Client Acct No: 495
NET Pacific Log No: 8566
Received: 07-12-91 0800

Client Reference Information

K/D Cedar Hayward, 91020

Sample analysis in support of the project referenced above has been completed and results are presented on following pages. Please refer to the enclosed "Key to Abbreviations" for definition of terms. Should you have questions regarding procedures or results, please feel welcome to contact Client Services.

Approved by:

Jules Skamarack
Laboratory Manager

JS:rct
Enclosure(s)

NET Pacific, Inc.

Client No: 495 Date: 07-20-91
Client Name: Blymyer Engineers, Inc
NET Log No: 8566 Page: 2

Ref: K/D Cedar Hayward, 91020

Parameter	Method	Reporting Limit	Descriptor, Lab No. and Results MW1 5-5.5 07-11-91 91297	 MW1 9.0-9.5 07-11-91 91298	Units
PETROLEUM HYDROCARBONS			--	--	
VOLATILE (SOIL)			--	--	
DILUTION FACTOR *			1	1	
DATE ANALYZED			07-15-91	07-15-91	
METHOD GC FID/5030			--	--	
as Gasoline		1	ND	ND	mg/Kg
METHOD 8020			--	--	
DILUTION FACTOR *			1	1	
DATE ANALYZED			07-15-91	07-15-91	
Benzene		2.5	ND	ND	ug/Kg
Ethylbenzene		2.5	ND	ND	ug/Kg
Toluene		2.5	ND	ND	ug/Kg
Xylenes, total		2.5	ND	ND	ug/Kg

NET Pacific, Inc

Client No: 495 Date: 07-20-91
Client Name: Blymyer Engineers, Inc
NET Log No: 8566 Page: 3

Ref: K/D Cedar Hayward, 91020

Parameter	Method	Reporting Limit	Descriptor, Lab No. and Results MW1 14.5-15. 07-11-91 91299	 MW1 19.5-20. 07-11-91 91300	Units
PETROLEUM HYDROCARBONS			--	--	
VOLATILE (SOIL)			--	--	
DILUTION FACTOR *			1	1	
DATE ANALYZED			07-15-91	07-15-91	
METHOD GC FID/5030			--	--	
as Gasoline		1	ND	ND	mg/Kg
METHOD 8020			--	--	
DILUTION FACTOR *			1	1	
DATE ANALYZED			07-15-91	07-15-91	
Benzene		2.5	ND	ND	ug/Kg
Ethylbenzene		2.5	ND	ND	ug/Kg
Toluene		2.5	ND	ND	ug/Kg
Xylenes, total		2.5	ND	ND	ug/Kg

NET Pacific, Inc.

Client No: 495 Date: 07-20-91
Client Name: Blymyer Engineers, Inc
NET Log No: 8566 Page: 4

Ref: K/D Cedar Hayward, 91020

Parameter	Method	Reporting Limit	Descriptor, Lab No. and Results MW1 24.5-25. 07-11-91 91301	 MW1 29.5-30. 07-11-91 91302	Units
PETROLEUM HYDROCARBONS			--	--	
VOLATILE (SOIL)			--	--	
DILUTION FACTOR *			1	1	
DATE ANALYZED			07-15-91	07-15-91	
METHOD GC FID/5030			--	--	
as Gasoline		1	ND	ND	mg/Kg
METHOD 8020			--	--	
DILUTION FACTOR *			1	1	
DATE ANALYZED			07-15-91	07-15-91	
Benzene		2.5	ND	ND	ug/Kg
Ethylbenzene		2.5	ND	ND	ug/Kg
Toluene		2.5	ND	ND	ug/Kg
Xylenes, total		2.5	ND	ND	ug/Kg

NET Pacific, Inc.

Client No: 495 Date: 07-20-91
Client Name: Blymyer Engineers, Inc
NET Log No: 8566 Page: 5

Ref: K/D Cedar Hayward, 91020

Parameter	Method	Reporting Limit	Descriptor, Lab No. and Results MW1 34.0-35.5 07-11-91 91303	 MW1 39.5-40. 07-11-91 91304	Units
PETROLEUM HYDROCARBONS			--	--	
VOLATILE (SOIL)			--	--	
DILUTION FACTOR *			1	1	
DATE ANALYZED			07-15-91	07-15-91	
METHOD GC FID/5030			--	--	
as Gasoline		1	ND	ND	mg/Kg
METHOD 8020			--	--	
DILUTION FACTOR *			1	1	
DATE ANALYZED			07-15-91	07-15-91	
Benzene		2.5	ND	ND	ug/Kg
Ethylbenzene		2.5	ND	ND	ug/Kg
Toluene		2.5	ND	ND	ug/Kg
Xylenes, total		2.5	ND	ND	ug/Kg

NET Pacific, Inc.

Client No: 495 Date: 07-20-91
Client Name: Blymyer Engineers, Inc
NET Log No: 8566 Page: 6

Ref: K/D Cedar Hayward, 91020

Parameter	Method	Reporting Limit	Descriptor, Lab No. and Results MW2 4.0-5.5 07-10-91 91305	 MW2 9.0-10.5 07-10-91 91306	Units
PETROLEUM HYDROCARBONS			--	--	
VOLATILE (SOIL)			--	--	
DILUTION FACTOR *			1	1	
DATE ANALYZED			07-15-91	07-15-91	
METHOD GC FID/5030			--	--	
as Gasoline		1	ND	ND	mg/Kg
METHOD 8020			--	--	
DILUTION FACTOR *			1	1	
DATE ANALYZED			07-15-91	07-15-91	
Benzene		2.5	ND	ND	ug/Kg
Ethylbenzene		2.5	ND	ND	ug/Kg
Toluene		2.5	ND	ND	ug/Kg
Xylenes, total		2.5	ND	ND	ug/Kg

NET Pacific, Inc.

Client No: 495 Date: 07-20-91
Client Name: Blymyer Engineers, Inc
NET Log No: 8566 Page: 7

Ref: K/D Cedar Hayward, 91020

Parameter	Method	Reporting Limit	Descriptor, Lab No. and Results MW2 16.0-16.5 07-10-91 91307	 MW2 19.5-20. 07-10-91 91308	Units
PETROLEUM HYDROCARBONS			--	--	
VOLATILE (SOIL)			--	--	
DILUTION FACTOR *			1	1	
DATE ANALYZED			07-15-91	07-15-91	
METHOD GC FID/5030			--	--	
as Gasoline		1	ND	ND	mg/Kg
METHOD 8020			--	--	
DILUTION FACTOR *			1	1	
DATE ANALYZED			07-15-91	07-15-91	
Benzene		2.5	ND	ND	ug/Kg
Ethylbenzene		2.5	ND	ND	ug/Kg
Toluene		2.5	ND	ND	ug/Kg
Xylenes, total		2.5	ND	ND	ug/Kg

NET Pacific, Inc.

Client No: 495 Date: 07-20-91
Client Name: Blymyer Engineers, Inc
NET Log No: 8566 Page: 8

Ref: K/D Cedar Hayward, 91020

Parameter	Method	Reporting Limit	Descriptor, Lab No. and Results MW2 24.5-25. 07-10-91 91309	 MW2 29.5-30. 07-10-91 91310	Units
PETROLEUM HYDROCARBONS			--	--	
VOLATILE (SOIL)			--	--	
DILUTION FACTOR *			1	1	
DATE ANALYZED			07-15-91	07-15-91	
METHOD GC FID/5030			--	--	
as Gasoline		1	ND	ND	mg/Kg
METHOD 8020			--	--	
DILUTION FACTOR *			1	1	
DATE ANALYZED			07-15-91	07-15-91	
Benzene		2.5	ND	ND	ug/Kg
Ethylbenzene		2.5	ND	ND	ug/Kg
Toluene		2.5	ND	ND	ug/Kg
Xylenes, total		2.5	ND	ND	ug/Kg

NET Pacific, Inc.

Client No: 495 Date: 07-20-91
Client Name: Blymyer Engineers, Inc
NET Log No: 8566 Page: 9

Ref: K/D Cedar Hayward, 91020

Parameter	Method	Reporting Limit	Descriptor, Lab No. and Results MW2 34.5-35.5 07-10-91 91311	 MW2 39.5-40. 07-10-91 91312	Units
PETROLEUM HYDROCARBONS			--	--	
VOLATILE (SOIL)			--	--	
DILUTION FACTOR *			1	1	
DATE ANALYZED			07-16-91	07-16-91	
METHOD GC FID/5030			--	--	
as Gasoline		1	ND	ND	mg/Kg
METHOD 8020			--	--	
DILUTION FACTOR *			1	1	
DATE ANALYZED			07-16-91	07-16-91	
Benzene		2.5	ND	ND	ug/Kg
Ethylbenzene		2.5	ND	ND	ug/Kg
Toluene		2.5	ND	ND	ug/Kg
Xylenes, total		2.5	ND	ND	ug/Kg

NET Pacific, Inc

Client No: 495 Date: 07-20-91
Client Name: Blymyer Engineers, Inc
NET Log No: 8566 Page: 10

Ref: K/D Cedar Hayward, 91020

Parameter	Method	Reporting Limit	Descriptor, Lab No. and Results MW3 4.5-5.0 07-10-91 91313	 MW3 9.5-10.0 07-10-91 91314	Units
PETROLEUM HYDROCARBONS			--	--	
VOLATILE (SOIL)			--	--	
DILUTION FACTOR *			1	1	
DATE ANALYZED			07-16-91	07-16-91	
METHOD GC FID/5030			--	--	
as Gasoline		1	ND	ND	mg/Kg
METHOD 8020			--	--	
DILUTION FACTOR *			1	1	
DATE ANALYZED			07-16-91	07-16-91	
Benzene		2.5	ND	ND	ug/Kg
Ethylbenzene		2.5	ND	ND	ug/Kg
Toluene		2.5	ND	ND	ug/Kg
Xylenes, total		2.5	ND	ND	ug/Kg

NET Pacific, Inc.

Client No: 495 Date: 07-20-91
Client Name: Blymyer Engineers, Inc
NET Log No: 8566 Page: 11

Ref: K/D Cedar Hayward, 91020

Parameter	Method	Reporting Limit	Descriptor, Lab No. and Results MW3 15.0-15.5 07-10-91 91315	 MW3 19.5-20. 07-10-91 91316	Units
PETROLEUM HYDROCARBONS			--	--	
VOLATILE (SOIL)			--	--	
DILUTION FACTOR *			1	1	
DATE ANALYZED			07-16-91	07-16-91	
METHOD GC FID/5030			--	--	
as Gasoline		1	ND	ND	mg/Kg
METHOD 8020			--	--	
DILUTION FACTOR *			1	1	
DATE ANALYZED			07-16-91	07-16-91	
Benzene		2.5	ND	ND	ug/Kg
Ethylbenzene		2.5	ND	ND	ug/Kg
Toluene		2.5	ND	ND	ug/Kg
Xylenes, total		2.5	ND	ND	ug/Kg

Ref: K/D Cedar Hayward, 91020

Parameter	Method	Reporting Limit	Descriptor, Lab No. and Results MW3 24.5-25. 07-10-91 91317	 MW3 29.5-30. 07-10-91 91318	Units
PETROLEUM HYDROCARBONS			--	--	
VOLATILE (SOIL)			--	--	
DILUTION FACTOR *			1	1	
DATE ANALYZED			07-16-91	07-16-91	
METHOD GC FID/5030			--	--	
as Gasoline		1	ND	ND	mg/Kg
METHOD 8020			--	--	
DILUTION FACTOR *			1	1	
DATE ANALYZED			07-16-91	07-16-91	
Benzene		2.5	ND	ND	ug/Kg
Ethylbenzene		2.5	ND	ND	ug/Kg
Toluene		2.5	ND	ND	ug/Kg
Xylenes, total		2.5	ND	ND	ug/Kg

NET Pacific, Inc

Client No: 495 Date: 07-20-91
Client Name: Blymyer Engineers, Inc
NET Log No: 8566 Page: 13

Ref: K/D Cedar Hayward, 91020

Parameter	Method	Reporting Limit	Descriptor, Lab No. and Results MW3 34.5-35. 07-10-91 91319	 MW3 39.5-40. 07-10-91 91320	Units
PETROLEUM HYDROCARBONS			--	--	
VOLATILE (SOIL)			--	--	
DILUTION FACTOR *			1	1	
DATE ANALYZED			07-16-91	07-16-91	
METHOD GC FID/5030			--	--	
as Gasoline		1	ND	ND	mg/Kg
METHOD 8020			--	--	
DILUTION FACTOR *			1	1	
DATE ANALYZED			07-16-91	07-16-91	
Benzene		2.5	ND	ND	ug/Kg
Ethylbenzene		2.5	ND	ND	ug/Kg
Toluene		2.5	ND	ND	ug/Kg
Xylenes, total		2.5	ND	ND	ug/Kg

Ref: K/D Cedar Hayward, 91020

QUALITY CONTROL DATA

Parameter	Reporting Limits	Units	Cal Verf Stand % Recovery	Blank Data	Spike % Recovery	Duplicate Spike % Recovery	RPD
Gasoline	1	mg/Kg	112	ND	104	106	1.7
Benzene	2.5	ug/Kg	98	ND	89	94	4.8
Toluene	2.5	ug/Kg	110	ND	92	95	2.7

COMMENT: Blank Results were ND on other analytes tested.

Gasoline	1	mg/Kg	108	ND	84	82	2.4
Benzene	2.5	ug/Kg	117	ND	86	85	1.2
Toluene	2.5	ug/Kg	113	ND	85	83	2.4

COMMENT: Blank Results were ND on other analytes tested.

NET Pacific, Inc.

KEY TO ABBREVIATIONS and METHOD REFERENCES

<	:	Less than; When appearing in results column indicates analyte not detected at the value following. This datum supercedes the listed Reporting Limit.
*	:	Reporting Limits are a function of the dilution factor for any given sample. To obtain the actual reporting limits for this sample, multiply the stated Reporting Limits by the dilution factor (but do not multiply reported values).
ICVS	:	Initial Calibration Verification Standard (External Standard).
mean	:	Average; sum of measurements divided by number of measurements.
mg/Kg (ppm)	:	Concentration in units of milligrams of analyte per kilogram of sample, (parts per million).
mg/L	:	Concentration in units of milligrams of analyte per liter of sample.
mL/L/hr	:	Milliliters per liter per hour.
MPN/100 mL	:	Most probable number of bacteria per one hundred milliliters of sample.
N/A	:	Not applicable.
NA	:	Not analyzed.
ND	:	Not detected; the analyte concentration is less than applicable listed reporting limit.
NTU	:	Nephelometric turbidity units.
RPD	:	Relative percent difference, 100 [Value 1 - Value 2]/mean value.
SNA	:	Standard not available.
ug/Kg (ppb)	:	Concentration in units of micrograms of analyte per kilogram of sample, (parts per billion).
ug/L	:	Concentration in units of micrograms of analyte per liter of sample.
umhos/cm	:	Micromhos per centimeter.

Method References

Methods 100 through 493: see "Methods for Chemical Analysis of Water & Wastes", U.S. EPA, 600/4-79-020, rev. 1983.

Methods 601 through 625: see "Guidelines Establishing Test Procedures for the Analysis of Pollutants" U.S. EPA, 40 CFR, Part 136, rev. 1988.

Methods 1000 through 9999: see "Test Methods for Evaluating Solid Waste", U.S. EPA SW-846, 3rd edition, 1986.

SM: see "Standard Methods for the Examination of Water & Wastewater, 17th Edition, APHA, 1989.

BEI Field Services
1829 Clement Avenue
Alameda, CA 94501

CHAIN OF CUSTODY RECORD

8566

PROJ NO.	PROJECT NAME
91020	K/D CEDAR HAYWARD, CA

SAMPLERS (Signature) John Morrison

DATE	TIME	COMP.	GRAB	SAMPLE LOCATION	NO OF CONTAINERS	TPH as gasoline + BTXE	TPH as diesel	Oil & Grease (SM503E)	VOC (EPA 624/8240)	Semi-VOC (EPA 625/8270)	REMARKS
11 July 91				MW1 5-5.5'	1	✓					Standard
"				MW1 9.0-9.5'	1	✓					5 DAY TURNAROUND
"				MW1 14.5-15.0'	1	✓					
"				MW1 19.5-20.0'	1	✓					
"				MW1 24.5-25.0'	1	✓					
"				MW1 29.5-30.0'	1	✓					
"				MW1 34.0-35.5'	1	✓					
"				MW1 39.5-40.0'	1	✓					

(CUSTODY SEALED 7/11/91 @ 1700 MMW seal intact)

Relinquished by : (Signature)	Date/Time	Received by : (Signature)	Relinquished by : (Signature)	Date/Time	Received by : (Signature)
(1) John Morrison	7/11/91 1430	(2) Ramon Khu	(5) Roman S. Worobel	7/11/91 1715	(6)
(3) Ramon Khu	7/11/91 1435	(4) Roman S. Worobel	(9) Mike Tierney	7/11/91	(10) 7/12/91 0800
(7)	7/11/91 1716	(8) Mike Tierney	7/11/91	Remarks: invoice & results to: Ramon Khu, Blymyer Engineers	

Received for Laboratory by : (Signature)

CCR/REV 0/2-89

BEI Field Services
1829 Clement Avenue
Alameda, CA 94501

8566

CHAIN OF CUSTODY RECORD

PROJ NO.	PROJECT NAME
91020	K/D CEDAR HAYWARD, CA

SAMPLERS (Signature) JOHN MORRISON [signature]

DATE	TIME	COMP.	GRAB	SAMPLE LOCATION	NO OF CONTAINERS	TPH as gasoline + BTXE	TPH as diesel	Oil & Grease (SM503E)	VOC (EPA 624/8240)	Semi-VOC (EPA 625/8270)							REMARKS
10 JULY 91				MW2 4.0-5.5'	1	✓											Standard
"				MW2 9.0-10.5	1	✓											5 DAY Turnaround
"				MW2 16.0-16.5	1	✓											
"				MW2 19.5-20.0	1	✓											
"				MW2 24.5-25.0	1	✓											
"				MW2 29.5-30.0	1	✓											
"				MW2 34.5-35.0	1	✓											
"				MW2 39.5-40.0	1	✓											

(CUSTODY SEALED 7/11/91 @ 1900 [initials] seal intact)

Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Relinquished by: (Signature)	Date/Time	Received by: (Signature)
① [signature]	7/11/91 1430	② Ramon Khu	⑤ Roman S. Worobel	7/11/91 1715	⑥ [signature]
③ Ramon Khu	7/11/91 1435	④ Roman S. Worobel	⑨ Mike Tomasini	7/11/91	⑩ [signature] 7/12/91 0800
⑦ [signature]	7/11/91 1716	Received for Laboratory by: (Signature) ⑧ Mike Tomasini	Date/Time 7/11/91	Remarks invoice & results to: Ramon Khu, Blymyer Engineers	

CCR/REV 0/2-89

BEI Field Services
1829 Clement Avenue
Alameda, CA 94501

8566

CHAIN OF CUSTODY RECORD

PROJ NO.	PROJECT NAME
91020	KID CEDAR HAYWARD, CA

SAMPLERS (Signature): JOHN MORRISON [signature]

DATE	TIME	COMP.	GRAB	SAMPLE LOCATION	NO OF CONTAINERS	TPH as gasoline + BTXE	TPH as diesel	Oil & Grease (SM503E)	VOC (EPA 624/8240)	Semi-VOC (EPA 625/8270)						REMARKS
10 JULY 91				MW3 4.5-5.0	1	✓										Standard
"				MW3 9.5-10.0	1	✓										5 DAY turnaround
"				MW3 15.0-15.5	1	✓										
"				MW3 19.5-20.0	1	✓										
"				MW3 24.5-25.0	1	✓										
"				MW3 29.5-30.0	1	✓										
"				MW3 34.5-35.0	1	✓										
"				MW3 39.5-40.0'	1	✓										

(CUSTODY SEALED 7/11/91 @ 1900 MWT seal intact)

Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Relinquished by: (Signature)	Date/Time	Received by: (Signature)
① John Morrison [signature]	7/11/91 1430	② Ramon Khu [signature]	⑤ Roman S. Worobel [signature]	7/11/91 1715	⑥ [signature]
③ Ramon Khu [signature]	7/11/91 1435	④ Roman S. Worobel [signature]	⑨ [signature]	7/11/91	⑩ [signature] 7/12/91 0800
⑦ [signature]	7/11/91 1716	Received for Laboratory by: (Signature) ⑧ [signature]	Date/Time 7/11/91	Remarks: invoice & results to: Ramon Khu, Blymyer Engineers	

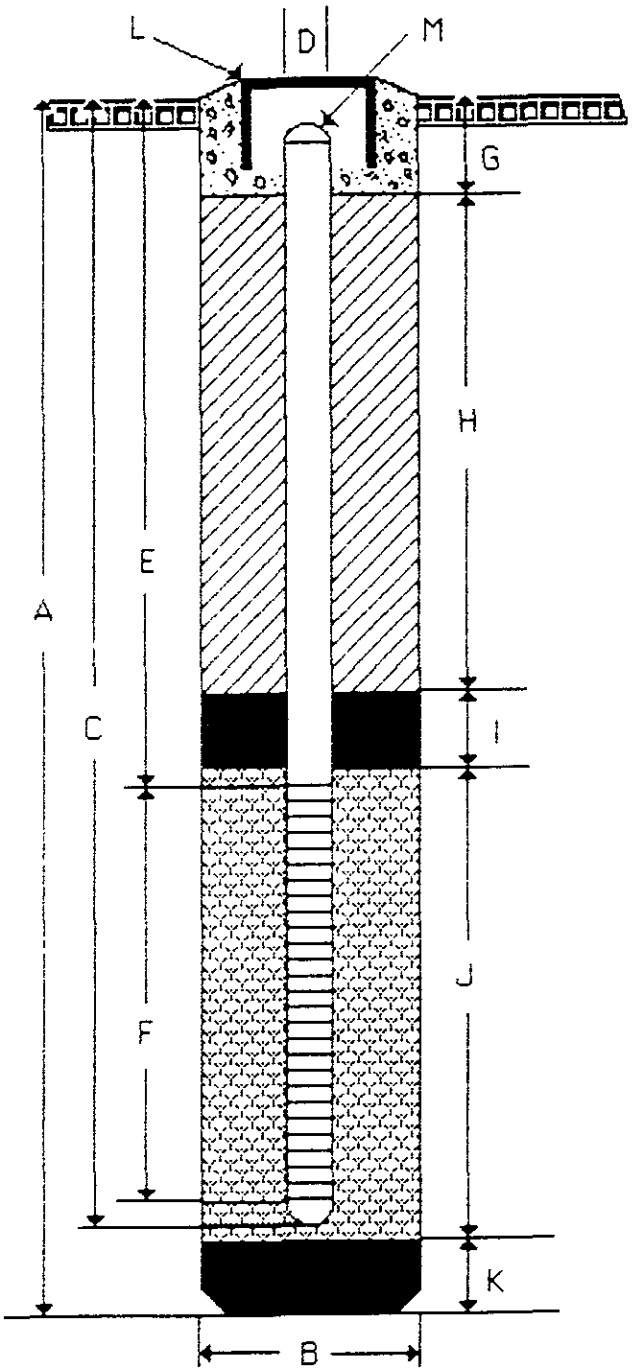
CCR/REV 0/2-89

Appendix D

BLYMYER ENGINEERS, INC.

CLIENT. K/D CEDAR
SITE. 2200 MEEKLAND AVE., HAYWARD, CA
JOB # 91020
DRILLER GREGG DRILLING
LOGGED BY. JOHN MORRISON

BORING/WELL NO.: MW-1
TOP OF CASING ELEV..
GROUND SURFACE ELEV.
DATUM: ARBITRARY



WELL CONSTRUCTION

A TOTAL DEPTH 49 FT.

B DIAMETER 8 IN

DRILLING METHOD HOLLOW STEM AUGER

C CASING LENGTH 49 FT
MATERIAL SCHEDULE 40 PVC

D CASING DIAMETER 2 IN

E. DEPTH TO TOP PERFORATIONS 29 FT

F PERFORATED LENGTH
PERFORATED INTERVAL FROM 29 to 49
PERFORATION TYPE FACTORY-SLOTTED
PERFORATION SIZE 0.020 IN

G SURFACE SEAL 1 FT.
SEAL MATERIAL CONCRETE

H BACKFILL 24 FT.
BACKFILL MATERIAL NEAT CEMENT

I SEAL 2 FT
SEAL MATERIAL BENTONITE PELLETS

J. GRAVEL PACK 22 FT
PACK MATERIAL #2 MONTEREY SAND

K BOTTOM SEAL ____ FT
SEAL MATERIAL N/A

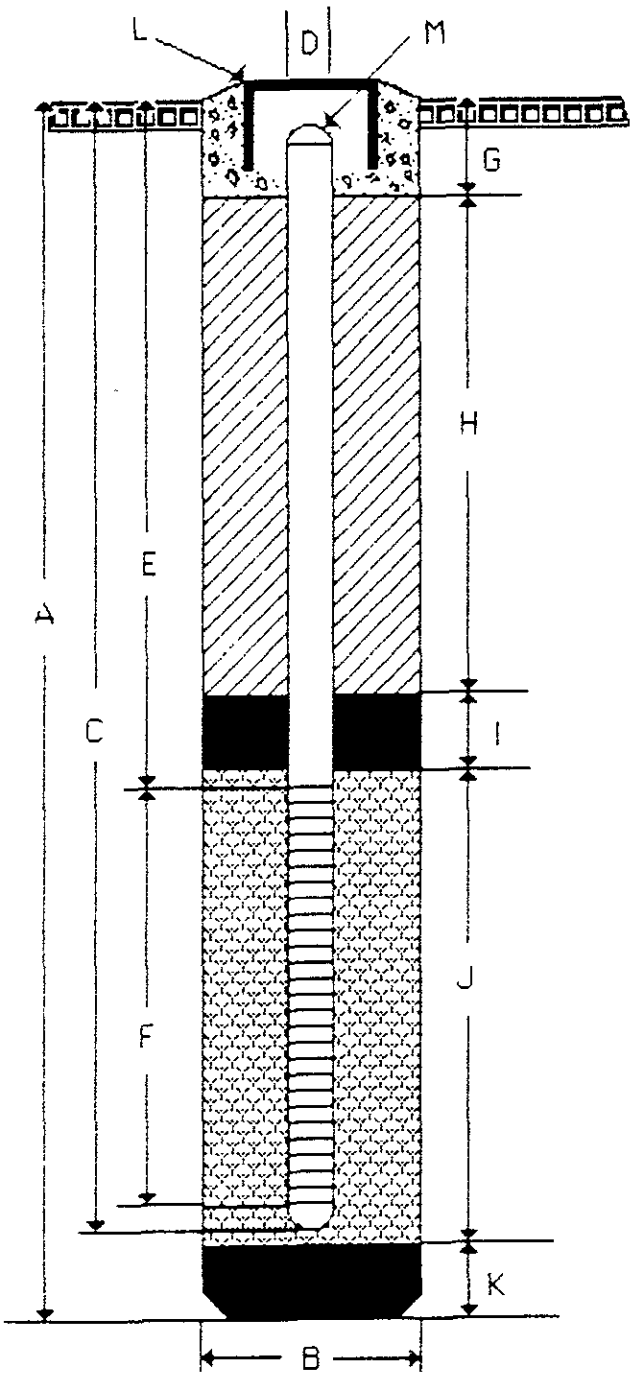
L _____

M _____

BLYMYER ENGINEERS, INC.

CLIENT. K/D CEDAR
SITE: 2200 MEEKLAND AVE , HAYWARD, CA
JOB # 91020
DRILLER: GREGG DRILLING
LOGGED BY. JOHN MORRISON

BORING/WELL NO.: MW-2
TOP OF CASING ELEV .
GROUND SURFACE ELEV .
DATUM. ARBITRARY



WELL CONSTRUCTION

A. TOTAL DEPTH 48.5 FT.

B. DIAMETER 8 IN.

DRILLING METHOD HOLLOW STEM AUGER

C CASING LENGTH 48.5 FT
MATERIAL SCHEDULE 40 PVC

D. CASING DIAMETER 2 IN.

E. DEPTH TO TOP PERFORATIONS 28.5 FT

F. PERFORATED LENGTH
PERFORATED INTERVAL FROM 28.5 to 48.5
PERFORATION TYPE FACTORY-SLOTTED
PERFORATION SIZE 0.020 IN

G. SURFACE SEAL 1 FT
SEAL MATERIAL CONCRETE

H BACKFILL 23 FT
BACKFILL MATERIAL NEAT CEMENT

I SEAL 2 FT
SEAL MATERIAL BENTONITE PELLETS

J. GRAVEL PACK 22.5 FT
PACK MATERIAL #2 MONTEREY SAND

K. BOTTOM SEAL ____ FT
SEAL MATERIAL N/A

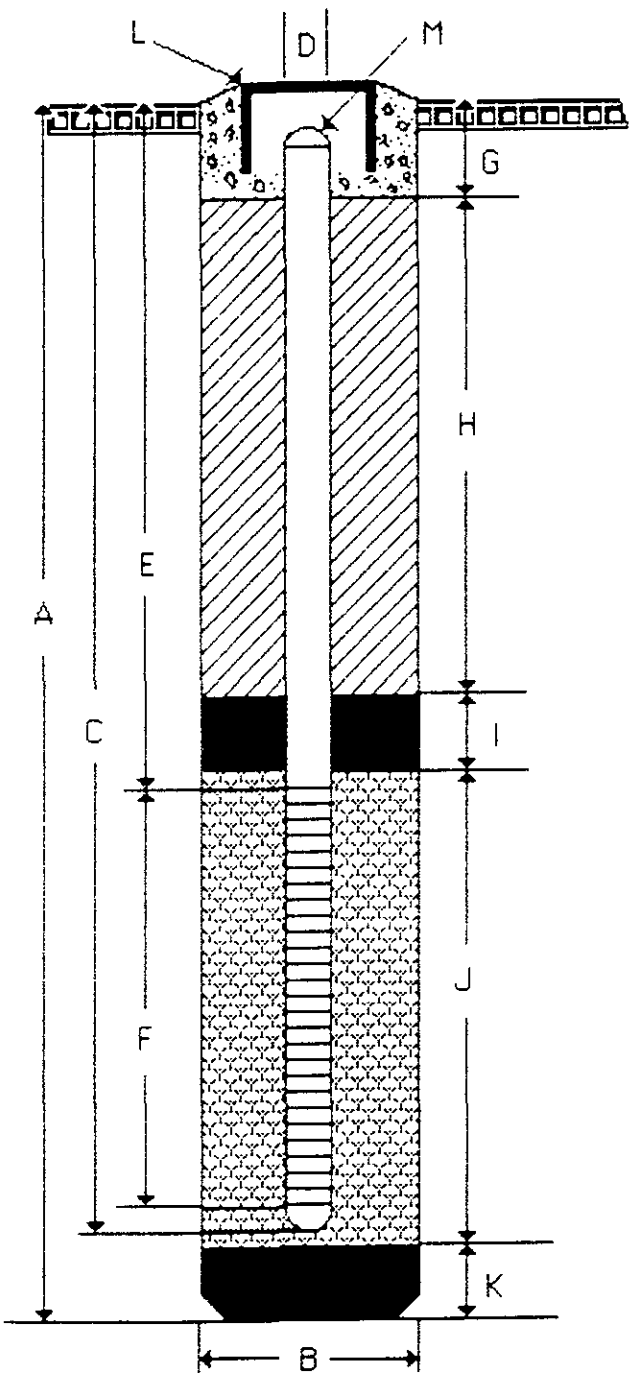
L. _____

M _____

BLYMYER ENGINEERS, INC.

CLIENT: K/D CEDAR
SITE. 2200 MEEKLAND AVE., HAYWARD, CA
JOB # 91020
DRILLER. GREGG DRILLING
LOGGED BY: JOHN MORRISON

BORING/WELL NO.: MW-3
TOP OF CASING ELEV :
GROUND SURFACE ELEV :
DATUM: ARBITRARY



WELL CONSTRUCTION

A TOTAL DEPTH 49 FT

B. DIAMETER 8 IN

DRILLING METHOD HOLLOW STEM AUGER

C CASING LENGTH 49 FT
MATERIAL SCHEDULE 40 PVC

D CASING DIAMETER 2 IN.

E. DEPTH TO TOP PERFORATIONS 29 FT

F PERFORATED LENGTH
PERFORATED INTERVAL FROM 29 to 49
PERFORATION TYPE FACTORY-SLOTTED
PERFORATION SIZE 0.020 IN

G SURFACE SEAL 1 FT
SEAL MATERIAL CONCRETE

H. BACKFILL 24 FT.
BACKFILL MATERIAL NEAT CEMENT

I SEAL 2 FT
SEAL MATERIAL BENTONITE PELLETS

J. GRAVEL PACK 22 FT.
PACK MATERIAL #2 MONTEREY SAND

K. BOTTOM SEAL ____ FT
SEAL MATERIAL N/A

L ____

M. ____

ALAMEDA COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
5997 PARKSIDE DRIVE ♦ PLEASANTON, CALIFORNIA 94588 ♦ (415) 484-2600

20 June 1991

Blymyer Engineers, Inc.
1829 Clement Avenue
Alameda, CA 94501

Gentlemen:

Enclosed is Drilling permit 91345 for a monitoring well construction project at 22008 Meekland Avenue in Hayward for K/D Cedar Supply Company.

Please note that permit condition A-2 requires that a well construction report be submitted after completion of the work. The report should include drilling and completion logs, location sketch, and permit number.

If you have any questions, please contact Wyman Hong or me at 484-2600.

Very truly yours,

Craig A. Mayfield

Craig A. Mayfield
Water Resources Engineer

WH:mm
Enc.

ALAMEDA COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

5997 PARKSIDE DRIVE • PLEASANTON, CALIFORNIA 94588 • (415) 484-2600

GROUNDWATER PROTECTION ORDINANCE PERMIT APPLICATION

FOR APPLICANT TO COMPLETE

LOCATION OF PROJECT 22008 Meekland Avenue
Hayward, CA 94541

CLIENT
Name K/D Cedar Supply Company
Address 22008 Meekland Ave Phone (415)357-1063
City Hayward, CA Zip 94541

APPLICANT
Name Ramon Khu
Blymyer Engineers, Inc.
Address 1829 Clement Ave Phone (415) 521-3773
City Alameda CA Zip 94501

TYPE OF PROJECT

Well Construction		Geotechnical Investigation	
Cathodic Protection	___	General	___
Water Supply	___	Contamination	___
Monitoring	X	Well Destruction	___

PROPOSED WATER SUPPLY WELL USE
Domestic ___ Industrial ___ Other ___
Municipal ___ Irrigation ___

DRILLING METHOD:
Mud Rotary ___ Air Rotary ___ Auger X
Cable ___ Other ___

DRILLER'S LICENSE NO. 485165

WELL PROJECTS
Drill Hole Diameter 10 in. Maximum
Casing Diameter 4 in. Depth 40 ft.
Surface Seal Depth 7 ft. Number 3

GEOTECHNICAL PROJECTS
Number of Borings ___ Maximum
Hole Diameter ___ in. Depth ___ ft.

ESTIMATED STARTING DATE July 10, 1991
ESTIMATED COMPLETION DATE July 12 1991

I hereby agree to comply with all requirements of this permit and Alameda County Ordinance No. 73-68.

APPLICANT'S SIGNATURE Ramon Khu Date 6/17/91

FOR OFFICE USE

PERMIT NUMBER 91345
LOCATION NUMBER ___

PERMIT CONDITIONS

Circled Permit Requirements Apply

(A.) GENERAL
1. A permit application should be submitted so as to arrive at the Zone 7 office five days prior to proposed starting date.
2. Submit to Zone 7 within 60 days after completion of permitted work the original Department of Water Resources Water Well Drillers Report or equivalent for well projects, or drilling logs and location sketch for geotechnical projects.
3. Permit is void if project not begun within 90 days of approval date.

(B.) WATER WELLS, INCLUDING PIEZOMETERS
1. Minimum surface seal thickness is two inches of cement grout placed by tremie.
2. Minimum seal depth is 50 feet for municipal and industrial wells or 20 feet for domestic and irrigation wells unless a lesser depth is specially approved. Minimum seal depth for monitoring wells is the maximum depth practicable or 20 feet.

C. GEOTECHNICAL. Backfill bore hole with compacted cuttings or heavy bentonite and upper two feet with compacted material. In areas of known or suspected contamination, tremied cement grout shall be used in place of compacted cuttings.

D. CATHODIC. Fill hole above anode zone with concrete placed by tremie.

E. WELL DESTRUCTION. See attached.

Approved Wyman Hong Date 18 Jun 91
Wyman Hong

121989

Appendix E

WELL PURGING AND SAMPLING DATA

DATE 07.16.91 | PROJECT NUMBER 91020 | PROJECT NAME K/D Cedar

WELL NUMBER MW1 | BORING DIAMETER | CASING DIAMETER 2"

Column of Liquid in Well

Depth to product	N/A
Depth to water	35.54
Total depth of well	49.58
Column of water	14.04

Volume to be Removed

Gallon per foot of casing	=	0.17 gal
Column of water	x	14.04 ft
Volume of casing	=	2.39 gal
Number of volumes to remove	x	3
Total volume to remove	=	7.17

Method of measuring liquid Interface probe

Method of purging well Teflon bailer rate N/A

Method of decon TSP and de-ionized Water

Physical appearance of water (clarity, color, particulates, odor)

Initial very silty no odor

During very silty and no odor

Final very silty, no odor

Field Analysis	Initial	During		Final
Time	12:48	12:57	13:08	13:18
Conductivity (μs/cm)	1690	1430	1360	1260
pH	6.67	6.72	6.73	6.67
Temperature (°F)	66.4	65.0	65.9	65.2

Method of measurement

Total of volume purged 7.5 gal

Comments

Sample Number MW1 Amount of Sample 3 40ml VOA

Preservative (circle one) None (HCl) HNO_3 H_2SO_4

Signed/Sampler Steph W Myers Date 07.16.91

Signed/Reviewer Date

wpsd rev. 1, 5/91

WELL PURGING AND SAMPLING DATA

DATE 07.16.91 | PROJECT NUMBER 91020 | PROJECT NAME K/D Cedar

WELL NUMBER MW2 | BORING DIAMETER | CASING DIAMETER 2"

Column of Liquid in Well

Depth to product	N/A
Depth to water	35.41
Total depth of well	48.92
Column of water	13.51

Volume to be Removed

Gallon per foot of casing	=	0.17 gal.
Column of water	x	13.51 ft
Volume of casing	=	2.30 gal
Number of volumes to remove	x	3
Total volume to remove	=	6.90 gal

Method of measuring liquid Oil/Water interface probe

Method of purging well Teflon bailer rate N/A

Method of decon TSP and de-ionized water

Physical appearance of water (clarity, color, particulates, odor)

Initial very silty, no odor

During very silty - no odor

Final very silty no odor

Field Analysis	Initial	During		Final
Time	11:20	11:31	11:42	11:51
Conductivity (μs/cm)	1010	1020	1060	1040
pH	6.98	6.80	6.82	6.79
Temperature (°F)	68.8	65.2	63.9	64.2

Method of measurement

Total of volume purged 7.0 gal

Comments

Sample Number MW 2 | Amount of Sample 3 40ml VOA

Preservative (circle one) None (HCl) HNO_3 H_2SO_4

Signed/Sampler Stephen W Moore | Date 07.16.91

Signed/Reviewer | Date

wpsd rev. 1, 5/91

WELL PURGING AND SAMPLING DATA

DATE 07.16.91 | PROJECT NUMBER 91020 | PROJECT NAME K/D Cedar

WELL NUMBER MW3 | BORING DIAMETER | CASING DIAMETER 2"

Column of Liquid in Well

Depth to product	N/A
Depth to water	35.49
Total depth of well	49.46
Column of water	13.97

Volume to be Removed

Gallon per foot of casing	=	0.17 gal
Column of water	x	13.97 ft
Volume of casing	=	2.37 gal
Number of volumes to remove	x	3
Total volume to remove	=	7.13 gal

Method of measuring liquid interface probe

Method of purging well teflon bailer rate N/A

Method of decon tsp & de-ionized H_2O

Physical appearance of water (clarity, color, particulates, odor)

Initial very silty no odor

During very silty - no odor

Final very silty, no odor

Field Analysis	Initial	During		Final
Time	14:04	1416	1424	14:35
Conductivity (μs/cm)	1180	1050	1200	1160
pH	6.80	6.88	6.75	6.72
Temperature (°F)	67.8	66.4	66.1	66.2

Method of measurement Hydac Meter

Total of volume purged 8 gal

Comments

Sample Number MW3 Amount of Sample 3 40ml VOA

Preservative (circle one) None (HCl) HNO_3 H_2SO_4

Signed/Sampler Steph W Moore Date 07.16.91

Signed/Reviewer Date

wpsd rev. 1, 5/91

Appendix F

NATIONAL
ENVIRONMENTAL
TESTING, INC.

NET Pacific, Inc.
435 Tesconi Circle
Santa Rosa, CA 95401
Tel: (707) 526-7200
Fax: (707) 526-9623

Ramon Khu
Blymyer Engineers, Inc
1829 Clement Ave
Alameda, CA 94501

Date: 07-25-91
NET Client Acct No: 495
NET Pacific Log No: 8677
Received: 07-18-91 0800

Client Reference Information

K/D Cedar; Project: 91020

Sample analysis in support of the project referenced above has been completed and results are presented on following pages. Please refer to the enclosed "Key to Abbreviations" for definition of terms. Should you have questions regarding procedures or results, please feel welcome to contact Client Services.

Approved by:

Jules Skamarack
Laboratory Manager

JS:rct
Enclosure(s)

NET Pacific, Inc

Client No: 495 Date: 07-25-91
®Client Name: Blymyer Engineers, Inc
NET Log No: 8677 Page: 2

Ref: K/D Cedar; Project: 91020

Parameter	Method	Reporting Limit	Descriptor, Lab No. and Results MW-2 07-16-91 1158 92013	 MW-1 07-16-91 1326 92014	Units
PETROLEUM HYDROCARBONS			--	--	
VOLATILE (WATER)			--	--	
DILUTION FACTOR *			1	1	
DATE ANALYZED			07-22-91	07-22-91	
METHOD GC FID/5030			--	--	
as Gasoline		0.05	ND	ND	mg/L
METHOD 602			--	--	
DILUTION FACTOR *			1	1	
DATE ANALYZED			07-22-91	07-22-91	
Benzene		0.5	ND	ND	ug/L
Ethylbenzene		0.5	ND	ND	ug/L
Toluene		0.5	ND	ND	ug/L
Xylenes, total		0.5	ND	ND	ug/L

NET Pacific, Inc

Client No: 495 Date: 07-25-91
Client Name: Blymyer Engineers, Inc
NET Log No: 8677 Page: 3

Ref: K/D Cedar; Project: 91020

Parameter	Method	Reporting Limit	Descriptor, Lab No. and Results MW-3 07-16-91 1445 92015	Units
PETROLEUM HYDROCARBONS			--	
VOLATILE (WATER)			--	
DILUTION FACTOR *			1	
DATE ANALYZED			07-23-91	
METHOD GC FID/5030			--	
as Gasoline		0.05	ND	mg/L
METHOD 602			--	
DILUTION FACTOR *			1	
DATE ANALYZED			07-23-91	
Benzene		0.5	ND	ug/L
Ethylbenzene		0.5	ND	ug/L
Toluene		0.5	ND	ug/L
Xylenes, total		0.5	ND	ug/L

Ref: K/D Cedar; Project: 91020

QUALITY CONTROL DATA

Parameter	Reporting Limits	Units	Cal Verf Stand % Recovery	Blank Data	Spike % Recovery	Duplicate Spike % Recovery	RPD
Gasoline	0.05	mg/L	118	ND	113	116	3.4
Benzene	0.5	ug/L	98	ND	102	93	9.9
Toluene	0.5	ug/L	103	ND	101	96	5.4
Gasoline	0.05	mg/L	115	ND	97	97	< 1
Benzene	0.5	ug/L	94	ND	84	87	3.1
Toluene	0.5	ug/L	98	ND	88	90	1.9

COMMENT: Blank Results were ND on other analytes tested.

NET Pacific, Inc.

KEY TO ABBREVIATIONS and METHOD REFERENCES

<	:	Less than; When appearing in results column indicates analyte not detected at the value following. This datum supercedes the listed Reporting Limit.
*	:	Reporting Limits are a function of the dilution factor for any given sample. To obtain the actual reporting limits for this sample, multiply the stated Reporting Limits by the dilution factor (but do not multiply reported values).
ICVS	:	Initial Calibration Verification Standard (External Standard).
mean	:	Average; sum of measurements divided by number of measurements.
mg/Kg (ppm)	:	Concentration in units of milligrams of analyte per kilogram of sample, (parts per million).
mg/L	:	Concentration in units of milligrams of analyte per liter of sample.
mL/L/hr	:	Milliliters per liter per hour.
MPN/100 mL	:	Most probable number of bacteria per one hundred milliliters of sample.
N/A	:	Not applicable.
NA	:	Not analyzed.
ND	:	Not detected; the analyte concentration is less than applicable listed reporting limit.
NTU	:	Nephelometric turbidity units.
RPD	:	Relative percent difference, 100 [Value 1 - Value 2]/mean value.
SNA	:	Standard not available.
ug/Kg (ppb)	:	Concentration in units of micrograms of analyte per kilogram of sample, (parts per billion).
ug/L	:	Concentration in units of micrograms of analyte per liter of sample.
umhos/cm	:	Micromhos per centimeter.

Method References

Methods 100 through 493: see "Methods for Chemical Analysis of Water & Wastes", U.S. EPA, 600/4-79-020, rev. 1983.

Methods 601 through 625: see "Guidelines Establishing Test Procedures for the Analysis of Pollutants" U.S. EPA, 40 CFR, Part 136, rev. 1988.

Methods 1000 through 9999: see "Test Methods for Evaluating Solid Waste", U.S. EPA SW-846, 3rd edition, 1986.

SM: see "Standard Methods for the Examination of Water & Wastewater, 17th Edition, APHA, 1989.

BEI Field Services
1829 Clement Avenue
Alameda, CA 94501

CHAIN OF CUSTODY RECORD

8677

PROJ NO.	PROJECT NAME
91020	K/D Cedar

SAMPLERS (Signature): Stephen Moore

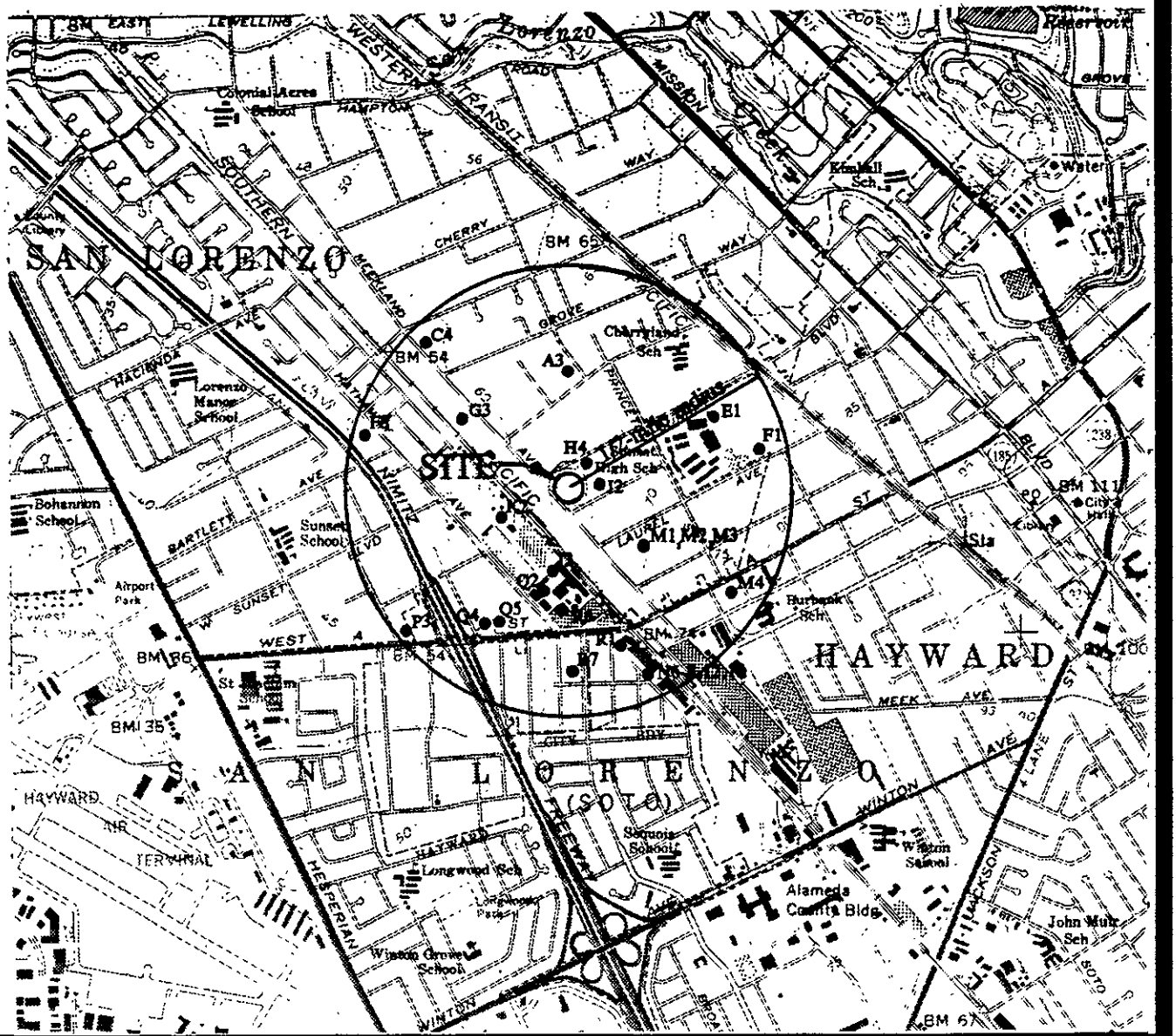
DATE	TIME	COMP.	GRAB	SAMPLE LOCATION	NO OF CONTAINERS	TPH as gasoline + BTXE	TPH as diesel	Oil & Grease (SM503E)	VOC (EPA 624/8240)	Semi-VOC (EPA 625/8270 HOLD)	REMARKS
07.16.91	11:12		X	BB-1	3					X	Standard 5 day TAT ↓
07.16.91	11:58		X	MW-2	3	X					
07.16.91	13:26		X	MW-1	3	X					
07.16.91	14:45		X	MW-3	3	X					

(CUSTODY SEALED 7/17/91 @ 1720 J.W intact JK)

Relinquished by : (Signature)	Date/Time	Received by : (Signature)	Relinquished by : (Signature)	Date/Time	Received by : (Signature)
Stephen Moore	7/16/91 1650	Michael S. Lee	Michael S. Lee	7/17/91 1435	Jeff Wickham
Relinquished by : (Signature)	Date/Time	Received by : (Signature)	Relinquished by : (Signature)	Date/Time	Received by : (Signature)
Jeff Wickham	7/17/91 1720	VIA NCS			
Relinquished by : (Signature)	Date/Time	Received for Laboratory by : (Signature)	Date/Time	Remarks	
		J Schwartz	7/18/91 0800	Bill to Blymyer Engineers. Attn: Ramon Khu	

CCR/REV 0/2-89

Appendix G



Source: United States Geological Survey, "Hayward, CA", photorevised 1980

SENSITIVITY RECEPTOR SURVEY

● = WELL LOCATION

N

0 1000 2000

SCALE IN FEET

FIGURE 1

JOB #91020

APPENDIX G, SENSITIVE RECEPTOR SURVEY
Water Wells Within 1/2 Mile Radius
BEI Job No. 91020, K/D Cedar
22008 Meekland Avenue, Hayward, California

Location on Map	Date	Depth (Ft)	Water(Ft)	Use	Owner/Address
T3S, R2W, Section 16					
E1	11/78	132	--	IRR	HUSD/Sunset High School, Hayward
F1	4/43	59	--	?	King/504 Laurel, Hayward
M1	5/51	98	45	IRR	L.T. Perry/790 Laurel St., Hayward
M2	3/54	92	18	DOM	Melvin Smith/724 Laurel St., Hayward
M3	3/54	93	34	DOM	Melvin Smith/724 Laurel St., Hayward
M4-6	8/86	50	39	TES	ARCO Petroleum/207 A St., Hayward
M7-11	2/87	21	--	MON	Thrifty Oil Co./207 A St., Hayward
N6-8, 12, 13	--	--	--	--	Select Sysco/22885 Amador St., Hayward
T3S, R2W, Section 17					
A3	5/77	72	40	IRR	David Pearson/21671 Haviland Ave., Hayward
C4	7/77	77	37	IRR	Abrev Egg Co./21005 Meekland Ave., Hayward
F3	6/31	200	--	IRR	--/20165 Hathaway, Hayward
G3	10/77	80	37	IRR	Jorn DeNobriga/21455 Meekland Ave., Hayward
H4	9/54	83	--	DOM	E. Billenger/231 Sunset, Hayward
J2	6/54	74	--	DOM	Voctor Downin/746 Polar St., Hayward
J3	1/86	49	23	TES	Diamond Bathurst, Inc./22302 Hathaway, Hayward
K2	7/65	680	--	TES	Hunt Food Products/West A St., Hayward
P3	4/86	34	10	TES	Vic Hubbard/411 West A St., Hayward
Q2	3/37	603	--	IND	United Canning Co./C & Burbank, Hayward
Q4	9/88	45	26	DES	Unocal Station #3791/391 West A St., Hayward
R1	4/41	540	--	IND	Union Ice Co./2174 A St., Hayward
R6	7/65	510	--	TES	Hunt Food Products, Inc./A St. & Hathaway, San Lorenzo

DES = destroyed well DOM = domestic IND = industrial IRR = irrigation MON = monitoring TES = test