**FUGRO WEST, INC.**

44 Montgomery Street, Suite 1010
San Francisco, California 94104

Phone : (415) 296-1041
Telefax : (415) 296-0944

Need RBCA Tier 2 evaluation

# LETTER OF TRANSMITTAL

| | | | |
|---|---|---|---|
| To: | Alameda County Environmental Health | Project No. | 9537-1311 |
| | 1131 Harbor Bay Parkway, Room 250 | Date | October 2, 1996 |
| | Alameda, California 94502-6577 | | |
| Attn: | Ms. Eva Chu | | |
| Phone: | | Fax No. | |

From: Peter B. Hudson

Subject: Soil Remediation and Closure Report

**SENT BY:**

☐ Messenger ☐ Overnight Mail ☐ Overnight (by 10 AM) ☒ Regular mail ☐ Hand Delivered

**WE ARE TRANSMITTING:**

☐ Draft Report
☒ Final Report
☐ Proposal
☐ Other:

**THESE ARE TRANSMITTED:**

☐ For Your Review
☒ For Your Information and Use
☐ Per Your Request
☐ Other:

Please find enclosed a copy of the Soil Remediation and Closure Report for the AHA property at 1916 Webster Street, in Alameda, California. If you have any addition questions or comments regarding this report, please contact Peter B. Hudson at the number above.

ENVIRONMENTAL PROTECTION
96 OCT -3 PM 2:14

Signature

10/2/96
Date

**FOR OFFICE USE ONLY**

Originator Please Initial Appropriate Box Prior to Sending

| | | | | |
|---|---|---|---|---|
| ☐ Create typed transmittal | ☐ Mail to Addressee | ☐ Mail copy, then file original | ☐ Mail copy, return original | ☐ Mail to Addressee and cc, file copy |

FUGRO WEST, INC.

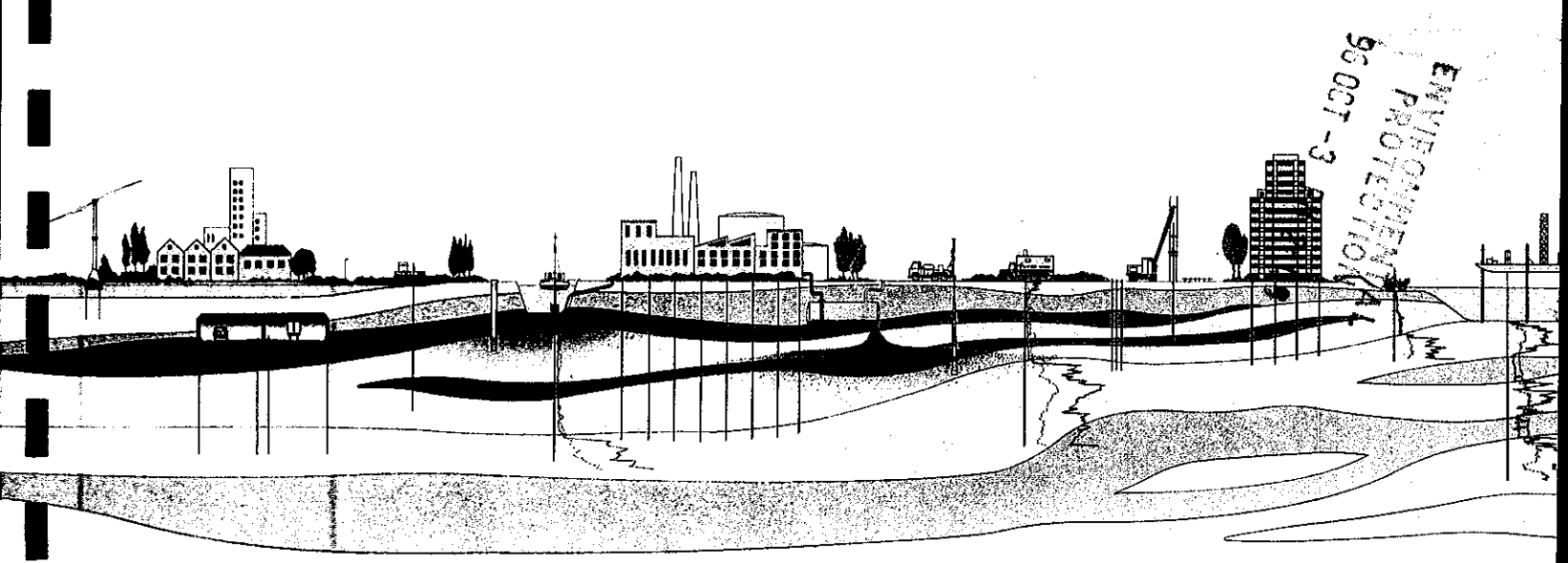
# SOIL REMEDIATION AND CLOSURE REPORT

## HOUSING AUTHORITY OF THE CITY OF ALAMEDA FACILITY
## 1916 WEBSTER STREET
## ALAMEDA, CALIFORNIA

*Prepared for:*
**HOUSING AUTHORITY OF THE CITY OF ALAMEDA**
**701 Atlantic Avenue**
**Alameda, California**

*Prepared by:*
**FUGRO WEST, INC.**
**44 Montgomery Street, Suite 1010**
**San Francisco, California 94104**

Project No. 9537-1311
September 1996



**FUGRO WEST, INC.**

44 Montgomery Street, Suite 1010
San Francisco, CA 94104
Tel: (415) 296-1041
Fax: (415) 296-0944

October 2, 1996
Project No. 9537-1311

Housing Authority of the City of Alameda
701 Atlantic Avenue
Alameda, California 94501

Attention: Ms. Eileen Duffy

**Soil Remediation and Closure Report**
**Housing Authority of the City of Alameda Property**
**1916 Webster Street**
**Alameda, California**

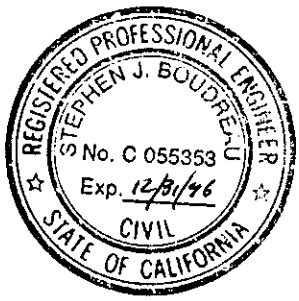
Dear Ms. Duffy:

Fugro West Inc. (Fugro) is pleased to provide the Housing Authority of the City of Alameda (AHA) with the enclosed Soil Remediation and Closure Report for the AHA property, located at 1916 Webster Street in Alameda California. This report documents the recent soil excavation project and presents recommendations for closure of the LUST case on this property.

We appreciate the opportunity to provide environmental services to the AHA on this project. If you have questions or comments regarding this report please contact us at (415) 296-1041.

Sincerely,
FUGRO WEST, INC.

Peter B. Hudson
Project Geologist




Stephen J. Boudreau, P.E.
Regional Branch Manager
P.E. No. C055353

PBH:lah

Attachment:

c: Eva Chu, Alameda County Environmental Health Department

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## EXECUTIVE SUMMARY

Fugro West, Inc. (Fugro) has prepared this report to document the removal of soils impacted with petroleum hydrocarbons at the Housing Authority of the City of Alameda (AHA) property, located at 1916 Webster Street in Alameda, California (subject property). Fugro completed this project in accordance with the workplan discussed in the August 14, 1996 letter to the Alameda County Environmental Health Department (ACEHD). The ACEHD approved the soil excavation work plan in a letter to the AHA, dated August 19, 1996.

The objective of this project was to excavate and dispose, as feasible, the impacted soils associated with a former leaking underground storage gasoline tank (LUST). The AHA is conducting the corrective action to facilitate a property transfer and eventual commercial development of the subject property. Fugro intends that this report will provide the ACEHD and the California Regional Water Quality Control Board - San Francisco Bay Region (RWQCB) with data necessary to grant closure for this LUST case.

The subject property is located at the southeast corner of Webster Street and Atlantic Avenue in a commercial area of Alameda, California. The subject property contains a warehouse building and adjacent parking lot. The building includes rented tenant office space that is currently occupied The warehouse area is used by the AHA maintenance crews for equipment and vehicle storage. The building was built prior to 1950 and at one time contained a peanut butter production operation.

The AHA had a 280-gallon underground storage tank (UST) removed from the subject property in July 1986. Subsequent environmental investigation determined that the UST had released gasoline to the subsurface soil and groundwater.

Fugro conducted soil excavation, backfilling and disposal activities at the subject property from August 21 through 28, 1996. The initial excavation was completed on August 21, 1996 and additional soil was excavated on August 27, 1996 prior to backfilling.

It is Fugro's opinion that the recent soil excavation removed, as feasible, the majority of soil containing elevated concentrations of total petroleum hydrocarbons as gasoline (TPHg) and benzene, toluene, ethylbenzene and xylenes (BTEX) from the area of the former LUST. Soil excavation, in conjunction with previous soil removal efforts (March 1994), have significantly reduced the source of TPHg and BTEX capable of impacting the shallow groundwater. Residual TPHg and BTEX concentrations remaining in the soils are limited in extent and are currently covered by the concrete slab of the existing building. It is Fugro's opinion that under current conditions, impact to human health and the environment from the remaining impacted soils is low.

Concentrations of TPHg and BTEX in monitoring wells MW-4 and MW-5 decreased following the recent excavation of the petroleum impacted soils. Dissolved petroleum hydrocarbon concentrations in monitoring wells MW-1, MW-2, MW-3 and MW-6 have generally remained at or below the method reporting limit (MRL) and have not increased. This indicates that a petroleum hydrocarbon plume is not migrating in a downgradient direction off the subject property. Because the majority of the soils containing TPHg and BTEX have been removed, it is Fugro's opinion that residual TPHg and BTEX concentrations in the groundwater will decrease over time. Beneficial uses of the shallow ground water in this area are limited to extraction for irrigation.

The subject property is located in an area of Alameda that has been occupied by commercial and industrial development since the early 1900's. At this time, the subject property is used in a limited capacity. According to information provided by the AHA, the proposed development of the property includes the construction of a commercial mall. The mall may include discount retail stores and fast-food outlets.

Fugro does not recommend further mitigation measures for this LUST case and recommends this site be considered for closure. Fugro's rationale for this recommendation is summarized below.

- The UST, associated piping, and dispensing system was removed in 1986.
- Soil impacted with petroleum released from the UST has been removed, as feasible, from the area surrounding the former UST and in a down-gradient direction.
- The extent of the petroleum-impacted soils have been delineated.
- Dissolved concentrations of petroleum hydrocarbons in the groundwater are limited to the area within the previous soil excavation.
- Dissolved petroleum hydrocarbons have not been identified migrating off the subject property.
- Dissolved concentrations of petroleum hydrocarbons in the groundwater decreased since the recent soil removal effort in August 1996.
- Uses of the shallow groundwater in this area appears to be limited to irrigation.
- Residual petroleum impacted soils are located beneath the concrete building slab. Currently, there is a low potential of impact to human health and the environment from these soils.
- Proposed uses of the subject property includes a paved commercial development.

## 1.0 INTRODUCTION

Fugro West Inc. (Fugro) has prepared this report to document the removal of soils impacted with petroleum hydrocarbons at the Housing Authority of the City of Alameda (AHA) property, located at 1916 Webster Street in Alameda, California (subject property). Fugro completed this project in accordance with the workplan discussed in the August 14, 1996 letter to the Alameda County Environmental Health Department (ACEHD). The ACEHD approved the soil excavation work plan in a letter to the AHA, dated August 19, 1996.

The objective of this project was to excavate and dispose, as feasible, the impacted soils associated with a former leaking underground storage gasoline tank (LUST). The AHA is conducting the corrective action to facilitate a property transfer and eventual commercial development of the subject property. Fugro intends that this report will provide the ACEHD and the California Regional Water Quality Control Board - San Francisco Bay Region (RWQCB) with data necessary to grant closure for this LUST case.

The introduction section of this report is followed by a discussion of the project background (Section Two) which includes the geologic and hydrogeologic setting. Section Three summarizes the soil removal, disposal procedures and backfilling of the excavation, in addition to confirmatory soil sampling procedures and results. Section Four summarizes the results of quarterly groundwater monitoring performed on September 10, 1996. Section Five presents Fugro's conclusion based on data collected at the subject property. Recommendations are presented in Section Six and includes Fugro's rationale for recommending site closure at this time. Summary data tables and figures follow the text sections. Non-hazardous waste manifests and laboratory reports are included as Appendices.

## 2.0 BACKGROUND

The subject property is located at the southeast corner of Webster Street and Atlantic Avenue in a commercial area of Alameda, California. (Figure 1) The subject property contains a warehouse building and adjacent parking lot (Figure 2) The building includes rented tenant office space that is currently occupied The warehouse area is used by the AHA maintenance crews for equipment and vehicle storage. The building was built prior to 1950 and at one time contained a peanut butter production operation.

The AHA had a 280-gallon underground storage tank (UST) removed from the subject property in July 1986. Aqua-Science Engineers, Inc. conducted an environmental investigation after the UST was removed and determined that it had leaked and released gasoline to the subsurface soil and groundwater. Additional work included excavation of impacted soils in September 1986 and installing groundwater monitoring wells MW-1, MW-2 and MW-3. In

accordance with a Corrective Action Plan (CAP), Environmental Science and Engineering Inc. excavated additional soil in March 1994. The excavation area extended from the former UST location to within 6 feet of the northern fence line (Figure 2) Soil samples collected by ESE in March 1994, indicated that petroleum hydrocarbons remained in the soils south of the former UST, between the excavation and the building.

Fugro installed three additional groundwater monitoring wells (MW-4, MW-5, and MW-6) in October 1994 (Figure 2). Monitoring wells MW-4 and MW-5 are sampled quarterly and the remaining monitoring wells are sampled annually. Ground water elevations in the monitoring wells are measured and recorded on a quarterly basis. Groundwater sample analyses indicate that monitoring wells MW-4 and MW-5 contain total petroleum hydrocarbons as gasoline (TPHg) and benzene, toluene, ethylbenzene and xylenes (BTEX).

Fugro conducted subsurface soil sampling in May 1996 to further define the extent of the TPHg and BTEX in the soils to the south, east and west of the former UST (Figure 3). Soil samples were obtained from locations inside and outside the building at depths ranging from 1.5 to 3.0 feet. below ground surface (bgs). Analysis of the samples indicated that hydrocarbon concentrations exceeding 1,000 parts per million (ppm) TPHg and 1 ppm BTEX remained in the subsurface soils adjacent to the former UST and north of the building. Petroleum hydrocarbon concentrations in soils decreased to the south, towards the interior of the building. Fugro prepared a report of findings for this investigation titled: *Results of Subsurface Soil Sampling, 1916 Webster Street, Alameda California,* dated June 3, 1996.

Based on subsurface soil sampling results, Fugro recommended removal and disposal of soils containing TPHg and BTEX. The estimated extent of soil removal encompassed the area between the previous excavation and the north wall of the building, extending 25 feet to the east.

## 2.1 Geology and Hydrogeology

The island of Alameda lies within the Coastal Range Geologic Province on the east shore of the San Francisco Bay. Alameda is bounded to the east by the Oakland Inner Harbor and to the west by the San Francisco Bay. The elevation of Alameda ranges from 10 to 35 feet above mean sea level.

The Oakland-Alameda area is situated on a broad, alluvial plain that slopes gently west from the Oakland-Berkeley Hills to the San Francisco Bay. The alluvial plain is comprised of quaternary (11,000 years ago) alluvial sediments derived from erosion of the hills to the east. Alameda is located at the eastern margin of the alluvial plain and is underlain by fine-grained alluvial and tidal-bayland sediments. These sediments include silts, sand and bay mud to reported depths of at least 280 feet bgs. Former bayland areas in northern Alameda were filled prior to the construction of the Alameda Naval Air Station.

Subsurface materials beneath the subject property consist of artificial fill underlain by native silty sand (Merritt sand) to the maximum depth explored of approximately 15 feet bgs. During the soil excavation artificial fill material including silty clay and trash debris was encountered from the surface to three feet bgs. Black silty sand was encountered below the fill to a maximum depth of five feet bgs.

The subject property is approximately three-quarters of a mile south of the Inner Harbor and three-quarters of a mile north the San Francisco Bay shoreline (Figure 1). Shallow groundwater beneath the subject property occurs between 3 and 5 feet bgs under unconfined conditions. The water table fluctuates seasonally approximately two feet. Quarterly groundwater elevation data obtained from the six on-site monitoring wells indicate a north-north-east groundwater flow direction at an approximate gradient of 0.006 feet per foot. Groundwater appears to flow towards the Oakland Inner Harbor.

## 2.2 Near Vicinity Groundwater Wells

Fugro received information on vicinity water wells from the Alameda County Public Works Agency (ACPW) to determine the presence of potential downgradient receptors. The ACPW database contained 73 listings of shallow soil borings, monitoring wells, irrigation wells and test wells within a one half mile radius. Four of the listings included wells that could potentially be extracting groundwater. The well types and locations are listed below.

- Industrial well at Webster and Tynan Streets is located approximately 2,500 feet from the subject property in an estimated down-gradient groundwater flow direction. The well was drilled in 1905 to a total depth of 37 feet bgs. Information on the current operational status of this well was not available in the ACPW database.

- Irrigation Well at 462 Buena Vista is located approximately 2,000 feet from the subject property in an estimated upgradient groundwater flow direction. The well was drilled in 1935 to a depth of 23 feet bgs. Information on the current operational status of this well was not available in the ACPW database.

- Irrigation well at 1614 6th Street is located approximately 2,000 feet from the subject property in an estimated upgradient groundwater flow direction. This well was installed in June 1977 to a depth of 25 feet bgs and has reported yield of 5 gallons per minute (gpm). Information on the current operational status of these wells was not available in the ACPW database.

- Irrigation well at 441 Pacific Avenue and 5th Avenue is located approximately 2,000 feet from the subject property in an estimated cross-gradient groundwater flow direction. This well was drilled in 1906 to a depth of 315 feet bgs. Groundwater is

reported at 71 feet bgs. Information on the current operational status of this well was not available in the ACPW database.

Information from the ACPW indicate that the beneficial uses of the shallow water table in this area of Alameda are limited to irrigation. Considering that offsite migration of dissolved hydrocarbons have not been identified at the subject property, it is Fugro's opinion that residual groundwater contaminants do not represent a potential impact to the near-vicinity water wells. Furthermore, the near-vicinity wells are either upgradient or far enough away to preclude direct hydrogeological or contaminant impact from the subject property.

## 3.0 SOIL EXCAVATION AND SAMPLING

Fugro conducted soil excavation, backfilling and disposal activities at the subject property from August 21 through 28, 1996. The initial excavation was completed on August 21, 1996 and additional soil was excavated on August 27, 1996 prior to backfilling. (Figure 5).

The excavation encompassed approximately 340 square feet and included the area south, east and west of the former UST (Figure 4 and 5). The total depth of the excavation ranged from 5 to 6 feet bgs. Soil was excavated to the soil-groundwater interface at approximately five feet bgs. Historical groundwater elevation monitoring indicates that the seasonal low groundwater depths range from 4.5 to 5.0 feet bgs.

Soil was excavated and placed in stockpile using a tractor-mounted back-hoe equipment. The stockpiles were covered pending profile sampling and removal. This work was performed under the direction of Fugro field personnel. Following landfill acceptance, approximately 75 cubic yards of soil was transported off the subject property to Altamont Landfill in Livermore, California for disposal. Copies of the non-hazardous waste manifests are included in Appendix A.

The excavation was backfilled to the surface on August 27 and 28, 1996 with Class II aggregate base rock. The backfill material was placed in 2 to 3 foot lifts and compacted using a back-hoe mounted vibratory unit.

### 3.1 Confirmatory Soil Sampling Procedures

A Fugro field geologist performed confirmatory soil sampling within the excavation during soil removal operations. In general, soil samples were extracted from the excavation sidewalls at depths ranging from 2 feet bgs to 4.5 feet bgs (Figure 5). Sample depths were determined by field observations of soil, photo-ionization detector (PID) screening and data from previous soil sampling (May 1996). No soil samples were collected along the north sidewall adjacent to the former excavation because soil was removed up to the pea gravel backfill placed during the initial excavation in March 1994. A total of 16 confirmatory soil samples were collected on August 21,

1996 and three additional soil samples were collected August 27, 1996. Fugro collected one composite soil sample (SP-A,B COMP) from the stockpile on August 21, 1996 for disposal profiling.

Ms. Eva Chu of the ACEHD was present on the subject property in the afternoon of August 21, 1996 to observe soil removal operations. Ms Chu and the Fugro field geologist discussed sampling locations and protocols.

Soil samples were collected within 1.25-inch by 6-inch stainless steel sleeves by hand pushing sleeve into the sidewall. Each sample sleeve was capped and placed in refrigerated storage. Soil samples collected on August 21, 1996 were immediately transferred under chain of custody control to an on-site mobile laboratory operated by Onsite Environmental Laboratories (Onsite) of Fremont California. Onsite is a California state certified mobile laboratory. Soil samples were refrigerated within the mobile laboratory prior to analysis. The three soil samples collected August 27, 1996 were transferred by courier to American Environmental Network (AEN) in Pleasant Hill, California. AEN is a California state certified environmental laboratory.

Confirmatory soil samples were analyzed for TPHg by EPA Method 8015 (modified) and BTEX by EPA Method 8020. As required by the Altamont Landfill, sample SP-A,B COMP was analyzed for TPHg, BTEX and total lead (EPA Method 6010).

### 3.2 Confirmatory Soil Sample Results

The following sections summarizes the laboratory findings of the TPHg and benzene analyses. The concentrations of TPHg and BTEX are summarized in Table 1. Sample locations and the distribution of TPHg and benzene is shown on Figure 5. Complete laboratory reports are included as Appendix B.

North Sidewall

The majority of the north sidewall of the excavation was adjacent to the previous excavation so only one soil sample (N-3') was collected. Sample N-3' contained 100 ppm TPHg and 3.2 ppm benzene.

South Sidewall

Analytical results indicated the highest concentrations of TPHg and BTEX were found in soil samples collected from the south side wall of the excavation. Soil samples from the south sidewall were collected at depths ranging from 2 feet to 4.5 feet bgs. The maximum TPHg concentration detected from the south wall was 460 ppm in sample S-2.5'. The maximum benzene concentration detected was 6.2 ppm in samples S-2.5' and SSW-4.5.' Additional soil was removed from the east end of the excavation on August 27, 1996 Soil sample SSE(EXT)-3

extracted from the south sidewall after additional soil was removed, contained 5 ppm TPHg and 0.2 ppm benzene.

East Sidewall

Three soil samples were collected from the east sidewalls of the excavation. Soil sample E(C)-3' was extracted from the soil beneath the footing of the canopy support column. The sample contained 120 ppm of TPHg and 0.049 ppm of benzene. Soil sample E(END)-3' was collected from the east sidewall adjacent to the building on August 21, 1996. This sample contained 47 ppm of TPHg and benzene at a concentration of 3.2 ppm. Additional soil was removed from this area on August 27, 1996 and Fugro collected soil sample E(END-R)-3'. This sample contained 0.4 ppm TPHg and benzene was not detected above the method detection limit.

West Sidewall

Soil sample WSW-3' extracted from the south half of the west sidewall contained concentrations of TPHg at 2.7 ppm and benzene at 0.24 ppm. Sample WNW-3', located in the northern half of the west sidewall contained 2,100 ppm of TPHg and 12 ppm benzene. Because of the elevated concentrations in sample WNW-3', Fugro continued the excavation in that area 4 feet to the west. Two confirmatory soil samples were extracted after the additional soil was removed. Sample W(R)-3' contained 81 ppm of TPHg and 1.6 ppm benzene. Soil sample WNW(R)-3' contained TPHg at 39 ppm and benzene at 1.9 ppm.

Bottom of Excavation

Soil sample B-1-5' was collected from the bottom of the excavation at the soil-groundwater interface. The concentrations in sample B-1-5' were 600 ppm of TPHg and 5.1 ppm of benzene. While observing the soil sampling activities, Ms. Chu (ACEHD) stated that bottom soil samples from 5 feet bgs may not be representative of actual soil concentrations. Fugro concurred and did not collect additional bottom soil samples from the excavation.

## 4.0 QUARTERLY GROUNDWATER RESULTS

### September 1996

Fugro performed quarterly groundwater sampling of monitoring wells MW-1 through MW-6 on September 10, 1996. The details of this sampling event are summarized in this report and will be presented in a forthcoming quarterly sampling report. Groundwater elevation data is summarized in Table 2 and petroleum hydrocarbon concentration data is presented in Table 3.

Concentrations of TPHg and BTEX were detected above the method reporting limit (MRL) in groundwater samples collected from MW-2, MW-4 and MW-5. Monitoring wells

MW-1, MW-3 and MW-6 did not contain TPHg or BTEX concentrations above the MRL. The groundwater sample from MW-2 contained 0.06 parts per billion (ppb) TPHg and 0.9 ppb benzene. Toluene, ethylbenzene and xylenes were not detected above the MRL. The groundwater sample collected from MW-4 contained 130 ppb TPHg, 16 ppb benzene and 0.7 ppb toluene. The groundwater sample collected from monitoring well MW-5 contained 1,200 ppb TPHg and 620 ppb benzene. Toluene, ethylbenzene and xylenes were not detected above the MRL in MW-5.

Comparing with the quarterly sampling results from June 1996 (second quarter) to the September 1996 (third quarter) results, concentrations of TPHg and benzene in monitoring well MW-4 have decreased approximately 57%. Third quarter groundwater sampling results from monitoring well MW-5 indicate a 43% decrease in TPHg and a 23% decrease in benzene since the second quarter.

## 5.0 CONCLUSIONS

Soil Removal

Analytical results of soil samples collected from the north, east and west sidewalls of the excavation approximately define the lateral extents of TPH-impacted soils (Figure 5). These limits are consistent with those established from the results of the soil sampling conducted in May 1996 (Figure 3). The petroleum-impacted soils were excavated to a depth approximately equivalent to the lowest seasonal groundwater (5 feet bgs).

The highest concentrations of TPHg (460 ppm) and BTEX (6.2 ppm) remain in the soils along the southern boundary of the excavation. Based on south sidewall sample results, these soils likely extend beneath the building. Subsurface soil sample results from May 1996 define the southern lateral extent of the petroleum-impacted soils to approximately six feet to the south, under the building (Figure 3). The east-west lateral extent of the impacted soils is approximately 20 feet. The approximate vertical extent of the petroleum-impacted soils is between 2 feet bgs and 5 feet bgs. Based on results of the previous soil sampling (May 1996) concentrations TPHg and BTEX concentrations decrease at depths greater than five feet bgs.

It is Fugro's opinion that recent soil excavation efforts removed, as feasible, the majority of soil containing elevated TPHg and BTEX concentrations from the area of the former LUST. Soil excavation in conjunction with previous efforts (March 1994) have significantly reduced the source of TPHg and BTEX capable of impacting the shallow groundwater. Residual TPHg and BTEX concentrations remaining in the soils are limited in extent and are currently covered by the concrete slab of the existing building. It is Fugro's opinion that under current conditions, impact to human health and the environment from the remaining impacted soils is low.

Current Groundwater Conditions

Concentrations of TPHg and BTEX in monitoring wells MW-4 and MW-5 decreased following the recent excavation of the petroleum impacted soils. The dissolved petroleum hydrocarbon concentrations in monitoring wells MW-4 and MW-5 suggest that petroleum impacted groundwater remains within the confines of the former LUST excavation. Dissolved petroleum hydrocarbon concentrations in monitoring wells MW-1, MW-2, MW-3 and MW-6 have generally remained below the MRL and have not increased. This indicates that a petroleum hydrocarbon plume is not migrating in a downgradient direction off the subject property. Because the majority of the soils containing TPHg and BTEX have been removed it is Fugro's opinion that residual TPHg and BTEX concentrations in the groundwater will decrease over time.

Beneficial uses of the shallow water table in this area are limited to extraction for irrigation. Based on available information, near-vicinity water extraction wells have a low potential of being affected by the dissolved hydrocarbons identified at the subject property.

Present and Future Uses of the Subject Property

The subject property is located in an area of Alameda that has been occupied by commercial and industrial development since the early 1900's. Currently, the subject property is used in a limited capacity. According to information provided by the AHA, the proposed development of the property includes the construction of a commercial mall. The mall may include discount retail stores and fast-food outlets.

## 6.0 RECOMMENDATIONS AND RATIONALE FOR CLOSURE

Fugro does not recommend further mitigation measures for this LUST case and recommends this site be considered for closure. Fugro's rationale for this recommendation is summarized below.

- The UST, associated piping, and dispensing system was removed in 1986.
- Soil impacted with petroleum released from the UST has been removed, as feasible, from the area surrounding the former UST and in a down-gradient direction.
- The extent of the petroleum-impacted soils have been delineated.
- Dissolved concentrations of petroleum hydrocarbons in the groundwater are limited to the area within the previous soil excavation.
- Dissolved petroleum hydrocarbons have not been identified migrating off the subject property.

- Dissolved concentrations of petroleum hydrocarbons in the groundwater decreased since the recent soil removal effort in August 1996.
- Uses of the shallow groundwater in this area appears to be limited to irrigation.
- Residual petroleum impacted soils are located beneath the concrete building slab. Currently, there is a low potential of impact to human health and the environment from these soils.
- Proposed uses of the subject property includes a paved commercial development.

# TABLES

# TABLE 1
# ANALYTICAL RESULTS OF VERIFICATION SOIL SAMPLING
## Soil Excavation - August 1996

Housing Authority of the City of Alameda
1916 Webster Street
Alameda, California

All Concentrations in Parts per Million (ppm)

| Soil Sample Location and Depth | Sampling Date | TPH - Gasoline | Benzene | Toluene | Ethyl-benzene | Xylenes (Total) | Total Lead |
|---|---|---|---|---|---|---|---|
| SP-A,B COMP[1] | 8/21/96 | 16 | 0.13 | 0.76 | 0.27 | 1.1 | 40 |
| N-3' | 8/21/96 | 100 | 3.2 | 0.49 | 1.5 | 3.7 | NA |
| S-2.5' | 8/21/96 | 460 | 6.2 | 16 | 5.9 | 22 | NA |
| SSW-3' | 8/21/96 | 190 | 6.2 | 1.7 | 3.9 | 13 | NA |
| SSW-4.5' | 8/21/96 | 58 | 3.7 | 0.28 | 0.68 | 2.1 | NA |
| SSE-2' | 8/21/96 | 70 | 2.1 | 5.0 | 1.1 | 4.6 | NA |
| SSE-3.5' | 8/21/96 | 180 | 3.7 | 6.9 | 3.9 | 15 | NA |
| SSE(EXT)-3' | 8/27/96 | 5 (0.2) | 0.2 | 0.006 | 0.025 | 0.068 | NA |
| W(R)-3' | 8/27/96 | 81 (0.2) | 1.6 | ND | 0.8 | 1.9 | NA |
| WSW-3' | 8/21/96 | 2.7 | 0.24 | ND | 0.044 | 0.11 | NA |
| WNW-3' | 8/21/96 | 2,100 | 12 | 54 | 33 | 100 | NA |
| WNW(R)-3' | 8/21/96 | 39 (4) | 1.9 (0.1) | ND (0.1) | 0.27 (0.10) | 0.68 (0.1) | NA |
| S-4.5' | 8/21/96 | 330 | 5.3 | 13 | 5.0 | 14 | NA |
| E(C)-3' | 8/21/96 | 120 | 0.49 | 3.5 | 1.9 | 6.6 | NA |
| E(END)-3' | 8/21/96 | 47 | 3.2 | 0.33 | 0.97 | 3.1 | NA |
| E(END-R)-3' | 8/27/96 | 0.4 (0.2) | ND | ND | ND | ND | NA |
| B1-5' | 8/21/96 | 600 | 5.1 | 15 | 5.5 | 18 | NA |
| Method Reporting Limit * | | 0.5 | 0.005 | 0.005 | 0.005 | 0.005 | 1 |

NOTES:

TPHg Total Petroleum Hydrocarbons as gasoline analysis performed using EPA Method 8015 modified and California LUFT.
Benzene, Toluene, Ethylbenzene and Xylenes analysis performed using EPA Method 8020 and EPA Method 5030.
Parts per Million (ppm) = milligrams per Liter (mg/L)=1,000 x.ug/kg or parts per billion (ppb)
1 - Soil Sample SP-A,B COMP was collected for stockpile profiling purposes.
ND - Not Detected above indicated method reporting limit.
NA - Not Analyzed
* - Method Reporting Limits unless otherwise noted by value in parentheses

# TABLE 2
# GROUNDWATER ELEVATION DATA

Housing Authority of the City of Alameda Facility
1916 Webster Street
Alameda, California

| Well No. | Date | Top of Casing Reference Elevation (feet above MSL) | Depth to Groundwater (feet) | Groundwater Elevation (feet above MSL) |
|---|---|---|---|---|
| MW-1 | 10/22/92 | 9.23(1) | 4.94 | 4.29 |
| | 03/19/93 | | 3.72 | 5.51 |
| | 04/19/93 | | 3.91 | 4.92 |
| | 05/30/93 | | 3.94 | 5.29 |
| | 06/29/93 | | 4.36 | 4.87 |
| | 08/04/93 | | 4.55 | 4.68 |
| | 01/26/94 | | 4.14 | 5.09 |
| | 07/16/94 | | 4.65 | 4.58 |
| | 10/10/94 | 6.51(2) | 4.86 | 1.65 |
| | 03/29/95 | | 3.54 | 2.97 |
| | 05/25/95 | | 4.09 | 2.42 |
| | 08/16/95 | | 4.41 | 2.10 |
| | 11/30/95 | | 4.84 | 1.67 |
| | 03/07/96 | | 3.44 | 3.07 |
| | 06/12/96 | | 4.18 | 2.33 |
| | **09/10/96** | | **4.68** | **1.83** |
| MW-2 | 10/22/92 | 10.00(1) | 5.22 | 4.78 |
| | 03/19/93 | | 3.39 | 6.61 |
| | 04/19/93 | | 3.78 | 6.22 |
| | 05/30/93 | | 3.86 | 6.14 |
| | 06/29/93 | | 4.41 | 5.59 |
| | 08/04/93 | | 4.72 | 5.28 |
| | 01/26/94 | | 3.98 | 6.02 |
| | 07/16/94 | | 4.86 | 5.14 |
| | 10/10/94 | 7.26(2) | 5.02 | 2.24 |
| | 03/29/95 | | NA | NA |
| | 05/25/95 | | N/A | N/A |
| | 08/16/95 | | 4.60 | 2.66 |
| | 11/30/95 | | 5.03 | 2.23 |
| | 03/07/96 | | 3.00 | 4.26 |
| | 06/12/96 | | 4.12 | 3.14 |
| | **09/10/96** | | **4.89** | **2.37** |
| MW-3 | 10/22/92 | 9.44(1) | 4.66 | 4.78 |
| | 03/19/93 | | 3.18 | 6.26 |
| | 04/19/93 | | 3.44 | 4.65 |
| | 05/30/93 | | 3.45 | 5.99 |
| | 06/29/93 | | 3.95 | 5.49 |
| | 08/04/93 | | 4.13 | 5.31 |
| | 01/26/94 | | 3.7 | 5.74 |
| | 07/16/94 | | 4.41 | 5.03 |
| | 10/10/94 | 6.71(2) | 4.52 | 2.19 |
| | 03/29/95 | | 3.02 | 3.69 |
| | 05/25/95 | | 3.52 | 3.19 |
| | 08/16/95 | | 4.09 | 2.62 |
| | 11/30/95 | | 4.64 | 2.07 |
| | 03/07/96 | | 3.39 | 3.32 |
| | 06/12/96 | | 3.57 | 3.14 |
| | **09/10/96** | | **4.24** | **2.47** |
| MW-4 | 10/10/94 | 7.55(2) | 4.94 | 2.61 |
| | 03/29/95 | | 3.00 | 4.55 |
| | 05/25/95 | | 3.52 | 4.03 |
| | 08/16/95 | | 4.18 | 3.37 |
| | 11/30/95 | | 4.71 | 2.84 |
| | 03/07/96 | | 3.04 | 4.51 |
| | 06/12/96 | | 3.66 | 3.89 |
| | **09/10/96** | | **4.47** | **3.08** |

Table 2 notes on page T2-2.

# TABLE 2

## GROUNDWATER ELEVATION DATA
## (continued)

Housing Authority of the City of Alameda Facility
1916 Webster Street
Alameda, California

| Well No. | Date | Top of Casing Reference Elevation (feet above MSL) | Depth to Groundwater (feet) | Groundwater Elevation (feet above MSL) |
|---|---|---|---|---|
| MW-5 | 10/10/94 | 7.31(2) | 4.91 | 2.40 |
| | 03/29/95 | | 3.41 | 3.90 |
| | 05/25/95 | | 3.65 | 3.66 |
| | 08/16/95 | | 4.31 | 3.00 |
| | 11/30/95 | | 4.59 | 2.72 |
| | 03/07/96 | | 3.31 | 4.00 |
| | 06/12/96 | | 4.05 | 3.26 |
| | **09/10/96** | | **4.60** | **2.71** |
| MW-6 | 10/10/94 | 8.09(2) | 4.37 | 3.72 |
| | 03/29/95 | | 2.29 | 5.80 |
| | 05/25/95 | | 3.52 | 4.57 |
| | 08/16/95 | | 3.41 | 4.68 |
| | 11/30/95 | | 4.45 | 3.64 |
| | 03/07/96 | | 2.35 | 5.74 |
| | 06/12/96 | | 3.57 | 4.52 |
| | **09/10/96** | | **4.31** | **3.78** |

**NOTES:**
MSL = mean sea level
(1) = Top of casing reference elevations surveyed using an assumed elevation of 10.00 feet above MSL for MW-2.
(2) = Top of casing reference elevations were resurveyed on September 12, 1994 using a cut square benchmark in the top of the concrete curb at a storm inlet on the south side of Atlantic Avenue approximately 75 feet east of the intersection of Atlantic Avenue and Constitution Way. Benchmark elevation 7.50 feet above MSL.
NA = Not available; well inaccessible due to construction debris.

## TABLE 3

## SUMMARY OF GROUNDWATER ANALYTICAL RESULTS

Housing Authority of the City of Alameda Facility
1916 Webster Street
Alameda, California

| Sample I.D. | Date (µ/L) | TPHg (µ/L) | Benzene (µ/L) | Toluene (µ/L) | Ethylbenzene (µ/L) | Xylenes (µ/L) | Organic Lead (mg/L) |
|---|---|---|---|---|---|---|---|
| MW-1 | 07/91 | ND (50) | ND (0.50) | ND (0.50) | ND (0.50) | ND (1.5) | NA |
| | 11/91 | ND (50) | ND (0.50) | ND (0.50) | ND (0.50) | ND (1.5) | NA |
| | 02/92 | ND (50) | ND (0.50) | ND (0.50) | ND (0.50) | ND (1.5) | NA |
| | 07/92 | ND (50) | ND (0.50) | ND (0.50) | ND (0.50) | ND (1.5) | NA |
| | 03/93 | ND (50) | ND (0.50) | ND (0.50) | ND (0.50) | ND (1.5) | NA |
| | 04/93 | NS | NS | NS | NS | NS | NA |
| | 06/93 | ND (50) | ND (0.30) | ND (0.30) | ND (0.30) | ND (0.50) | NA |
| | 01/94 | ND (50) | ND (0.50) | ND (0.50) | ND (0.50) | ND (0.50) | ND (50) |
| | 07/16/94 | ND (50) | ND (0.5) | ND (0.5) | ND (0.5) | ND (0.5) | ND (20) |
| | 10/10/94 | ND (50) | ND (0.5) | ND (0.5) | ND (0.5) | ND (0.5) | NA |
| | 3/29/95 | ND (50) | 0.9 | 1.3 | ND (0.5) | ND (0.5) | NA |
| | 05/25/95 | ND (50) | ND (0.5) | ND (0.5) | ND (0.5) | ND (0.5) | ND (25)* |
| | 08/16/95 | ND (50) | ND (0.5) | ND (0.5) | ND (0.5) | ND (0.5) | ND (0.01) |
| | 11/30/95 | NS | NS | NS | NS | NS | NS |
| | 03/07/96 | NS | NS | NS | NS | NS | NS |
| | 06/12/96 | NS | NS | NS | NS | NS | NS |
| | **09/10/96** | **ND (50)** | **ND (0.5)** | **ND (0.5)** | **ND (0.5)** | **ND (2)** | **NA** |
| MW-2 | 07/91 | ND (50) | 3.7 | ND (0.50) | 0.50 | 5.1 | NA |
| | 11/91 | ND (50) | 1.1 | ND (0.50) | ND (0.50) | 4.5 | NA |
| | 02/92 | ND (50) | ND (0.50) | ND (0.50) | ND (0.50) | 1.6 | NA |
| | 07/92 | ND (50) | ND (0.50) | 0.59 | ND (0.50) | ND (1.5) | NA |
| | 03/93 | ND(250) | ND (52) | ND (50) | ND (59) | ND (150) | NA |
| | 04/93 | ND (50) | ND (0.50) | ND (0.50) | ND (0.50) | ND (1.5) | NA |
| | 06/93 | ND (50) | ND (0.30) | ND (0.30) | ND (0.30) | 0.95 | NA |
| | 01/94 | ND (50) | ND (0.50) | ND (0.50) | ND (0.50) | ND (0.50) | ND (50) |
| | 07/16/94 | ND (50) | ND (0.5) | ND (0.5) | ND (0.5) | ND (0.50) | ND (20) |
| | 10/10/94 | NS | 0.5 | ND (0.5) | ND (0.5) | 1.2 | NA |
| | 3/29/95 | NS | NS | NS | NS | NS | NS |
| | 05/25/95 | NS | NS | NS | NS | NS | NS |
| | 08/16/95 | ND (50) | ND (0.5) | ND (0.5) | ND (0.5) | ND (0.5) | ND (0.01) |
| | 11/30/95 | NS | NS | NS | NS | NS | NS |
| | 03/07/96 | NS | NS | NS | NS | NS | NS |
| | 06/12/96 | NS | NS | NS | NS | NS | NS |
| | **09/10/96** | **60** | **0.9** | **ND (0.5)** | **ND (0.5)** | **ND (2)** | **NA** |

Table 3 notes on Page T3-3

# TABLE 3

## SUMMARY OF GROUNDWATER ANALYTICAL RESULTS
## (continued)

Housing Authority of the City of Alameda Facility
1916 Webster Street
Alameda, California

| Sample I.D. | Date (µ/L) | TPHg (µ/L) | Benzene (µ/L) | Toluene (µ/L) | Ethylbenzene (µ/L) | Xylenes (µ/L) | Organic Lead (µ/L) |
|---|---|---|---|---|---|---|---|
| MW-3 | 07/91 | ND (50) | ND (0.50) | ND (0.50) | ND (0.50) | ND (1.5) | NA |
| | 11/91 | ND (50) | ND (0.50) | ND (0.50) | ND (0.50) | ND (1.5) | NA |
| | 02/92 | ND (50) | ND (0.50) | ND (0.50) | ND (0.50) | ND (1.5) | NA |
| | 07/92 | ND (50) | ND (0.50) | ND (0.50) | ND (0.50) | ND (1.5) | NA |
| | 03/93 | ND | ND (52) | ND (50) | ND (59) | ND (152) | NA |
| | 04/93 | (250) | ND (0.50) | ND (0.50) | ND (0.50) | ND (1.5) | NA |
| | 06/93 | ND (50) | ND (0.30) | ND (0.30) | ND (0.30) | ND | NA |
| | 01/94 | ND (50) | ND (0.50) | ND (0.50) | ND (0.50) | (0.50) | ND (50) |
| | 07/16/94 | ND (50) | ND (0.5) | ND (0.5) | ND (0.5) | ND | ND (20) |
| | 10/10/94 | ND (50) | ND (0.5) | ND (0.5) | ND (0.5) | (0.50) | NA |
| | 3/29/95 | ND (50) | ND (0.5) | 0.9 | ND (0.5) | ND (0.5) | NA |
| | 05/25/95 | ND (50) | ND (0.5) | ND (0.5) | ND (0.5) | ND (0.5) | ND (25)* |
| | 08/16/05 | ND (50) | ND (0.5) | ND (0.5) | ND (0.5) | ND (0.5) | ND (0.01) |
| | 11/30/95 | NS | NS | NS | NS | NS | NS |
| | 03/07/96 | NS | NS | NS | NS | NS | NS |
| | 06/12/96 | NS | NS | NS | NS | NS | NS |
| | **09/10/96** | **ND (50)** | **ND (0.5)** | **ND (0.5)** | **ND (0.5)** | **ND (2)** | **NA** |
| MW-4 | 10/10/94 | 2,400 | 900 | 44 | 12 | 80 | NA |
| | 3/29/95 | 1,500 | 580 | 4.9 | 4.3 | 7.0 | NA |
| | 05/25/95 | 1,100 | 260 | 6.0 | 5.5 | 3.3 | ND (25)* |
| | 08/16/95 | 650 | 230 | 2.6 | 23 | 1.9 | ND (0.01) |
| | 11/30/95 | 700 | 280 | ND (3) | 8 | ND (10) | ND(0.04) |
| | 03/07/96 | 1,800 | 600 | 4.3 | 15 | ND (10) | NA |
| | 06/12/96 | 300 | 37 | ND (3) | ND (3) | ND (10) | NA |
| | **09/10/96** | **130** | **16** | **0.7** | **ND (0.5)** | **ND (2)** | **NA** |
| MW-5 | 10/10/94 | 2,000 | 840 | 4.8 | 0.6 | 110 | NA |
| | 3/29/95 | 4,900 | 1,600 | 61 | 20 | 76 | NA |
| | 05/25/95 | 2,500 | 680 | 6.5 | 3.5 | 110 | ND (25)* |
| | 08/16/95 | 2,200 | 930 | 6 | 6.5 | 100 | ND (0.01) |
| | 11/30/95 | 3,400 | 1,400 | 4 | 5 | 21 | ND(0.04) |
| | 03/07/96 | 2,200 | 920 | 3 | ND (3) | 25 | NA |
| | 06/12/96 | 2,100 | 800 | ND (3) | 3 (3) | 20 | NA |
| | **09/10/96** | **1,200** | **620** | **ND (3)** | **ND (3)** | **ND (10)** | **NA** |

Table 3 notes on Page T3-3

## TABLE 3

## SUMMARY OF GROUNDWATER ANALYTICAL RESULTS
**(continued)**

Housing Authority of the City of Alameda Facility
1916 Webster Street
Alameda, California

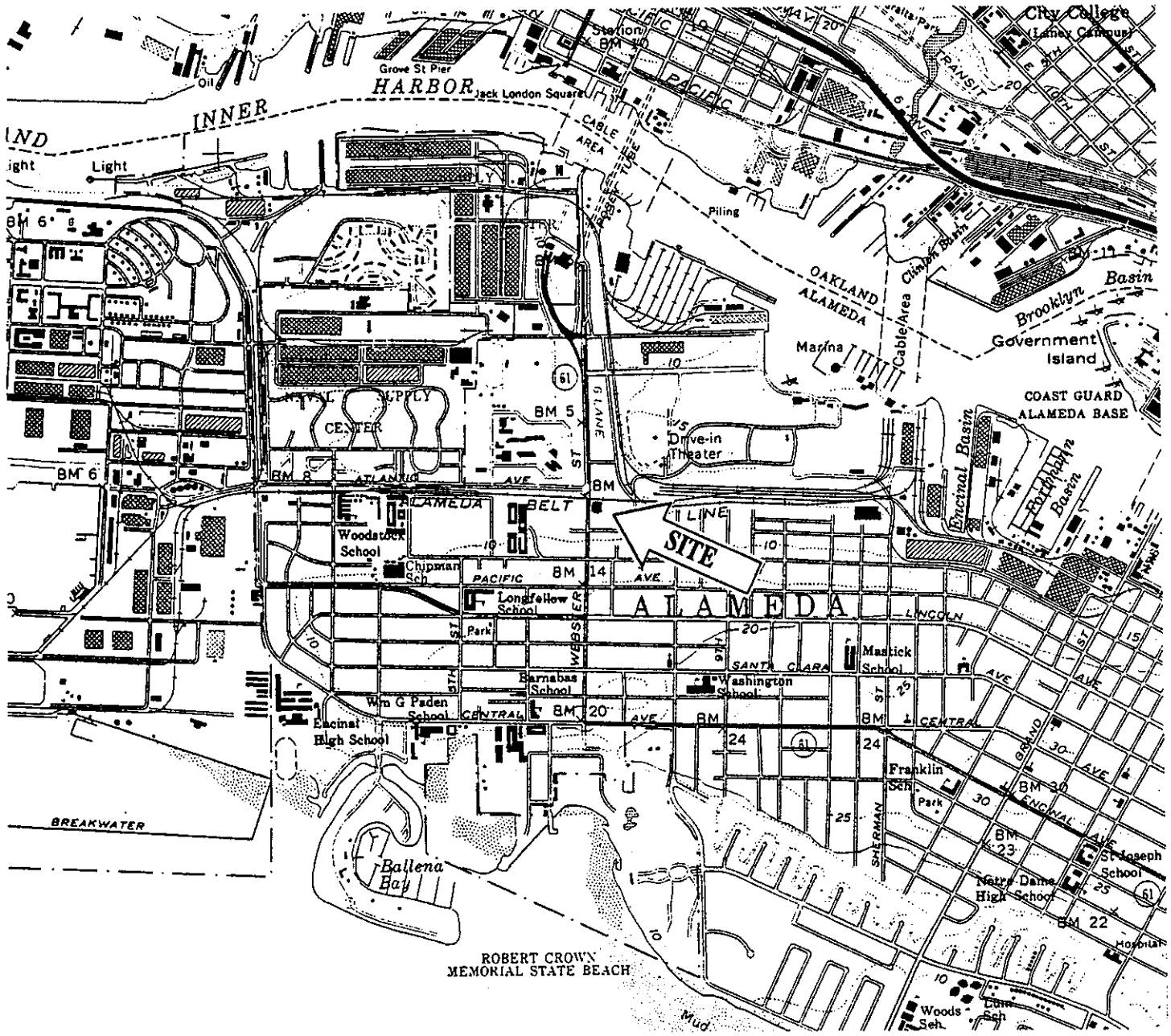
| Sample I.D. | Date (µ/L) | TPHg (µ/L) | Benzene (µ/L) | Toluene (µ/L) | Ethylbenzene (µ/L) | Xylenes (µ/L) | Organic Lead (µ/L) |
|---|---|---|---|---|---|---|---|
| MW-6 | 10/10/94 | ND (50) | ND (0.5) | ND (0.5) | ND (0.5) | ND (0.5) | NA |
| | 3/29/95 | ND (50) | 0.5 | 0.9 | ND (0.5) | ND (0.5) | NA |
| | 05/25/95 | ND (50) | ND (0.5) | ND (0.5) | ND (0.5) | ND (0.5) | ND (25)* |
| | 08/16/95 | ND (50) | ND (0.5) | ND (0.5) | ND (0.5) | ND (0.5) | ND(0.01) |
| | 11/30/95 | NS | NS | NS | NS | NS | NS |
| | 03/07/96 | NS | NS | NS | NS | NS | NS |
| | 06/12/96 | NS | NS | NS | NS | NS | NS |
| | **09/10/96** | **ND (50)** | **ND (0.5)** | **ND (0.5)** | **ND (0.5)** | **ND (2)** | **NA** |

NOTES:

mg/L = Milligrams per Liter (ppm)
µg/L = Micrograms per Liter (ppb)
ND (0.5)= Not detected at or above the method reporting limit shown in parenthesis
NA = Not analyzed
NS = No sample collected
Data prior to 1/94 reported by Versar, Inc.
* = Total lead

File: 0.0

# FIGURES




GENERAL NOTES:

BASE MAP FROM USGS
7.5 MINUTE TOPOGRAPHIC
OAKLAND WEST, CA

FUGRO

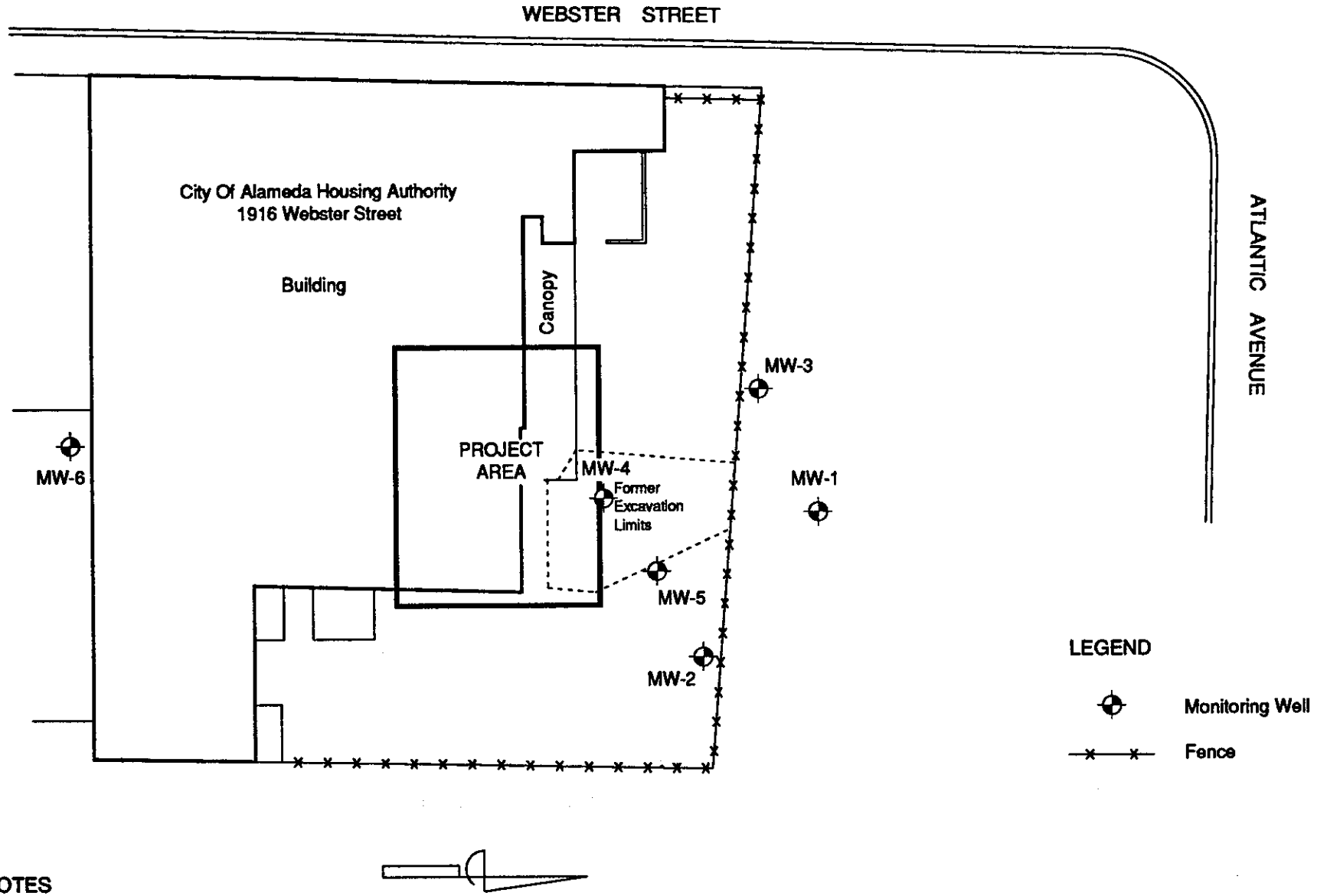
| | |
|---|---|
| DRAWN BY: | J. Paradis |
| DATE: | September 19, 1996 |
| REVISED BY: | |
| DATE: | |

# SITE LOCATION MAP

City of Alameda Housing Authority Property
1916 Webster Street
Alameda, CA

FIGURE
1

PROJECT NUMBER:
95-37-1311




NOTES

Site Sketch After Map
By Ron Archer, Civil Engineer, Inc.

All Locations Are Approximate

0 50 100
Approximate Scale In Feet

FUGRO

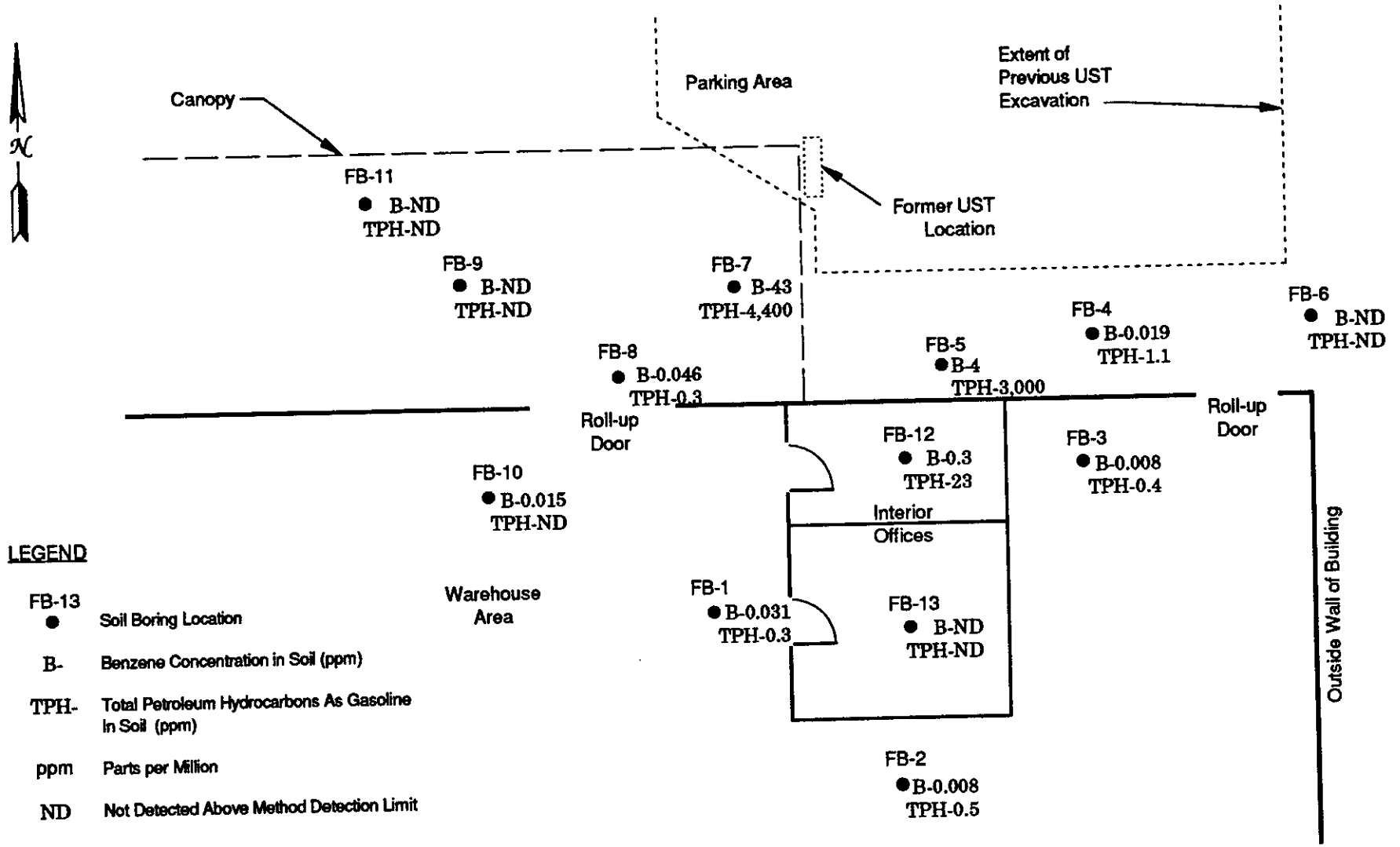
DRAWN BY: D. Hada
DATE: April 17, 1996
REVISED BY: J. Paradis
DATE: September 19, 1996

# SITE AND PROJECT AREA MAP

City of Alameda Housing Authority Property
1916 Webster Street
Alameda, CA

FIGURE 2

PROJECT NUMBER: 95-37-1311




LEGEND

| | |
|---|---|
| FB-13 ● | Soil Boring Location |
| B- | Benzene Concentration in Soil (ppm) |
| TPH- | Total Petroleum Hydrocarbons As Gasoline In Soil (ppm) |
| ppm | Parts per Million |
| ND | Not Detected Above Method Detection Limit |

NOTES:

ppm = milligrams per kilogram (mg/kg)

Soil Sample Interval:
1.5-2.5 Foot Depth (typical)

All Locations Are Approximate

0 10 20
Approximate Scale In Feet

FUGRO

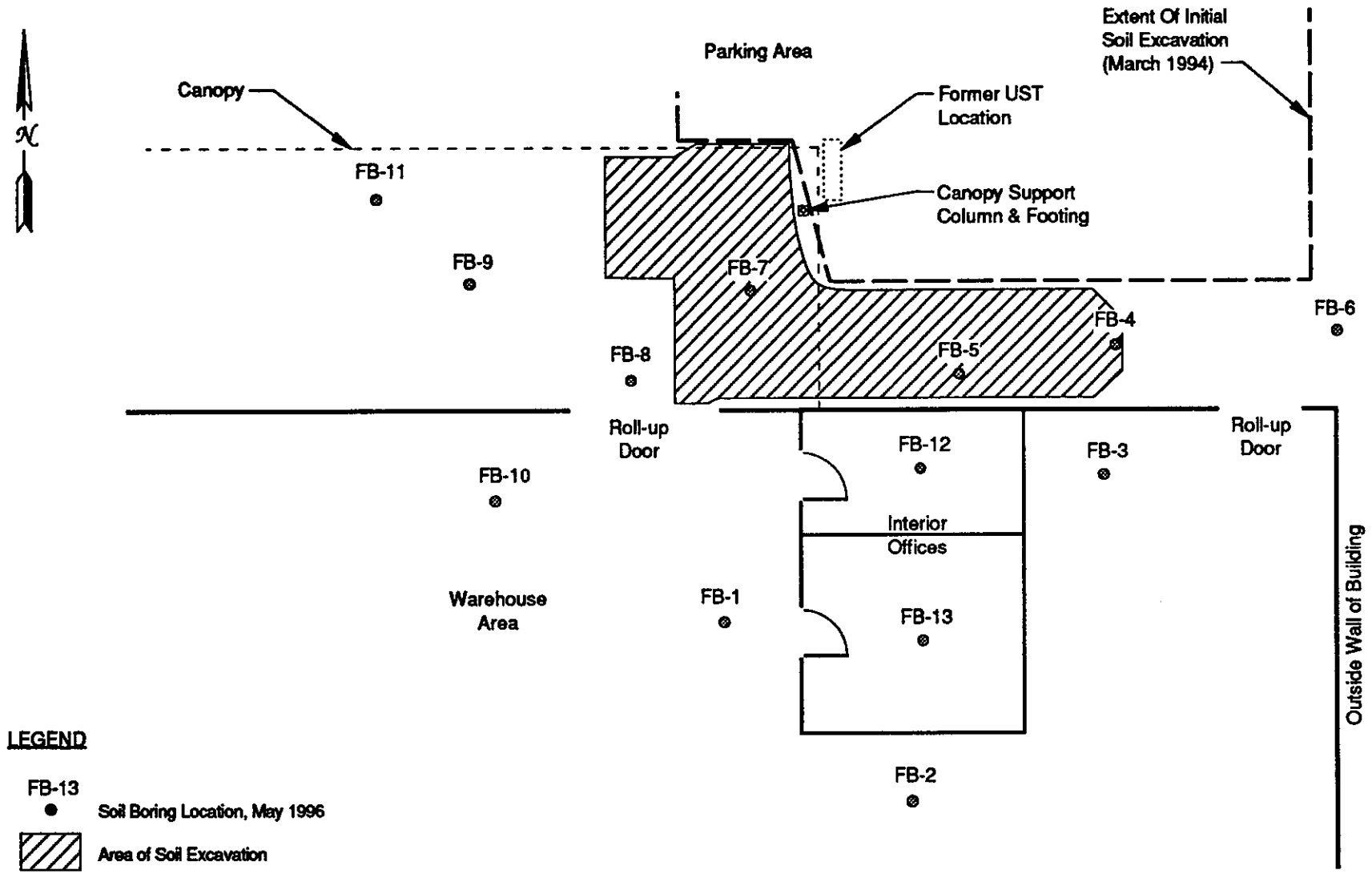
DRAWN BY: J. Paradis
DATE: May 31, 1996
REVISED BY: J. Paradis
DATE: September 19, 1996

LOCATION OF SOIL BORINGS, DISTRIBUTION OF BENZENE AND GASOLINE CONCENTRATIONS IN SOIL
MAY 1996

City of Alameda Housing Authority Property
1916 Webster Street
Alameda, CA

FIGURE
3

PROJECT NUMBER:
95-37-1311




LEGEND

FB-13 ● Soil Boring Location, May 1996

Area of Soil Excavation

NOTES:

All Locations Are Approximate

0 10 20

Approximate Scale In Feet

FUGRO

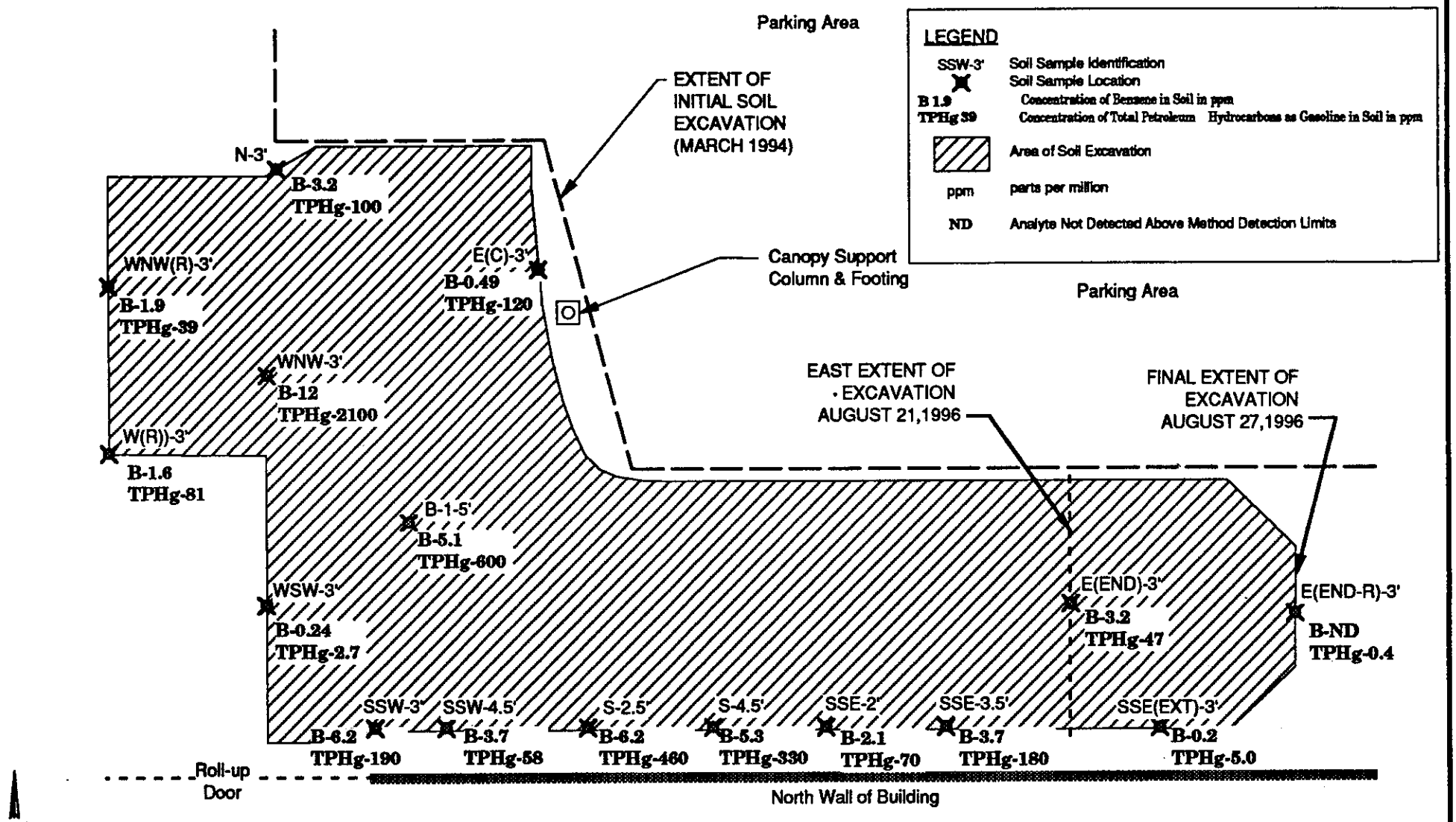
| | |
|---|---|
| DRAWN BY: | J. Paradis |
| DATE: | May 31, 1996 |
| REVISED BY: | J. Paradis |
| DATE: | September 19, 1996 |

# EXCAVATION AREA MAP

City of Alameda Housing Authority Property
1916 Webster Street
Alameda, CA

FIGURE
4

PROJECT NUMBER:
95-37-1311




NOTES:

All Locations Are Approximate

0 4 8

Approximate Scale In Feet

FUGRO

| | |
|---|---|
| DRAWN BY: | J. Paradis |
| DATE: | May 31, 1996 |
| REVISED BY: | J. Paradis |
| DATE: | September 20, 1996 |

# EXCAVATION SOIL SAMPLE LOCATIONS

City of Alameda Housing Authority Property
1916 Webster Street
Alameda, CA

FIGURE 5

PROJECT NUMBER: 95-37-1311

# APPENDIX A

# NON HAZARDOUS WASTE MANIFESTS

# NON-HAZARDOUS WASTE MANIFEST

| 1. Generator's US EPA ID No. | Manifest Document No. | 2. Page 1 of 1 |
|---|---|---|
| N/A | 1956A | |

**GENERATOR**

3. Generator's Name and Mailing Address
Housing Authority of the City of Alameda
1916 Webster Street
Alameda, CA 94501

4. Generator's Phone ( )

| 5. Transporter 1 Company Name | 6. US EPA ID Number |
|---|---|
| DeCon Environmental Services, Inc | N/A |

| 7. Transporter 2 Company Name | 8. US EPA ID Number |
|---|---|
| | |

| 9. Designated Facility Name and Site Address | 10. US EPA ID Number |
|---|---|
| ALTAMONT LANDFILL<br>10840 ALTAMONT PASS RD.<br>LIVERMORE, CA 94550 | CAD981382732 |

A. Transporter's Phone (510) 732-6411
B. Transporter's Phone
C. Facility's Phone 510-449-6349

| 11. Waste Shipping Name and Description | 12. Containers No. | 12. Containers Type | 13. Total Quantity | 14. Unit Wt/Vol |
|---|---|---|---|---|
| a. Soil With TPH | 001 | DT | 00018 | Y |
| b. | | | | |
| c. | | | | |
| d. | | | | |

D. Additional Descriptions for Materials Listed Above
Altamont Profile # 46776

E. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information
**PROFILE #** _____

**CUSTOMER NAME** _____

Handlers should be 40 hour OSHA certified using NIOSH safety Equipment
Site Address 1916 Webster Street Alameda, CA 94567

16. **GENERATOR'S CERTIFICATION:** I certify the materials described above on this manifest are not subject to federal regulations for reporting proper disposal of Hazardous Waste.

| Printed/Typed Name | Signature | Month | Day | Year |
|---|---|---|---|---|
| AS AGENT FOR Peter C. Hozes Alameda Housing Authority | | 08 | 27 | 96 |

**TRANSPORTER**

17. Transporter 1 Acknowledgement of Receipt of Materials

| Printed/Typed Name | Signature | Month | Day | Year |
|---|---|---|---|---|
| | | 08 | 27 | 96 |

18. Transporter 2 Acknowledgement of Receipt of Materials

| Printed/Typed Name | Signature | Month | Day | Year |
|---|---|---|---|---|
| | | | | |

**FACILITY**

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of waste materials covered by this manifest except as noted in Item 19.

| Printed/Typed Name | Signature | Month | Day | Year |
|---|---|---|---|---|
| | | | | |

**GENERATOR'S COPY**

# NON-HAZARDOUS WASTE MANIFEST

| 1. Generator's US EPA ID No. | Manifest Document No. | 2. Page 1 of |
|---|---|---|
| N/A | 1956B | 1 |

**GENERATOR**

3. Generator's Name and Mailing Address

Housing Authority of the City of Alameda
1910 Webster Street
Alameda, CA 94501

4. Generator's Phone ( )

| 5. Transporter 1 Company Name | 6. US EPA ID Number |
|---|---|
| DECON Environmental Services, Inc. | N/A |
| 7. Transporter 2 Company Name | 8. US EPA ID Number |
| | |

| 9. Designated Facility Name and Site Address | 10. US EPA ID Number |
|---|---|
| ALTAMONT LANDFILL<br>10840 ALTAMONT PASS RD<br>LIVERMORE, CA 94550 | CAD981382732 |

A. Transporter's Phone (510) 732-6444
B. Transporter's Phone
C. Facility's Phone 510-449-6349

| 11. Waste Shipping Name and Description | 12. Containers No. | 12. Containers Type | 13. Total Quantity | 14. Unit Wt/Vol |
|---|---|---|---|---|
| a. Soil With TPH | 001 | DT | 00018 | T |
| b. | | | | |
| c. | | | | |
| d. | | | | |

D. Additional Descriptions for Materials Listed Above

Altamont Profile # 40877o

E. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information

PROFILE # _____

CUSTOMER NAME _____

Handlers should be 40 hour OSHA certified using NIOSH safety Equipment
Site Address 1910 Webster Street Alameda, CA 94587

16. GENERATOR'S CERTIFICATION: I certify the materials described above on this manifest are not subject to federal regulations for reporting proper disposal of Hazardous Waste.

| Printed/Typed Name | Signature | Month | Day | Year |
|---|---|---|---|---|
| CAS AGENT FOR PETER B. HUDSON HOUSING AUTH | | 08 | 27 | 96 |

**TRANSPORTER**

17. Transporter 1 Acknowledgement of Receipt of Materials

| Printed/Typed Name | Signature | Month | Day | Year |
|---|---|---|---|---|
| [illegible] BROOKS | | 08 | 27 | 96 |

18. Transporter 2 Acknowledgement of Receipt of Materials

| Printed/Typed Name | Signature | Month | Day | Year |
|---|---|---|---|---|
| | | | | |

**FACILITY**

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of waste materials covered by this manifest except as noted in Item 19.

| Printed/Typed Name | Signature | Month | Day | Year |
|---|---|---|---|---|
| | | | | |

**GENERATOR'S COPY**

# NON-HAZARDOUS WASTE MANIFEST

| 1. Generator's US EPA ID No. | Manifest Document No. | 2. Page 1 of 1 |
|---|---|---|
| N/A | 1956C | |

**GENERATOR**

3. Generator's Name and Mailing Address

Housing Authority of the City of Alameda
1916 Webster Street
Alameda, CA 94501

4. Generator's Phone ( )

5. Transporter 1 Company Name — 6. US EPA ID Number: N/A

DECON Environmental Services, Inc

7. Transporter 2 Company Name — 8. US EPA ID Number

9. Designated Facility Name and Site Address — 10. US EPA ID Number: N/A

Altamont Landfill
10840 Altamont Pass Rd.
Livermore, CA 94550

A. Transporter's Phone
B. Transporter's Phone (510) 732-6444
C. Facility's Phone (510) 449-6330

| 11. Waste Shipping Name and Description | 12. Containers No. | Type | 13. Total Quantity | 14. Unit Wt/Vol |
|---|---|---|---|---|
| a. Soil With TPH | 001 | DT | 00018 | Y |
| b. | | | | |
| c. | | | | |
| d. | | | | |

D. Additional Descriptions for Materials Listed Above

Altamont Profile # 40877a

E. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information

Handlers should be 40 hour OSHA certified using NIOSH safety Equipment
Site Address: 1916 Webster Street Alameda, CA 94587

16. **GENERATOR'S CERTIFICATION:** I certify the materials described above on this manifest are not subject to federal regulations for reporting proper disposal of Hazardous Waste.

Printed/Typed Name: PETER B. HODGE (AS AGENT FOR ALAMEDA HOUSING AUTH.) — Signature — Month 08 Day 27 Year 96

**TRANSPORTER**

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name: JIM BROOKS — Signature — Month 08 Day 27 Year 96

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name — Signature — Month Day Year

**FACILITY**

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of waste materials covered by this manifest except as noted in Item 19.

Printed/Typed Name — Signature — Month Day Year

**GENERATOR'S COPY**

# NON-HAZARDOUS WASTE MANIFEST

| 1. Generator's US EPA ID No. | Manifest Document No. | 2. Page 1 of 1 |
|---|---|---|
| N/A | 1756 D | |

**GENERATOR**

3. Generator's Name and Mailing Address: HOUSING AUTHORITY OF THE CITY OF ALAMEDA. 1916 WEBSTER STREET ALAMEDA CA 94501

4. Generator's Phone ( )

| 5. Transporter 1 Company Name | 6. US EPA ID Number |
|---|---|
| DECON ENVIRONMENTAL SERVICES INC | N/A |
| 7. Transporter 2 Company Name | 8. US EPA ID Number |
| | |

| 9. Designated Facility Name and Site Address | 10. US EPA ID Number |
|---|---|
| ALTAMONT LANDFILL 10840 ALTAMONT PASS ROAD LIVERMORE, CA 94550 | N/A |

A. Transporter's Phone (510) 732-6944

B. Transporter's Phone

C. Facility's Phone (510) 449-6349

| 11. Waste Shipping Name and Description | 12. Containers No. | 12. Containers Type | 13. Total Quantity | 14. Unit Wt/Vol |
|---|---|---|---|---|
| a. SOIL W/ TPH | 001 | DT | 00018 | Y |
| b. | | | | |
| c. | | | | |
| d. | | | | |

D. Additional Descriptions for Materials Listed Above: ALTAMONT PROFILE # 408776

E. Handling Codes for Wastes Listed Above:

15. Special Handling Instructions and Additional Information: HANDLERS SHOULD BE 40 HOUR OSHA CERTIFIED USING NIOSH SAFETY EQUIPMENT
SITE ADDRESS: 1916 WEBSTER STREET ALAMEDA CA 94587

16. **GENERATOR'S CERTIFICATION:** I certify the materials described above on this manifest are not subject to federal regulations for reporting proper disposal of Hazardous Waste.

| Printed/Typed Name | Signature | Month | Day | Year |
|---|---|---|---|---|
| PETER B. HUDSON (AS AGENT FOR ALAMEDA HOUSING AUTH) | | 10 | 28 | 96 |

**TRANSPORTER**

17. Transporter 1 Acknowledgement of Receipt of Materials

| Printed/Typed Name | Signature | Month | Day | Year |
|---|---|---|---|---|
| GREGS TRUCKING/PERRY HOWORTH | | | | 96 |

18. Transporter 2 Acknowledgement of Receipt of Materials

| Printed/Typed Name | Signature | Month | Day | Year |
|---|---|---|---|---|
| | | | | |

**FACILITY**

19. Discrepancy Indication Space:

20. Facility Owner or Operator: Certification of receipt of waste materials covered by this manifest except as noted in Item 19.

| Printed/Typed Name | Signature | Month | Day | Year |
|---|---|---|---|---|
| | | | | |

**GENERATOR'S COPY**

# APPENDIX B

## LABORATORY RESULTS

- ONSITE ENVIRONMENTAL LABORATORIES, INC.
- AMERICAN ENVIRONMENTAL NETWORK

# American Environmental Network

## Certificate of Analysis

DOHS Certification: 1172 AIHA Accreditation: 11134



RECD AUG 26 1996

FUGRO WEST, INC.
44 MONTGOMERY ST. #1010
SAN FRANCISCO, CA 94104

ATTN: PETER HUDSON
CLIENT PROJ. ID: 95371311

P.O. NUMBER: 95371311

REPORT DATE: 08/23/96

DATE(S) SAMPLED: 08/21/96

DATE RECEIVED: 08/21/96

**AEN WORK ORDER: 9608289**

PROJECT SUMMARY:

On August 21, 1996, this laboratory received 1 soil sample(s).

Client requested sample(s) be analyzed for chemical parameters. Results of analysis are summarized on the following page(s). Please see quality control report for a summary of QC data pertaining to this project.

Samples will be stored for 30 days after completion of analysis, then disposed of in accordance with State and Federal regulations. Samples may be archived by prior arrangement.

If you have any questions, please contact Client Services at (510) 930-9090.

Larry Klein
Laboratory Director

FUGRO WEST, INC.

SAMPLE ID: SP-C
AEN LAB NO: 9608289-01
AEN WORK ORDER: 9608289
CLIENT PROJ. ID: 95371311

DATE SAMPLED: 08/21/96
DATE RECEIVED: 08/21/96
REPORT DATE: 08/23/96

| ANALYTE | METHOD/ CAS# | RESULT | REPORTING LIMIT | UNITS | DATE ANALYZED |
|---|---|---|---|---|---|
| #Digestion, Metals AA/ICP | EPA 3050 | - | | Prep Date | 08/21/96 |
| Lead | EPA 6010 | 40 * | 1 | mg/kg | 08/22/96 |

ND = Not detected at or above the reporting limit
* = Value at or above reporting limit

# AEN (CALIFORNIA)
# QUALITY CONTROL REPORT

AEN JOB NUMBER: 9608289
CLIENT PROJECT ID: 95371311

## Quality Control and Project Summary

All laboratory quality control parameters were found to be within established limits.

### Definitions

Laboratory Control Sample (LCS)/Method Spikes(s): Control samples of known composition. LCS and Method Spike data are used to validate batch analytical results.

Matrix Spike(s): Aliquot of a sample (aqueous or solid) with added quantities of specific compounds and subjected to the entire analytical procedure. Matrix spike and matrix spike duplicate QC data are advisory.

Method Blank: An analytical control consisting of all reagents, internal standards, and surrogate standards carried through the entire analytical process. Used to monitor laboratory background and reagent contamination.

Not Detected (ND): Not detected at or above the reporting limit.

Relative Percent Difference (RPD): An indication of method precision based on duplicate analyses.

Reporting Limit (RL): The lowest concentration routinely determined during laboratory operations. The RL is generally 1 to 10 times the Method Detection Limit (MDL). Reporting limits are matrix, method, and analyte dependent and take into account any dilutions performed as part of the analysis.

Surrogates: Organic compounds which are similar to analytes of interest in chemical behaviour, but are not found in environmental samples. Surrogates are added to all blanks, calibration and check standards, samples, and spiked samples. Surrogate recovery is monitored as an indication of acceptable sample preparation and instrument performance.

D: Surrogates diluted out.

!: Indicates result outside of established laboratory QC limits.

ANALYSIS: Metals Scan by ICP

MATRIX: Soil/Bulk

## METHOD BLANK SAMPLES

SAMPLE TYPE: Blank-Method/Media blank
INSTRUMENT: TJA Enviro 36
UNITS: mg/kg
METHOD:

LAB ID: IFS_BLNK_D
PREPARED:
ANALYZED: 08/22/96

INSTR RUN: ICP\960822112700/1/
BATCH ID: IFS082196-D
DILUTION: 1.000000

| ANALYTE | | RESULT | REF RESULT | REPORTING LIMIT | SPIKE VALUE | RECOVERY (%) | REC LIMITS (%) LOW | REC LIMITS (%) HIGH | RPD (%) | RPD LIMIT (%) |
|---|---|---|---|---|---|---|---|---|---|---|
| Pb | Lead | ND | | 1 | | | | | | |

## METHOD SPIKE SAMPLES

SAMPLE TYPE: Spike-Method/Media blank
INSTRUMENT: TJA Enviro 36
UNITS: mg/kg
METHOD:

LAB ID: IFS_MD_D
PREPARED:
ANALYZED: 08/22/96

INSTR RUN: ICP\960822112700/3/1
BATCH ID: IFS082196-D
DILUTION: 1.000000

| ANALYTE | | RESULT | REF RESULT | REPORTING LIMIT | SPIKE VALUE | RECOVERY (%) | REC LIMITS (%) LOW | REC LIMITS (%) HIGH | RPD (%) | RPD LIMIT (%) |
|---|---|---|---|---|---|---|---|---|---|---|
| Pb | Lead | 51.5 | ND | 1 | 50.0 | 103 | 90 | 120 | | |

SAMPLE TYPE: Spike-Method/Media blank
INSTRUMENT: TJA Enviro 36
UNITS: mg/kg
METHOD:

LAB ID: IFS_MS_D
PREPARED:
ANALYZED: 08/22/96

INSTR RUN: ICP\960822112700/2/1
BATCH ID: IFS082196-D
DILUTION: 1.000000

| ANALYTE | | RESULT | REF RESULT | REPORTING LIMIT | SPIKE VALUE | RECOVERY (%) | REC LIMITS (%) LOW | REC LIMITS (%) HIGH | RPD (%) | RPD LIMIT (%) |
|---|---|---|---|---|---|---|---|---|---|---|
| Pb | Lead | 50.5 | ND | 1 | 50.0 | 101 | 90 | 120 | | |

## METHOD SPIKE DUPLICATES

SAMPLE TYPE: Method Spike Sample Duplicate
INSTRUMENT: TJA Enviro 36
UNITS: mg/kg
METHOD:

LAB ID: IFS_MR_D
PREPARED:
ANALYZED: 08/22/96

INSTR RUN: ICP\960822112700/4/2
BATCH ID: IFS082196-D
DILUTION: 1.000000

| ANALYTE | | RESULT | REF RESULT | REPORTING LIMIT | SPIKE VALUE | RECOVERY (%) | REC LIMITS (%) LOW | REC LIMITS (%) HIGH | RPD (%) | RPD LIMIT (%) |
|---|---|---|---|---|---|---|---|---|---|---|
| Pb | Lead | 51.5 | 50.5 | 1 | | | | | 1.96 | 10 |

---------- End of Quality Control Report ----------

Reporting Information:

1. Client: FUGRO WEST
Address: 44 MONTGOMERY 10TH
SAN FRANCISCO CA 94104
Contact: PETER HUDSON
Alt. Contact: S. BOUDREAU

# American Environmental Network

3440 Vincent Road, Pleasant Hill, CA 94523
Phone (510) 930-9090
FAX (510) 930-0256

**AEN**

Page _____ of _____

## REQUEST FOR ANALYSIS / CHAIN OF CUSTODY

Lab Job Number: RH 8/21/96 9608289
Lab Destination:
Date Samples Shipped:
Lab Contact:
Date Results Required:
Date Report Required:
Client Phone No.:
Client FAX No.:

Address Report To:

2. SAME

Send Invoice To:

3. SAME

Send Report To: (1) or 2 (Circle one)

Client P.O. No.: 9537 1311 Client Project I.D. No.: 9537 1311

Sample Team Member (s) P. HUDSON

| Lab Number | Client Sample Identification | Air Volume | Date/ Time Collected | Sample Type* | Pres. | No. of Cont. | Type of Cont. | ANALYSIS: TOTAL LEAD | Comments / Hazards |
|---|---|---|---|---|---|---|---|---|---|
| 01A | SP-C * | | 8/21/96 12:50 | SOIL | - | 1 | SLV | X | NEED RESULTS ASAP 8/22/96 PLS PAGE P. HUDSON @ 415 739 8825 WHEN READY TO FAX REPORT NEED ON STANDARD AEN REPORT FORMAT |
| | | | | | | | | | * SAMPLE CONTAINS TPHg / BTEX. MAY BE HIGH. |

| | | | | | |
|---|---|---|---|---|---|
| Relinquished by: (Signature) | DATE 8/21/96 | TIME 12:59 | Received by: (Signature) | DATE 8/21/96 | TIME 1259 |
| Relinquished by: (Signature) | DATE 8/21/96 | TIME 15:25 | Received by: (Signature) | DATE 8/21/96 | TIME 15:25 |
| Relinquished by: (Signature) | DATE | TIME | Received by: (Signature) | DATE | TIME |
| Method of Shipment | | | Lab Comments | | |

*Sample type (Specify): 1) 37mm 0.8 µm MCEF 2) 25mm 0.8 µm MCEF 3) 25mm 0.4 µm polycarb. filter
4) PVC filter, diam. _____ pore size _____ 5) Charcoal tube 6) Silica gel tube 7) Water 8) Soil 9) Bulk Sample
10) Other _____ 11) Other _____

COPIES: WHITE - JOB FILE YELLOW - PROJECT FILE PINK - CLIENT

ONSITE
ENVIRONMENTAL
LABORATORIES, INC.

# Analytical Laboratory Report

## EPA Methods 8015 Modified / 8020

| | | | |
|---|---|---|---|
| **Date Sampled:** | 8/21/96 | **Proj Mgr:** | Peter Hudson |
| **Date Received:** | 8/21/96 | **Client:** | Fugro |
| **Date Analyzed:** | 8/21/96 | **Project:** | Alameda Housing Authority |
| **Date Reported:** | 8/21/96 | **Project #:** | 95371311 |
| **Report Number:** | 1C079.RPT | **Matrix:** | Soil |
| **Lab Number:** | 1C079 | **Units:** | mg/Kg |
| | | **COC #:** | N / A |

| Lab ID No. | Field ID No. | Benzene | Toluene | Ethyl-benzene | Xylenes total | TPHg | BTEX Surr. % | BTEX dil |
|---|---|---|---|---|---|---|---|---|
| -01 | SP-A,B COMP | 0.13 | 0.76 | 0.27 | 1.1 | 16 | 120% | 5 |
| Detection Limits | | 0.005 | 0.005 | 0.005 | 0.005 | 0.5 | | |

**NOTES:**
NR - Not requested
COC - Chain of custody
ND - Analytes not detected at, or above the stated detection limit
TPHd - Total petroleum hydrocarbons as diesel #2
mg/Kg - Milligrams per kilogram (PPM)
PQL - Practical Quantitation Limit
RE - Rerun of sample because of low surrogate recovery. Low surrogate recovery on two extractions of same sample is matrix effects
* - Higher boiling compounds indicated
# - Matrix effect

**PROCEDURES:**
BTEX - This analysis was performed using EPA Method 8020, and EPA Method 5030
TPHd - This analysis was performed using EPA Method 8015 Mod and LUFT Manual

**CERTIFICATION:**
California Department of Health Services ELAP Certificate #2010
Onsite Environmental Laboratories, 5500 Boscell Common, Fremont, CA 94538 (510) 490-8571

Laboratory Director

SEP 11 1996
Date

ONSITE
ENVIRONMENTAL
LABORATORIES, INC.

# QC Data Report

| | | | |
|---|---|---|---|
| **C-O-C #:** | NA | | |
| **Date Received:** | NA | **Client:** | Fugro |
| **Date Analyzed:** | 8/21/96 | **Project:** | Alameda Housing |
| **Lab ID #:** | NA | **Matrix:** | Soil |
| **Report #:** | 1C079.qac | **Units:** | mg/Kg |
| | | **Sample ID:** | NA |

| Parameter | Blank Result mg/Kg | Spike Level mg/Kg | LCS Result mg/Kg | LCS Recov. % | LCD Level mg/Kg | LCD Result mg/Kg | LCD Recov. % | RPD % |
|---|---|---|---|---|---|---|---|---|
| Benzene | ND | 0.0100 | 0.0097 | 97% | 0.0100 | 0.0088 | 88% | 9.70% |
| Toluene | ND | 0.0100 | 0.0089 | 89% | 0.0100 | 0.0088 | 88% | 1.10% |
| Ethyl benzene | ND | 0.0100 | 0.0092 | 92% | 0.0100 | 0.0087 | 87% | 5.60% |
| total Xylenes | ND | 0.0300 | 0.0280 | 93% | 0.0300 | 0.0260 | 87% | 6.70% |
| TPHg | ND | NR | NR | NR | NR | NR | NR | NR |
| surr %rec BTEX | 90% | -- | 90% | 90% | -- | 87% | 87% | -- |

**DEFINITION OF TERMS:**

LCS - Laboratory Control Spike
LCD - Laboratory Control Spike Duplicate
MS - Matrix Spike
MSD - Matrix Spike Duplicate
RPD - Relative Percent Difference: (MS - MSD) /( (MS + MSD)/2) X 100

**LABORATORY QC CRITERIA**

| Parameter | Acceptable % Recoveries | |
|---|---|---|
| Benzene | 70% | 130% |
| Toluene | 70% | 130% |
| Ethylbenzene | 70% | 130% |
| Xylenes Total | 70% | 130% |
| %RPD | 0% | 30% |

ONSITE
ENVIRONMENTAL
LABORATORIES, INC.

# Analytical Laboratory Report

## EPA Methods 8015 Modified / 8020

| | | | |
|---|---|---|---|
| **Date Sampled:** | 8/21/96 | **Proj Mgr:** | Peter Hudson |
| **Date Received:** | 8/21/96 | **Client:** | Fugro |
| **Date Analyzed:** | 8/21/96 | **Project:** | Alameda Housing Authority |
| **Date Reported:** | 8/21/96 | **Project #:** | 95371311 |
| **Report Number:** | 1C080.RPT | **Matrix:** | Soil |
| **Lab Number:** | 1C080 | **Units:** | mg/Kg |
| | | **COC #:** | N / A |

| Lab ID No. | Field ID No. | Benzene | Toluene | Ethyl-benzene | Xylenes total | TPHg | BTEX Surr. % | BTEX dil |
|---|---|---|---|---|---|---|---|---|
| -01 | WSW-3' | 0.24 | ND | 0.044 | 0.11 | 2.7 | M | 5 |
| -02 | WNW-3' | 12 | 54 | 33 | 100 | 2100 | M | 100 |
| -03 | B-1 | 5.1 | 15 | 5.5 | 18 | 600 | M | 50 |
| -04 | SSW-3' | 6.2 | 1.7 | 3.9 | 13 | 190 | M | 50 |
| -05 | SSE-2' | 2.1 | 5 | 1.1 | 4.6 | 70 | 115 | 50 |
| -06 | S-2.5' | 6.2 | 16 | 5.9 | 22 | 460 | M | 50 |
| -07 | SSE-3.5' | 3.7 | 6.9 | 3.9 | 15 | 180 | M | 50 |
| -08 | N-3 | 3.2 | 0.49 | 1.5 | 3.7 | 100 | M | 50 |
| -09 | WNW(R)-3' | 1.9 | ND | 0.27 | 0.68 | 39 | M | 50 |
| -10 | SSW-4.5 | 3.7 | 0.28 | 0.68 | 2.1 | 58 | M | 50 |
| -11 | S-4.5' | 5.3 | 13 | 5.0 | 14 | 330 | M | 50 |
| -12 | E(C)-3' | 0.49 | 3.5 | 1.9 | 6.6 | 120 | M | 50 |
| -13 | E(END)-3' | 3.2 | 0.33 | 0.97 | 3.1 | 47 | 114 | 50 |
| Detection Limits | | 0.005 | 0.005 | 0.005 | 0.005 | 0.5 | | |

**NOTES:**
Reporting limits = Detection Limits * Dilution factor
NR - Not requested
COC - Chain of custody
ND - Analytes not detected at, or above the stated detection limit
TPHd - Total petroleum hydrocarbons as diesel #2
mg/Kg - Milligrams per kilogram (PPM)
PQL - Practical Quantitation Limit
RE - Rerun of sample because of low surrogate recovery Low surrogate recovery on two extractions of same sample is matrix effects
** - Higher boiling compounds indicated
M - Matrix effect

**METHODOLOGY:**
BTEX - This analysis was performed using EPA Method 8020, and EPA Method 5030
TPHd - This analysis was performed using EPA Method 8015 Mod. and LUFT Manual

**CERTIFICATION:**
California Department of Health Services ELAP Certificate #2010
Onsite Environmental Laboratories, 5500 Boscell Common, Fremont, CA 94538 (510) 490-8571

Gavin Virgt
Laboratory Director

SEP 11 1996
Date

Printed on recycled paper.

ONSITE
ENVIRONMENTAL
LABORATORIES, INC.

# QC Data Report

| | | | |
|---|---|---|---|
| **Date Analyzed:** | 8/22/96 | **Client:** | Fugro |
| **Lab ID #:** | NA | **Project:** | Alameda Housing |
| **Report #:** | 1C080.qac | **Matrix:** | Soil |
| | | **Units:** | mg/Kg |

| Parameter | Blank Result mg/Kg | Spike Level mg/Kg | LCS Result mg/Kg | LCS Recov. % | LCD Level mg/Kg | LCD Result mg/Kg | LCD Recov. % | RPD % |
|---|---|---|---|---|---|---|---|---|
| Benzene | ND | 0.0100 | 0.0095 | 95% | -- | -- | -- | -- |
| Toluene | ND | 0.0100 | 0.0094 | 94% | -- | -- | -- | -- |
| Ethyl benzene | ND | 0.0100 | 0.0094 | 94% | -- | -- | -- | -- |
| total Xylenes | ND | 0.0300 | 0.0280 | 93% | -- | -- | -- | -- |
| TPHg | ND | NR | NR | NR | -- | -- | -- | -- |
| surr %rec BTEX | 98% | -- | 94% | 94% | -- | -- | -- | -- |

**DEFINITION OF TERMS:**

LCS - Laboratory Control Spike
LCD - Laboratory Control Spike Duplicate
MS - Matrix Spike
MSD - Matrix Spike Duplicate
RPD - Relative Percent Difference: (MS - MSD) /( (MS + MSD)/2) X 100

**LABORATORY QC CRITERIA**

| Parameter | Acceptable % Recoveries | |
|---|---|---|
| Benzene | 70% | 130% |
| Toluene | 70% | 130% |
| Ethylbenzene | 70% | 130% |
| Xylenes Total | 70% | 130% |
| %RPD | 0% | 30% |

ONSITE
ENVIRONMENTAL
LABORATORIES, INC.
[redacted]

# Daily Project Report

**(To be kept with the daily project data files)**

**Project:** Alameda housing (Fargo)

**Date:** 8/21/96

**ONSITE Analysts/Technicians:**

Roberto Arcilla

**Project Status (Circle One):** (Analyze Samples) **Standby** (Mob/Demob)

**Normal Hours and Overtime Hours Worked:**

| | | |
|---|---|---|
| Normal Hours | 12:00PM → | 10:00 PM |
| Overtime Hours | | |
| Reason for Overtime | | |

**Sample Volume and Matrix**

| | |
|---|---|
| # Samples Received and Matrix | 16 soil samples |
| Time Last Samples Received | 6:30 PM |

**Client Issues Raised:**

**ONSITE Action Plan:**

ONSITE
ENVIRONMENTAL
LABORATORIES, INC.
[redacted]
Tel (510) 490-8571 Fax (510) 490-8572

# CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST

| PROJECT NO. | PROJECT NAME/SITE |
|---|---|
| 9537 1311 | ALAMEDA HOUSING AUTHORITY |

SAMPLERS: P. HUDSON (SIGN) (PRINT) PETER B. HUDSON

ANALYSIS REQUESTED | P.O. #: 1C079

| SAMPLE IDENTIFICATION | DATE | TIME | COMP | GRAB | PRES. USED | ICED | NO. CONTAINERS | SAMPLE TYPE | BTEX (602/8020) | TPHg (8015) | TPHd (8015) | TCG 418.1/5520 | 601/8010 | 624/8240 | 625/8270 | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SP-A | 8/21 | 12:40 | X | | - | | 1 | | X | X | | | | | | COMPOSITE SP-A/SP-B AND ANALYZE AS ONE SAMPLE |
| SP-B | 8/21 | 12:40 | X | | - | | 1 | | X | X | | | | | | |

| RELINQUISHED BY: | DATE | TIME | RECEIVED BY: | LABORATORY: | PLEASE SEND RESULTS TO: |
|---|---|---|---|---|---|
| | 8/21/91 | 1245 | | | |
| RELINQUISHED BY: | DATE | TIME | RECEIVED BY: | | |
| RELINQUISHED BY: | DATE | TIME | RECEIVED BY: | REQUESTED TURNAROUND TIME: | |
| RELINQUISHED BY: | DATE | TIME | RECEIVED BY LABORATORY: Roberto Arcilla | RECEIPT CONDITION: | PROJECT MANAGER: |

ENVIRONMENTAL LABORATORIES, INC.
Tel. (510) 490-8571 Fax (510) 490-8572

# CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST

| PROJECT NO. | PROJECT NAME/SITE |
|---|---|
| 9537 1311 | ALAMEDA HOUSING AUTHORITY |

SAMPLERS (SIGN) / (PRINT) P. HUDSON / PETER B. HUDSON

P.O. #: 1C080

ANALYSIS REQUESTED: BTEX (8020/8020); TPHg (8015); TPHd (8015); TOG 418.1/5520; 601/8010; 624/8240; 625/8270

| SAMPLE IDENTIFICATION | DATE | TIME | COMP | GRAB | PRES. USED | ICED | NO. CONTAINERS | SAMPLE TYPE | REMARKS |
|---|---|---|---|---|---|---|---|---|---|
| WSW - 3' | 8/21/96 | 1345 | | | — | | | S | -01 |
| WNW - 3' | " | " | | | | | | " | -02 |
| B-1 | " | " | | | | | | S | -03 |
| SSW - 3' | " | " | | | | | | S | -04 |
| SSE - 2' | " | " | | | | | | S | -05 |
| S - 2.5' | " | " | | | | | | S | -06 |
| SSE - 3.5' | " | " | | | | | | S | -07 |
| N - 3 | " | " | | | | | | S | -08 |
| WNW(R) - 3' | " | " | | | | | | S | -09 |
| SSW - 4.5' | " | " | | | | | | S | -10 |
| S - 4.5' | " | " | | | | | | S | -11 |
| E(C) - 3' | " | " | | | | | | S | -12 |
| E(END) - 3' | " | " | | | | | | S | -13 |

| RELINQUISHED BY: | DATE | TIME | RECEIVED BY: |
|---|---|---|---|
| | 8/21/96 | 1353 | |
| RELINQUISHED BY: | DATE | TIME | RECEIVED BY: |
| RELINQUISHED BY: | DATE | TIME | RECEIVED BY: |
| RELINQUISHED BY: | DATE | TIME | RECEIVED BY LABORATORY: Roberto Arulla |

LABORATORY:

REQUESTED TURNAROUND TIME:

RECEIPT CONDITION:

PLEASE SEND RESULTS TO:

PROJECT MANAGER:

# American Environmental Network

## Certificate of Analysis

DOHS Certification: 1172

AIHA Accreditation: 11134



RECD SEP 11 1996

FUGRO WEST, INC.
44 MONTGOMERY ST. #1010
SAN FRANCISCO, CA 94104

ATTN: P. HUDSON
CLIENT PROJ. ID: 9537 1311

REPORT DATE: 09/09/96

DATE(S) SAMPLED: 08/27/96

DATE RECEIVED: 08/27/96

**AEN WORK ORDER: 9608370**

PROJECT SUMMARY:

On August 27, 1996, this laboratory received 3 soil sample(s).

Client requested sample(s) be analyzed for chemical parameters. Results of analysis are summarized on the following page(s). Please see quality control report for a summary of QC data pertaining to this project.

Samples will be stored for 30 days after completion of analysis, then disposed of in accordance with State and Federal regulations. Samples may be archived by prior arrangement.

If you have any questions, please contact Client Services at (510) 930-9090.

Larry Klein
Laboratory Director

FUGRO WEST, INC.

SAMPLE ID: W(R)-3'
AEN LAB NO: 9608370-01
AEN WORK ORDER: 9608370
CLIENT PROJ. ID: 9537 1311

DATE SAMPLED: 08/27/96
DATE RECEIVED: 08/27/96
REPORT DATE: 09/09/96

| ANALYTE | METHOD/ CAS# | RESULT | REPORTING LIMIT | UNITS | DATE ANALYZED |
|---|---|---|---|---|---|
| **BTEX & Gasoline HCs** | EPA 8020 | | | | |
| Benzene | 71-43-2 | 1,600 * | 100 | ug/kg | 09/03/96 |
| Toluene | 108-88-3 | ND | 100 | ug/kg | 09/03/96 |
| Ethylbenzene | 100-41-4 | 800 * | 100 | ug/kg | 09/03/96 |
| Xylenes, Total | 1330-20-7 | 1,900 * | 100 | ug/kg | 09/03/96 |
| Purgeable HCs as Gasoline | 5030/GCFID | 81 * | 4 | mg/kg | 09/03/96 |

Reporting limits elevated due to high levels of target compounds. Sample run at dilution.

ND = Not detected at or above the reporting limit
* = Value at or above reporting limit

FUGRO WEST, INC.

SAMPLE ID: SSE(EXT)-3'
AEN LAB NO: 9608370-02
AEN WORK ORDER: 9608370
CLIENT PROJ. ID: 9537 1311

DATE SAMPLED: 08/27/96
DATE RECEIVED: 08/27/96
REPORT DATE: 09/09/96

| ANALYTE | METHOD/ CAS# | RESULT | REPORTING LIMIT | UNITS | DATE ANALYZED |
|---|---|---|---|---|---|
| **BTEX & Gasoline HCs** | EPA 8020 | | | | |
| Benzene | 71-43-2 | 200 * | 5 | ug/kg | 08/29/96 |
| Toluene | 108-88-3 | 6 * | 5 | ug/kg | 08/29/96 |
| Ethylbenzene | 100-41-4 | 25 * | 5 | ug/kg | 08/29/96 |
| Xylenes, Total | 1330-20-7 | 68 * | 5 | ug/kg | 08/29/96 |
| Purgeable HCs as Gasoline | 5030/GCFID | 5.0 * | 0.2 | mg/kg | 08/29/96 |

ND = Not detected at or above the reporting limit
* = Value at or above reporting limit

FUGRO WEST, INC.

SAMPLE ID: E(END-R)-3'
AEN LAB NO: 9608370-03
AEN WORK ORDER: 9608370
CLIENT PROJ. ID: 9537 1311

DATE SAMPLED: 08/27/96
DATE RECEIVED: 08/27/96
REPORT DATE: 09/09/96

| ANALYTE | METHOD/ CAS# | RESULT | REPORTING LIMIT | UNITS | DATE ANALYZED |
|---|---|---|---|---|---|
| BTEX & Gasoline HCs | EPA 8020 | | | | |
| Benzene | 71-43-2 | ND | 5 | ug/kg | 08/29/96 |
| Toluene | 108-88-3 | ND | 5 | ug/kg | 08/29/96 |
| Ethylbenzene | 100-41-4 | ND | 5 | ug/kg | 08/29/96 |
| Xylenes, Total | 1330-20-7 | ND | 5 | ug/kg | 08/29/96 |
| Purgeable HCs as Gasoline | 5030/GCFID | 0.4 * | 0.2 | mg/kg | 08/29/96 |

ND = Not detected at or above the reporting limit
* = Value at or above reporting limit

# AEN (CALIFORNIA)
# QUALITY CONTROL REPORT

AEN JOB NUMBER: 9608370

CLIENT PROJECT ID: 9437 1311

## Quality Control and Project Summary

All laboratory quality control parameters were found to be within established limits.

### Definitions

Laboratory Control Sample (LCS)/Method Spike(s): Control samples of known composition. LCS and Method Spike data are used to validate batch analytical results.

Matrix Spike(s): Aliquot of a sample (aqueous or solid) with added quantities of specific compounds and subjected to the entire analytical procedure. Matrix spike and matrix spike duplicate QC data are advisory.

Method Blank: An analytical control consisting of all reagents, internal standards, and surrogate standards carried through the entire analytical process. Used to monitor laboratory background and reagent contamination.

Not Detected (ND): Not detected at or above the reporting limit.

Relative Percent Difference (RPD): An indication of method precision based on duplicate analysis.

Reporting Limit (RL): The lowest concentration routinely determined during laboratory operations. The RL is generally 1 to 10 times the Method Detection Limit (MDL). Reporting limits are matrix, method, and analyte dependent and take into account any dilutions performed as part of the analysis.

Surrogates: Organic compounds which are similar to analytes of interest in chemical behavior, but are not found in environmental samples. Surrogates are added to all blanks, calibration and check standards, samples, and spiked samples. Surrogate recovery is monitored as an indication of acceptable sample preparation and instrumental performance.

D: Surrogates diluted out.

#: Indicates result outside of established laboratory QC limits.

## QUALITY CONTROL DATA

METHOD: EPA 8020, 5030 GCFID

AEN JOB NO: 9608370
INSTRUMENT: E
MATRIX: SOIL

Surrogate Standard Recovery Summary

| Date Analyzed | Client Id. | Lab Id. | Percent Recovery Fluorobenzene |
|---|---|---|---|
| 09/03/96 | W(R)-3' | 01 | 94 |
| 08/29/96 | SSE(EXT)-3" | 02 | 98 |
| 08/29/96 | E(END-R)-3' | 03 | 114 |
| QC Limits: | | | 70-130 |

DATE ANALYZED: 08/30/96
SAMPLE SPIKED: 9608344-09
INSTRUMENT: E

Matrix Spike Recovery Summary

| Analyte | Spike Added (ug/kg) | Average Percent Recovery | RPD | QC Limits Percent Recovery | QC Limits RPD |
|---|---|---|---|---|---|
| Benzene | 34.0 | 93 | 4 | 79-113 | 26 |
| Toluene | 108 | 96 | 2 | 84-110 | 20 |
| Hydrocarbons as Gasoline | 1000 | 110 | 4 | 60-126 | 20 |

Daily method blanks for all associated analytical runs showed no contamination at or above the reporting limit.

*** END OF REPORT ***

Reporting Information:

1. Client: FUGRO WEST
Address: 44 MONTGOMERY #1010
SAN FRAN CA 94118
Contact: P. HUDSON
Alt. Contact:

**American Environmental Network**
3440 Vincent Road, Pleasant Hill, CA 94523
Phone (510) 930-9090
FAX (510) 930-0256

**AEN**

Page 1 of 1

**REQUEST FOR ANALYSIS / CHAIN OF CUSTODY**

Lab Job Number: 9609370
Lab Destination:
Date Samples Shipped:
Lab Contact:
Date Results Required:
Date Report Required:
Client Phone No.:
Client FAX No.:

Address Report To:
2. SAME

Send Invoice To:
3. SAME

Send Report To: (1) or 2 (Circle one)

Client P.O. No.: Client Project I.D. No.: 9537 1311

Sample Team Member (s) P. HUDSON

| Lab Number | Client Sample Identification | Air Volume | Date/ Time Collected | Sample Type* | Pres. | No. of Cont. | Type of Cont. | ANALYSIS: TPH: GAS + BTEX | Comments / Hazards |
|---|---|---|---|---|---|---|---|---|---|
| 01A | VV (R) - 3' | | 8/27/96 | SOIL | — | 1 | SLV | X | |
| 02A | SSE (EXT) - 3' | | ↓ | ↓ | — | 1 | SLV | X | NORMAL TURN AROUND TIME |
| 03A | E (ENDR) · 3' | | ↓ | ↓ | — | 1 | SLV | X | |

| | | | |
|---|---|---|---|
| Relinquished by: (Signature) | DATE 8/27/96 | TIME 1400 | Received by: (Signature) DATE 8/27/96 TIME 14:00 |
| Relinquished by: (Signature) | DATE 8/27/96 | TIME 17:16 | Received by: (Signature) Ronald Jensen DATE 8/27/96 TIME 17:16 |
| Relinquished by: (Signature) | DATE | TIME | Received by: (Signature) DATE TIME |
| Method of Shipment | | | Lab Comments |

*Sample type (Specify): 1) 37mm 0.8 µm MCEF 2) 25mm 0.8 µm MCEF 3) 25mm 0.4 µm polycarb. filter
4) PVC filter, diam. ____ pore size ____ 5) Charcoal tube 6) Silica gel tube 7) Water 8) Soil 9) Bulk Sample
10) Other ____ 11) Other ____

COPIES: WHITE - JOB FILE YELLOW - PROJECT FILE PINK - CLIENT

# American Environmental Network

## Certificate of Analysis

DOHS Certification: 1172 AIHA Accreditation: 11134

REC'D SEP 24 1996



FUGRO WEST, INC.
44 MONTGOMERY ST. #1010
SAN FRANCISCO, CA 94104

ATTN: PETER HUDSON
CLIENT PROJ. ID: 9537-1311

P.O. NUMBER: 9537-1311

REPORT DATE: 09/20/96

DATE(S) SAMPLED: 09/10/96

DATE RECEIVED: 09/10/96

**AEN WORK ORDER: 9609075**

PROJECT SUMMARY:

On September 10, 1996, this laboratory received 8 water sample(s).

Client requested sample(s) be analyzed for chemical parameters. Results of analysis are summarized on the following page(s). Please see quality control report for a summary of QC data pertaining to this project.

Samples will be stored for 30 days after completion of analysis, then disposed of in accordance with State and Federal regulations. Samples may be archived by prior arrangement.

If you have any questions, please contact Client Services at (510) 930-9090.

Cheryl McMillan for
Larry Klein
Laboratory Director

FUGRO WEST, INC.

SAMPLE ID: MW-1
AEN LAB NO: 9609075-01
AEN WORK ORDER: 9609075
CLIENT PROJ. ID: 9537-1311

DATE SAMPLED: 09/10/96
DATE RECEIVED: 09/10/96
REPORT DATE: 09/20/96

| ANALYTE | METHOD/ CAS# | RESULT | REPORTING LIMIT | UNITS | DATE ANALYZED |
|---|---|---|---|---|---|
| BTEX & Gasoline HCs | EPA 8020 | | | | |
| Benzene | 71-43-2 | ND | 0.5 | ug/L | 09/13/96 |
| Toluene | 108-88-3 | ND | 0.5 | ug/L | 09/13/96 |
| Ethylbenzene | 100-41-4 | ND | 0.5 | ug/L | 09/13/96 |
| Xylenes, Total | 1330-20-7 | ND | 2 | ug/L | 09/13/96 |
| Purgeable HCs as Gasoline | 5030/GCFID | ND | 0.05 | mg/L | 09/13/96 |

ND = Not detected at or above the reporting limit
* = Value at or above reporting limit

FUGRO WEST, INC.

SAMPLE ID: MW-2
AEN LAB NO: 9609075-02
AEN WORK ORDER: 9609075
CLIENT PROJ. ID: 9537-1311

DATE SAMPLED: 09/10/96
DATE RECEIVED: 09/10/96
REPORT DATE: 09/20/96

| ANALYTE | METHOD/ CAS# | RESULT | REPORTING LIMIT | UNITS | DATE ANALYZED |
|---|---|---|---|---|---|
| BTEX & Gasoline HCs | EPA 8020 | | | | |
| Benzene | 71-43-2 | 0.9 * | 0.5 | ug/L | 09/17/96 |
| Toluene | 108-88-3 | ND | 0.5 | ug/L | 09/17/96 |
| Ethylbenzene | 100-41-4 | ND | 0.5 | ug/L | 09/17/96 |
| Xylenes, Total | 1330-20-7 | ND | 2 | ug/L | 09/17/96 |
| Purgeable HCs as Gasoline | 5030/GCFID | 0.06 * | 0.05 | mg/L | 09/17/96 |

ND = Not detected at or above the reporting limit
* = Value at or above reporting limit

FUGRO WEST, INC.

SAMPLE ID: MW-3
AEN LAB NO: 9609075-03
AEN WORK ORDER: 9609075
CLIENT PROJ. ID: 9537-1311

DATE SAMPLED: 09/10/96
DATE RECEIVED: 09/10/96
REPORT DATE: 09/20/96

| ANALYTE | METHOD/ CAS# | RESULT | REPORTING LIMIT | UNITS | DATE ANALYZED |
|---|---|---|---|---|---|
| BTEX & Gasoline HCs | EPA 8020 | | | | |
| Benzene | 71-43-2 | ND | 0.5 | ug/L | 09/13/96 |
| Toluene | 108-88-3 | ND | 0.5 | ug/L | 09/13/96 |
| Ethylbenzene | 100-41-4 | ND | 0.5 | ug/L | 09/13/96 |
| Xylenes, Total | 1330-20-7 | ND | 2 | ug/L | 09/13/96 |
| Purgeable HCs as Gasoline | 5030/GCFID | ND | 0.05 | mg/L | 09/13/96 |

ND = Not detected at or above the reporting limit
* = Value at or above reporting limit

FUGRO WEST, INC.

SAMPLE ID: MW-4
AEN LAB NO: 9609075-04
AEN WORK ORDER: 9609075
CLIENT PROJ. ID: 9537-1311

DATE SAMPLED: 09/10/96
DATE RECEIVED: 09/10/96
REPORT DATE: 09/20/96

| ANALYTE | METHOD/ CAS# | RESULT | REPORTING LIMIT | UNITS | DATE ANALYZED |
|---|---|---|---|---|---|
| BTEX & Gasoline HCs | EPA 8020 | | | | |
| Benzene | 71-43-2 | 16 * | 0.5 | ug/L | 09/17/96 |
| Toluene | 108-88-3 | 0.7 * | 0.5 | ug/L | 09/17/96 |
| Ethylbenzene | 100-41-4 | ND | 0.5 | ug/L | 09/17/96 |
| Xylenes, Total | 1330-20-7 | ND | 2 | ug/L | 09/17/96 |
| Purgeable HCs as Gasoline | 5030/GCFID | 0.13 * | 0.05 | mg/L | 09/17/96 |

ND = Not detected at or above the reporting limit
* = Value at or above reporting limit

FUGRO WEST, INC.

SAMPLE ID: MW-5
AEN LAB NO: 9609075-05
AEN WORK ORDER: 9609075
CLIENT PROJ. ID: 9537-1311

DATE SAMPLED: 09/10/96
DATE RECEIVED: 09/10/96
REPORT DATE: 09/20/96

| ANALYTE | METHOD/ CAS# | RESULT | REPORTING LIMIT | UNITS | DATE ANALYZED |
|---|---|---|---|---|---|
| BTEX & Gasoline HCs | EPA 8020 | | | | |
| Benzene | 71-43-2 | 620 * | 3 | ug/L | 09/17/96 |
| Toluene | 108-88-3 | ND | 3 | ug/L | 09/17/96 |
| Ethylbenzene | 100-41-4 | ND | 3 | ug/L | 09/17/96 |
| Xylenes, Total | 1330-20-7 | ND | 10 | ug/L | 09/17/96 |
| Purgeable HCs as Gasoline | 5030/GCFID | 1.2 * | 0.3 | mg/L | 09/17/96 |

Reporting limits elevated due to high levels of target compounds. Sample run at dilution.

ND = Not detected at or above the reporting limit
* = Value at or above reporting limit

FUGRO WEST, INC.

SAMPLE ID: MW-6
AEN LAB NO: 9609075-06
AEN WORK ORDER: 9609075
CLIENT PROJ. ID: 9537-1311

DATE SAMPLED: 09/10/96
DATE RECEIVED: 09/10/96
REPORT DATE: 09/20/96

| ANALYTE | METHOD/ CAS# | RESULT | REPORTING LIMIT | UNITS | DATE ANALYZED |
|---|---|---|---|---|---|
| BTEX & Gasoline HCs | EPA 8020 | | | | |
| Benzene | 71-43-2 | ND | 0.5 | ug/L | 09/17/96 |
| Toluene | 108-88-3 | ND | 0.5 | ug/L | 09/17/96 |
| Ethylbenzene | 100-41-4 | ND | 0.5 | ug/L | 09/17/96 |
| Xylenes, Total | 1330-20-7 | ND | 2 | ug/L | 09/17/96 |
| Purgeable HCs as Gasoline | 5030/GCFID | ND | 0.05 | mg/L | 09/17/96 |

ND = Not detected at or above the reporting limit
* = Value at or above reporting limit

FUGRO WEST, INC.

SAMPLE ID: D-1
AEN LAB NO: 9609075-07
AEN WORK ORDER: 9609075
CLIENT PROJ. ID: 9537-1311

DATE SAMPLED: 09/10/96
DATE RECEIVED: 09/10/96
REPORT DATE: 09/20/96

| ANALYTE | METHOD/ CAS# | RESULT | REPORTING LIMIT | UNITS | DATE ANALYZED |
|---|---|---|---|---|---|
| BTEX & Gasoline HCs | EPA 8020 | | | | |
| Benzene | 71-43-2 | ND | 0.5 | ug/L | 09/13/96 |
| Toluene | 108-88-3 | ND | 0.5 | ug/L | 09/13/96 |
| Ethylbenzene | 100-41-4 | ND | 0.5 | ug/L | 09/13/96 |
| Xylenes, Total | 1330-20-7 | ND | 2 | ug/L | 09/13/96 |
| Purgeable HCs as Gasoline | 5030/GCFID | 0.07 * | 0.05 | mg/L | 09/13/96 |

ND = Not detected at or above the reporting limit
* = Value at or above reporting limit

FUGRO WEST, INC.

SAMPLE ID: D-2
AEN LAB NO: 9609075-08
AEN WORK ORDER: 9609075
CLIENT PROJ. ID: 9537-1311

DATE SAMPLED: 09/10/96
DATE RECEIVED: 09/10/96
REPORT DATE: 09/20/96

| ANALYTE | METHOD/ CAS# | RESULT | REPORTING LIMIT | UNITS | DATE ANALYZED |
|---|---|---|---|---|---|
| BTEX & Gasoline HCs | EPA 8020 | | | | |
| Benzene | 71-43-2 | ND | 0.5 | ug/L | 09/13/96 |
| Toluene | 108-88-3 | ND | 0.5 | ug/L | 09/13/96 |
| Ethylbenzene | 100-41-4 | ND | 0.5 | ug/L | 09/13/96 |
| Xylenes, Total | 1330-20-7 | ND | 2 | ug/L | 09/13/96 |
| Purgeable HCs as Gasoline | 5030/GCFID | ND | 0.05 | mg/L | 09/13/96 |

ND = Not detected at or above the reporting limit
* = Value at or above reporting limit

# AEN (CALIFORNIA)
# QUALITY CONTROL REPORT

AEN JOB NUMBER: 9609075

CLIENT PROJECT ID: 9537-1311

## Quality Control and Project Summary

All laboratory quality control parameters were found to be within established limits.

### Definitions

Laboratory Control Sample (LCS)/Method Spike(s): Control samples of known composition. LCS and Method Spike data are used to validate batch analytical results.

Matrix Spike(s): Aliquot of a sample (aqueous or solid) with added quantities of specific compounds and subjected to the entire analytical procedure. Matrix spike and matrix spike duplicate QC data are advisory.

Method Blank: An analytical control consisting of all reagents, internal standards, and surrogate standards carried through the entire analytical process. Used to monitor laboratory background and reagent contamination.

Not Detected (ND): Not detected at or above the reporting limit.

Relative Percent Difference (RPD): An indication of method precision based on duplicate analysis.

Reporting Limit (RL): The lowest concentration routinely determined during laboratory operations. The RL is generally 1 to 10 times the Method Detection Limit (MDL). Reporting limits are matrix, method, and analyte dependent and take into account any dilutions performed as part of the analysis.

Surrogates: Organic compounds which are similar to analytes of interest in chemical behavior, but are not found in environmental samples. Surrogates are added to all blanks, calibration and check standards, samples, and spiked samples. Surrogate recovery is monitored as an indication of acceptable sample preparation and instrumental performance.

D: Surrogates diluted out.

#: Indicates result outside of established laboratory QC limits.

## QUALITY CONTROL DATA

METHOD: EPA 8020, 5030 GCFID

AEN JOB NO: 9609075
INSTRUMENT: F
MATRIX: WATER

Surrogate Standard Recovery Summary

| Date Analyzed | Client Id. | Lab Id. | Percent Recovery Fluorobenzene |
|---|---|---|---|
| 09/13/96 | MW-1 | 01 | 84 |
| 09/17/96 | MW-2 | 02 | 84 |
| 09/13/96 | MW-3 | 03 | 85 |
| 09/17/96 | MW-4 | 04 | 83 |
| 09/17/96 | MW-5 | 05 | 87 |
| 09/17/96 | MW-6 | 06 | 83 |
| 09/13/96 | D-1 | 07 | 83 |
| 09/13/96 | D-2 | 08 | 87 |
| QC Limits: | | | 70-130 |

DATE ANALYZED: 09/17/96
SAMPLE SPIKED: LCS
INSTRUMENT: F

Laboratory Control Summary

| Analyte | Spike Added (ug/L) | Average Percent Recovery | RPD | QC Limits Percent Recovery | QC Limits RPD |
|---|---|---|---|---|---|
| Benzene | 18.6 | 86 | 19 | 60-120 | 20 |
| Toluene | 61.4 | 95 | 16 | 60-120 | 20 |
| Hydrocarbons as Gasoline | 500 | 87 | 2 | 60-120 | 20 |

Daily method blanks for all associated analytical runs showed no contamination at or above the reporting limit.

*** END OF REPORT ***

Reporting Information:

1. Client: FUGRO
Address: 44 MONTGOMERY STE 1010 S.F. CA. 94104
Contact: PETER HUDSON
Alt. Contact:

**American Environmental Network**
3440 Vincent Road, Pleasant Hill, CA 94523
Phone (510) 930-9090
FAX (510) 930-0256

**AEN** K551

Page 1 of 1

**REQUEST FOR ANALYSIS / CHAIN OF CUSTODY**

Lab Job Number: 960975
Lab Destination:
Date Samples Shipped:
Lab Contact:
Date Results Required:
Date Report Required:
Client Phone No.: (415) 296-1041
Client FAX No.: (415) 296-0944

Address Report To:

2. FUGRO
SAME

Send Invoice To:

3. FUGRO
SAME

Send Report To: 1 or 2 (Circle one)

Client P.O. No.: SEE PROJECT ID#

Client Project I.D. No.: 9537-1311

Sample Team Member (s): TRACE RANKIN

| Lab Number | Client Sample Identification | Air Volume | Date/Time Collected | Sample Type* | Pres. | No. of Cont. | Type of Cont. | ANALYSIS: TPH/BTEX | Comments / Hazards |
|---|---|---|---|---|---|---|---|---|---|
| 01A-C | MW-1 9/10/96 | | 0730 | $H_2O$ | HCL | 3 | VOA | X | |
| 02A-C | MW-2 9/10/96 | | 0930 | | | | | | |
| 03A-C | MW-3 | | 0645 | | | | | | |
| 04A-C | MW4 | | 1105 | | | | | | |
| 05A-C | MW5 | | 1210 | | | | | | |
| 06A-C | MW6 | | 0945 | | | | | | |
| 07A-C | D-1 | | 1025 | | | | | | |
| 08A-C | D-2 | | 1035 | | | | | | |

| | | | | |
|---|---|---|---|---|
| Relinquished by: (Signature) | DATE 9/10/96 | TIME 1400 | Received by: (Signature) | DATE 9/10/96 TIME 1400 |
| Relinquished by: (Signature) | DATE 9/10/96 | TIME 1430 | Received by: (Signature) | DATE 9-10-96 TIME 1430 |
| Relinquished by: (Signature) | DATE | TIME | Received by: (Signature) | DATE TIME |
| Method of Shipment: AEN COURIER PICK UP @ SITE | | | Lab Comments: STANDARD TAT | |

*Sample type (Specify): 1) 37mm 0.8 µm MCEF 2) 25mm 0.8 µm MCEF 3) 25mm 0.4 µm polycarb. filter
4) PVC filter, diam. ____ pore size ____ 5) Charcoal tube 6) Silica gel tube 7) Water 8) Soil 9) Bulk Sample
10) Other ____ 11) Other ____

COPIES: WHITE - JOB FILE YELLOW - PROJECT FILE PINK - CLIENT