FUGRO WEST, INC.

44 Montgomery Street, Suite 1010
San Francisco, California 94104

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

ENVIRONMENTAL PROTECTION
96 JUN -6 PM 1:32

LETTER OF TRANSMITTAL

To:	Alameda County Department of Environmental Health	Project No.	9437-7623
		Date	June 5, 1996
Attn:	Eva Chu		
Phone:		Fax No.	
From	Fugro West, Inc. - Peter Hudson		
Subject	Results of Subsurface Soil Sampling		

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 report for the soil sampling at 1916 Webster in Alameda, CA. Please call me with questions or comments.

① OK to excavate add'l HC-impacted soil as depicted in Fig 4. Hope to excavate up to 5' bgs

② Send boring logs

Signature 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

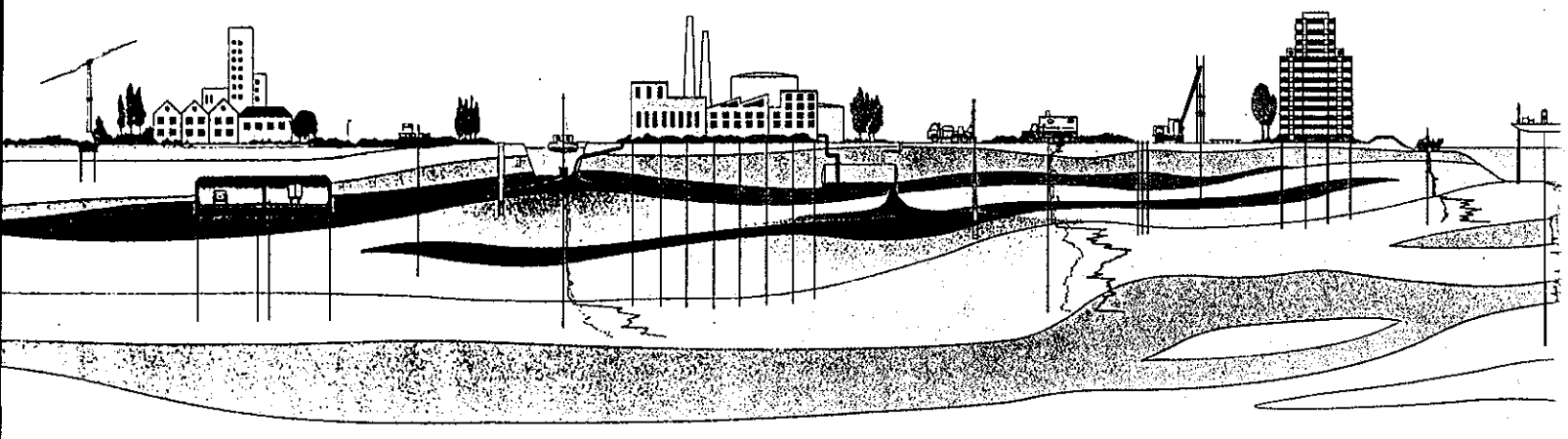
FUGRO WEST, INC.

RESULTS OF SUBSURFACE SOIL SAMPLING

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

Prepared By:
FUGRO WEST, INC.
44 Montgomery Street, Suite 1010
San Francisco, CA 94104

PROJECT 9437-7623
JUNE 1996



FUGRO WEST, INC.

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

June 3, 1996
Project No. 9437-7623

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

Attention: Ms. Eileen Duffy

Results of Subsurface Soil Sampling
Housing Authority of the City of Alameda
1916 Webster Street
Alameda, California

Dear Ms. Duffy

This letter presents the results of the subsurface soil sampling conducted by Fugro West Inc. (Fugro) at the Housing Authority of Alameda (AHA) property located at 1916 Webster Street in Alameda California (subject property), as shown in Figures 1 and 2. The purpose of the soil sampling effort was to further delimit the extent of petroleum hydrocarbons in the subsurface prior to implementing corrective action.

This letter discusses the project background, describes the sampling procedures, results and presents conclusions and recommendations for soil excavation. The laboratory results of the soil analyses are presented in Table 1. Figure 3 shows the soil sample locations and distribution of petroleum compounds detected in the soil. Figure 4 presents the revised limits of the proposed soil excavation.

BACKGROUND

The subject property consists of a warehouse building and adjacent parking lot located at the southeast corner of Webster Street and Atlantic Avenue in a commercial area of Alameda, California. A leaking 280-gallon underground storage tank (UST) was removed from the Subject Property in August 1986. Hydrocarbon-impacted soil associated with the leaking UST was excavated to the north and east of the former UST in September 1986 and in March 1994 (Figure 3). Previous environmental investigations conducted to determine the extent of the impacted soils included a series of soil borings and the installation of six ground water monitoring wells. Quarterly groundwater monitoring is currently conducted by Fugro at the subject property. Previous environmental Science Engineering conducted soil sampling in March 1994 to assess

the southern extent of the petroleum hydrocarbons in the soil. The results of the sampling indicated that residual petroleum hydrocarbons exists between the former UST excavation and the building. It was expected that the impacted soil also extended beneath the building.

In late 1995, Fugro provided AHA with a proposal to remediate the impacted soil by excavation and disposal. Prior to implementing the remedial activities, Fugro recommended additional soil sampling to delineate the extent of the impacted soil and determine whether it was present beneath the building. This letter addresses the results of that sampling effort.

SOIL SAMPLING PROCEDURES

Fugro retained Vironex Inc. of Foster City, California to drill soil borings using the Geoprobe push system. On May 3, 1996 13 soil borings were advanced to approximately 8 feet below ground surface (bgs) at the locations shown on Figure 3. Vironex advanced core samplers in four foot intervals and collected soil in clear plastic sleeves. Fugro personnel noted the lithology in each core, performed headspace analysis with a photoionization detector (PID) and prepared one sample per boring for laboratory analysis. Soil samples submitted for laboratory analysis represented the interval above the water table with the highest concentration of organic vapors detected during headspace analysis.

American Environmental Network (AEN) analyzed the soil samples for Total Petroleum Hydrocarbons as gasoline (TPH-g) and benzene, toluene, ethylbenzene and xylene (BTEX). AEN is a California state certified laboratory.

Ms. Eva Chu of the Alameda County Department of Environmental Health (ACDEH) briefly visited the work site during the field activities. During the site visit Ms. Chu requested that Fugro collect a background soil sample (FB-11) and extract a groundwater sample from the soil boring. The background soil sample was collected from within the capillary fringe (approximately 2 feet bgs). At the request of Ms. Chu, Fugro submitted the sample for organic carbon content, bulk density, water content, and porosity in addition to TPH-g and BTEX. The water sample was submitted for analysis of TPH-g, BTEX, and total dissolved solids (TDS). Fugro was not able to collect the TDS sample due to extremely low recharge of groundwater into the boring.

Geoprobe equipment used to obtain the soil and groundwater samples was cleaned with detergent, scrubbed and rinsed after completing each soil boring. All excess soil was placed in secure 55-gallon storage drums and left on the site. Vironex backfilled each boring to the surface with concrete grout via a tremmie pipe.

SOIL SAMPLING RESULTS

Soil materials encountered in the borings typically consisted of gray to tan silty sand with medium to coarse gravel in the upper two feet. These materials were encountered from the surface to the maximum depth explored of 8.5 to 9 feet bgs. Dark gray clayey silt was encountered within the top two feet in FB-1, FB-2, FB-4, FB-5, FB-12 and FB-13. Groundwater was encountered in the borings during drilling between 2.3 and 2.6 feet bgs.

Headspace analysis indicated that the highest concentrations of TPH was present at depths from 0.7 feet bgs to 2.8 feet bgs. The soil samples submitted for laboratory analysis were obtained from the 1.5 to 2.5 foot depth interval. Headspace analysis of soil samples below the depth of 5 feet bgs were below 1 ppm in all soil borings except FB-5 and FB-8. In soil boring FB-5, PID readings were 8.8 ppm at 5.6 feet bgs and 0.2 ppm at 8.1 feet bgs. In soil boring FB-8, PID readings were 32 ppm at 5 feet bgs and 0.8 at 8 feet bgs.

Laboratory analysis detected concentrations of TPH-g in soils ranging from below the method detection limit (MDL) to a maximum of 4,400 parts per million (ppm). Benzene concentrations ranged from below the MDL to 43 ppm. The highest concentrations of TPH-g were 3,000 ppm and 4,400 ppm detected in soil samples obtained in borings FB-5 and FB-7, respectively (Figure 3). These borings were located in the vicinity of the former UST, between the previous excavation and the building. The maximum concentration of TPH-g detected in soil borings placed within the building was 23 ppm at a depth of approximately 2 feet in FB-12 (Figure 3). All other detected TPH-g concentrations were below 2 ppm.

Benzene was detected at 43 ppm in the soil sample collected from boring FB-7. The next highest benzene concentration was 4 ppm detected in soil boring FB-5. All other detected benzene concentrations were below 1 ppm.

The background groundwater sample obtained from soil boring FB- 11 did not contain detectable concentrations of TPH-g or BTEX. Table 1 contains a complete listing of analytical results, including the results of the physical parameter of the soil sample in FB-11. Copies of the laboratory reports accompany this letter as Attachment A.

CONCLUSIONS AND RECOMMENDATIONS

Analytical results of the soil sampling suggest that hydrocarbon concentrations exceeding 1,000 ppm TPH-g and 1 ppm benzene remain in the subsurface soil between the previous excavated area and the north wall of the building. This area extends from the west roll-up door approximately 25 feet to the east (Figure 4). Analytical results of soil samples obtained beneath the building and west of the former UST indicate a limited lateral migration of hydrocarbons in these areas. This could be expected considering the northerly flow of groundwater and the

possibility that a subsurface portion of the building footing impeded migration of the contaminants beneath the building.

Fugro recommends that soil exceeding 1,000 ppm TPH-g and 1 ppm benzene be excavated and disposed. It is Fugro's opinion that the low concentrations of hydrocarbons in the soils beneath the building does not warrant remediation by excavation. The proposed excavation area encompasses approximately 283 cubic feet, as shown on Figure 4. Based on headspace analysis, the maximum depth of required excavation is 5 feet bgs. The estimated soil quantities for excavation and disposal is 42 cubic yards. It is recommended that hydrocarbon-impacted soil be transported off-site for landfill disposal. No demolition of the existing building or excavation within the building is recommended.

REMARKS

Fugro will revise the Proposal for Soil Remediation, dated December 28, 1995, to reflect the current delineation of petroleum hydrocarbon-impacted soil at the site. It is expected that the scope of work will be similar with the exception of building demolition and the construction of building closure. Prior to implementation of the soil remediation, Fugro will submit a letter to the ACDEH that describes the revised scope of work and schedule. The costs for the remediation work will be based on costs previously approved by the California State Water Resources Board, UST Clean-up Fund Program.

If you have any additional questions or comments regarding this letter, please contact me or Mr. Boudreau at (415) 296-1041.

Sincerely,

FUGRO WEST, INC.

Peter B. Hudson
Project Geologist

for Stephen J. Boudreau
Regional Branch Manager
Senior Environmental Engineer

PBH:lah

c: Ms. Eva Chu, Alameda County Department of Environmental Health

Analytical Results of Soil and Groundwater Samples

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

All Concentrations in Parts Per Million (PPM)

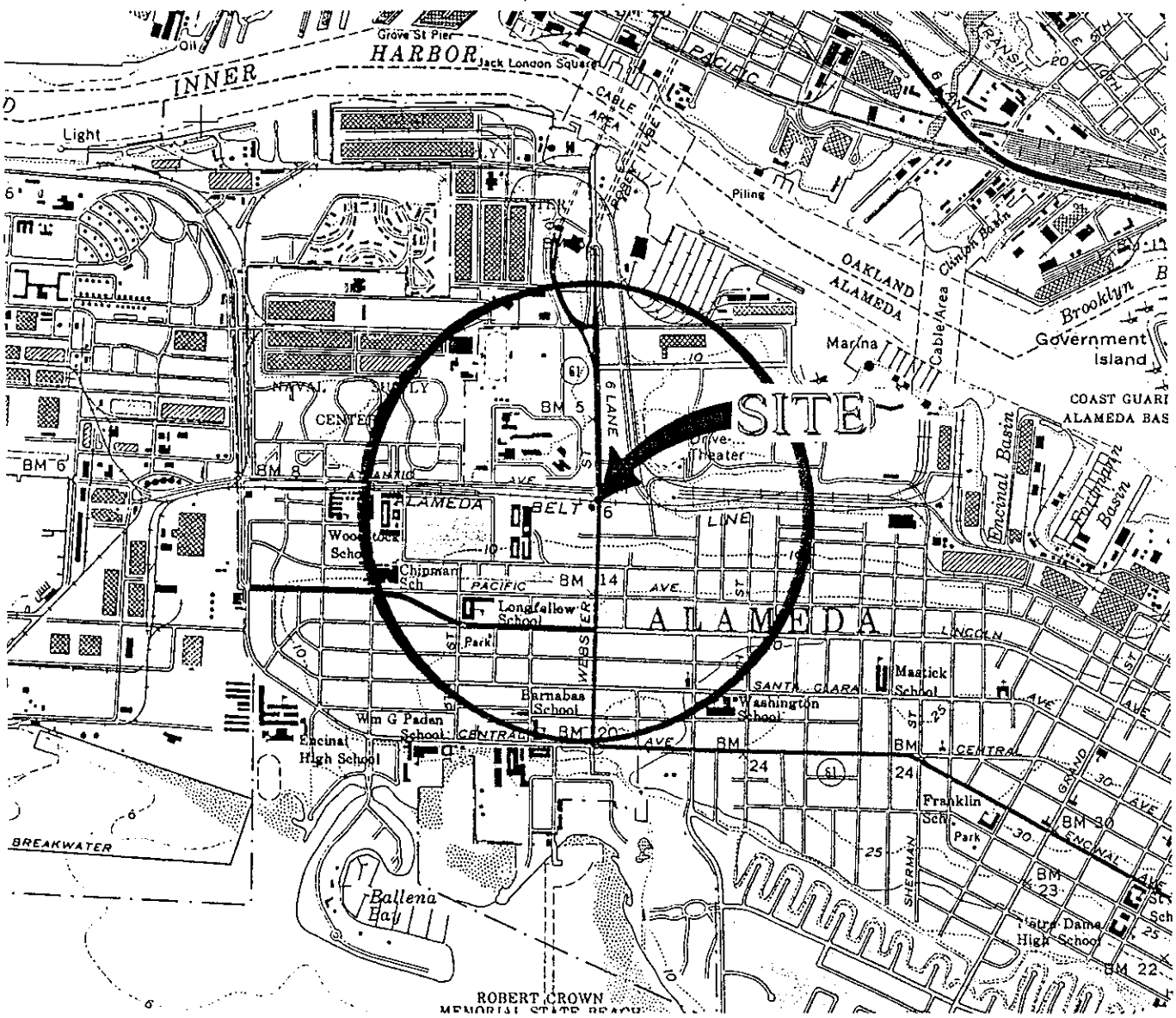
Sample I.D.	Sample Interval (Feet)	TPH as Gasoline	Benzene	Toluene	Ethylbenzene	Xylenes (Total)
Soil						
FB-1	2-2.5	0.3	0.031	ND	ND	ND
FB-2	2.3-2.6	0.5	0.008	ND	ND	ND
FB-3	2.0-2.6	0.4	0.008	ND	ND	ND
FB-4	1.5-2.0	1.1	0.019	ND	0.007	0.028
FB-5	1.5-2.5	3.000	4	63	33	130
FB-6	1.0-1.5	ND	ND	0.008	ND	0.008
FB-7	1.6-2.2	4.400	43	210	52	200
FB-8	0.7-1.2	0.3	0.046	ND	ND	ND
FB-9	1.1-2.0	ND	ND	ND	ND	ND
FB-10	1.1-1.7	ND	ND	ND	ND	ND
FB-11	0.9-1.9	ND	ND	ND	ND	ND
FB-12	1.3-2.1	23	0.3	0.180	0.060	0.210
FB-13	2-2.8	ND	ND	ND	ND	ND
MRL[*1]		0.2	0.005	0.005	0.005	0.005
Water						
FB-11	2.3	ND	ND	ND	ND	ND
MRL		0.05	0.0005	0.0005	0.0005	0.0005

Physical Parameters:
Soil Sample obtained from FB-11 at 2 Foot Depth
Organic Carbon content 1000[*2]
Bulk Density : Wet unit weight: 125.6 PCF
Dry unit weight: 104.0 PCF
Water content : 20.77%
Total Porosity (average): 38.26

Notes;

PPM	=	Milligrams Per Kilogram (mg/kg)
TPH	=	Total Petroleum Hydrocarbons
ND	=	Not detected above method reporting limit
TDS	=	Total dissolved solids. Not performed on water sample due to acidified sample
——	=	No sample analyzed
MRL	=	Method Reporting Unit
*1	=	MRL may be increased in some samples due to elevated concentrations
*2	=	Recovery limits were exceeded for the matrix spike duplicate and relative percent acceptability limits were exceeded due to sample heterogenrity
PCF	=	Pounds per Cubic Foot

Sample intervals determined by headspace analysis performed in the field with a photoionization detector (PID). Interval with highest headspace concentration submitted for laboratory analysis

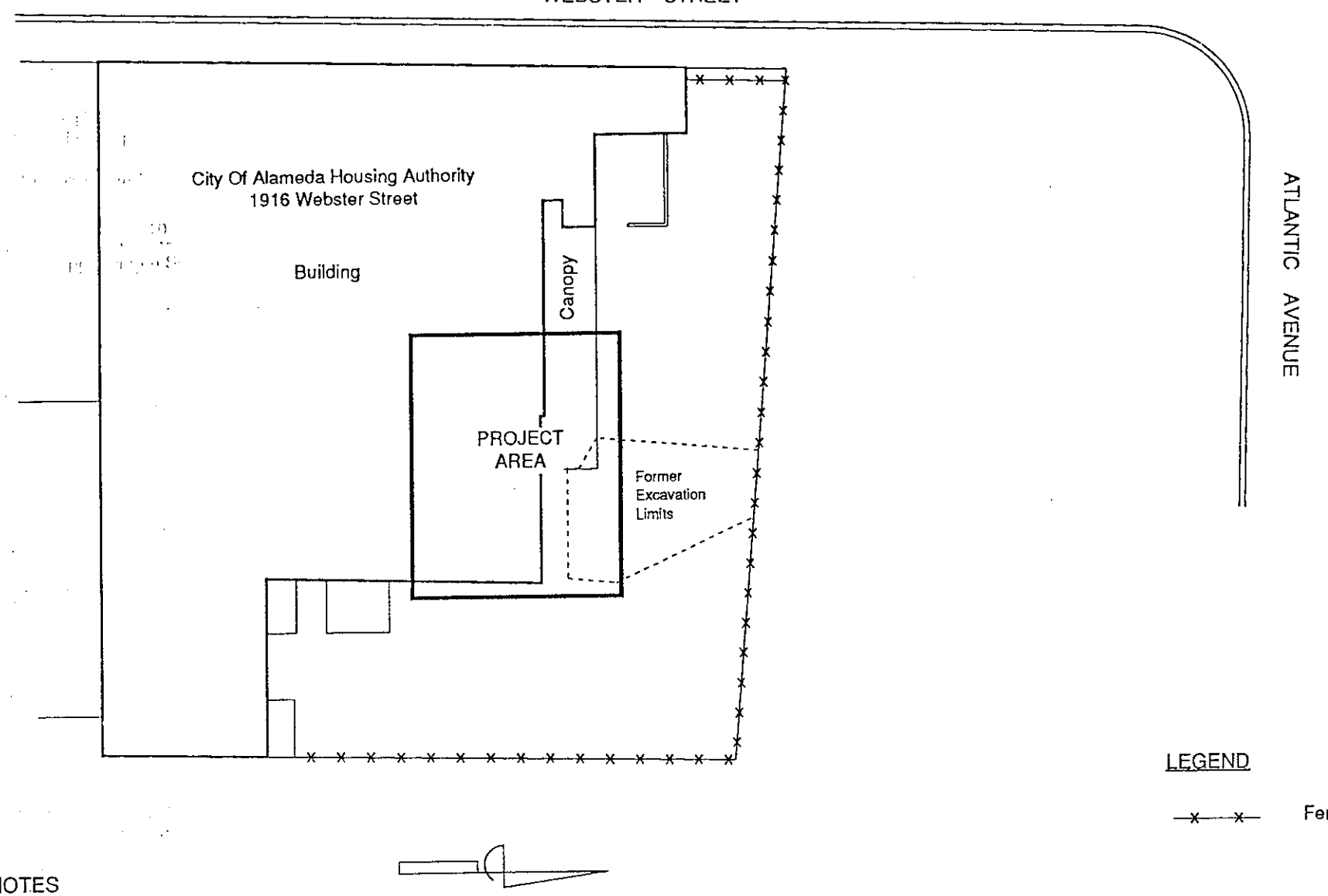


GENERAL NOTES:

BASE MAP FROM USGS
7.5 MINUTE TOPOGRAPHIC
OAKLAND WEST, CA

0 2000 4000
Approximate Scale in Feet

FUGRO	DRAWN BY: D. Hada DATE: September 19, 1994 REVISED BY: DATE:	SITE LOCATION MAP Alameda Housing 1916 Webster Street Alameda, CA	FIGURE 1 PROJECT NUMBER: 94-37-7623



NOTES

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

All Locations Are Approximate

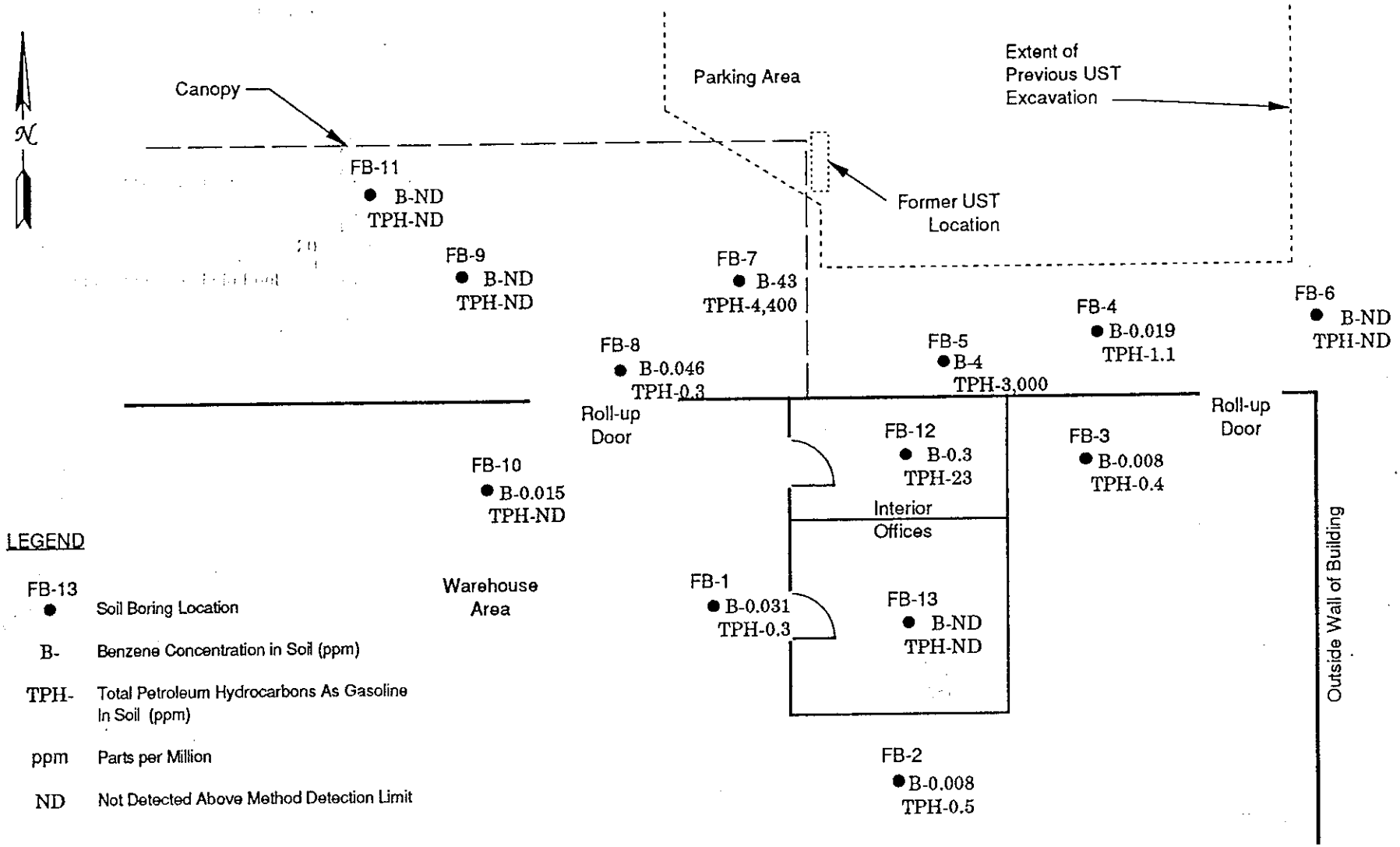
0 50 100
Approximate Scale In Feet

FUGRO

DRAWN BY: D. Hada	SITE AND PROJECT AREA MAP
DATE: April 17, 1996	
REVISED BY: J. Paradis	Alameda Housing 1916 Webster Street Alameda, CA
DATE: May 30, 1996	

FIGURE
2

PROJECT NUMBER:
94-37-7623



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

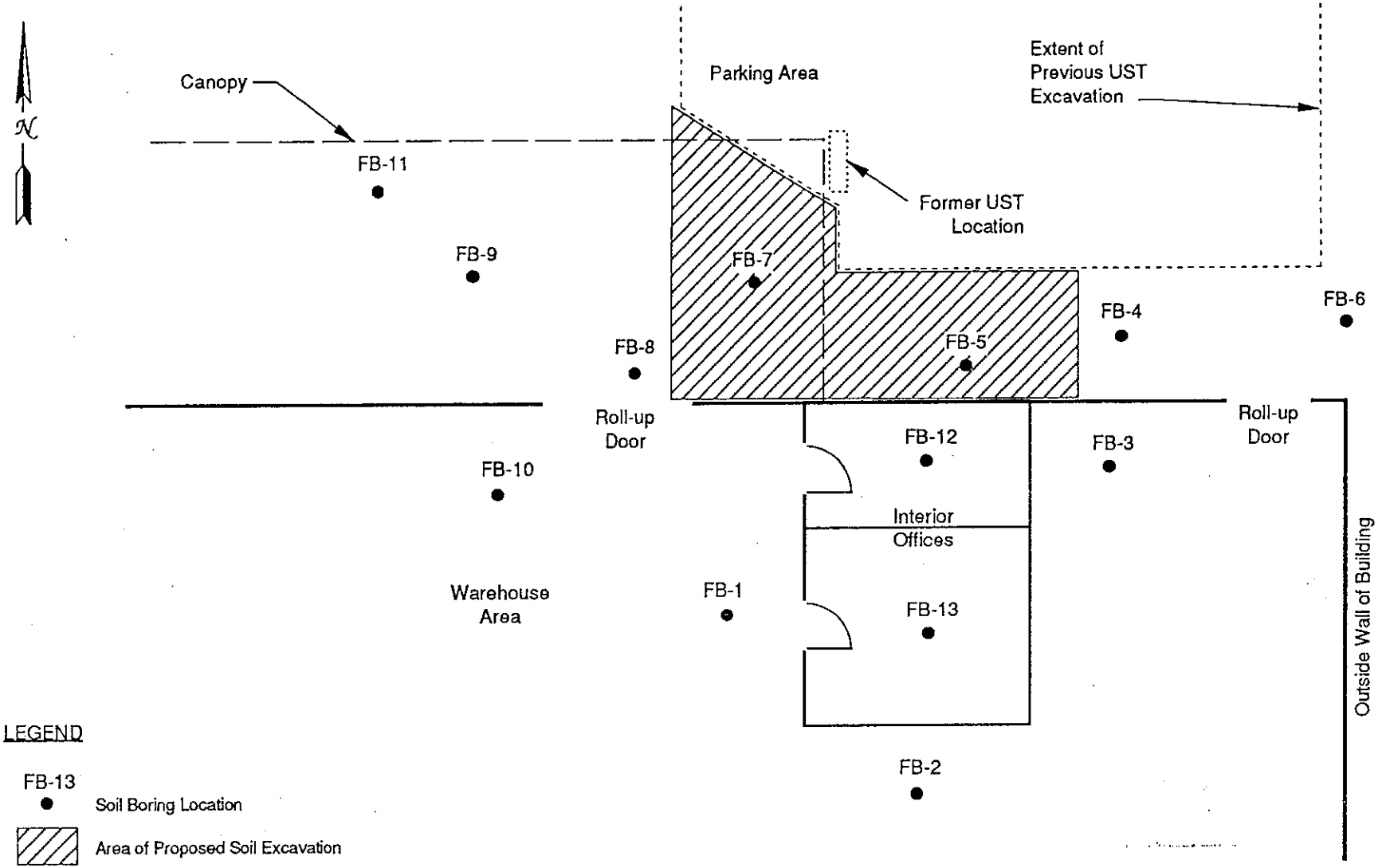
DRAWN BY: J. Paradis
DATE: May 31, 1996
REVISED BY:
DATE:

LOCATION OF SOIL BORINGS, DISTRIBUTION OF BENZENE AND GASOLINE CONTAMINATION IN SOIL

Alameda Housing
1916 Webster Street
Alameda, CA

FIGURE
3

PROJECT NUMBER:
94-37-7623



LEGEND

FB-13 ● Soil Boring Location

Area of Proposed 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:	
DATE:	

PROPOSED EXCAVATION AREA

Alameda Housing
1916 Webster Street
Alameda, CA

FIGURE
4

PROJECT NUMBER:
94-37-7623

ATTACHMENT A
ANALYTICAL LABORATORY REPORTS

American Environmental Network

Certificate of Analysis

DOHS Certification: 1172 AIHA Accreditation: 11134

ANALYTE

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

ATTN: PETER HUDSON
CLIENT PROJ. ID: 9437.7623

REPORT DATE: 05/21/96

DATE(S) SAMPLED: 05/03/96

DATE RECEIVED: 05/03/96

AEN WORK ORDER: 9605053

PROJECT SUMMARY:

On May 3, 1996, this laboratory received 14 (13 soil & 1 water) sample(s).

Client requested sample(s) be analyzed for chemical and physical parameters. Portions for total organic carbon and physical parameters were subcontracted to a DOHS certified laboratory and a geotechnical laboratory respectively. Subcontract report for physical parameters is included; subcontract report for total organic carbon will follow at a later date. 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: FB-1
AEN LAB NO: 9605053-01
AEN WORK ORDER: 9605053
CLIENT PROJ. ID: 9437.7623

DATE SAMPLED: 05/03/96
DATE RECEIVED: 05/03/96
REPORT DATE: 05/21/96

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
BTEX & Gasoline HCs	EPA 8020				
Benzene	71-43-2	31 *	5	ug/kg	05/07/96
Toluene	108-88-3	ND	5	ug/kg	05/07/96
Ethylbenzene	100-41-4	ND	5	ug/kg	05/07/96
Xylenes, Total	1330-20-7	ND	5	ug/kg	05/07/96
Purgeable HCs as Gasoline	5030/GCFID	0.3 *	0.2	mg/kg	05/07/96

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

FUGRO WEST, INC.

SAMPLE ID: FB-2
AEN LAB NO: 9605053-02
AEN WORK ORDER: 9605053
CLIENT PROJ. ID: 9437.7623

DATE SAMPLED: 05/03/96
DATE RECEIVED: 05/03/96
REPORT DATE: 05/21/96

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
BTEX & Gasoline HCs	EPA 8020				
Benzene	71-43-2	8 *	5	ug/kg	05/07/96
Toluene	108-88-3	ND	5	ug/kg	05/07/96
Ethylbenzene	100-41-4	ND	5	ug/kg	05/07/96
Xylenes, Total	1330-20-7	ND	5	ug/kg	05/07/96
Purgeable HCs as Gasoline	5030/GCFID	0.5 *	0.2	mg/kg	05/07/96

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

FUGRO WEST, INC.

SAMPLE ID: FB-3
AEN LAB NO: 9605053-03
AEN WORK ORDER: 9605053
CLIENT PROJ. ID: 9437.7623

DATE SAMPLED: 05/03/96
DATE RECEIVED: 05/03/96
REPORT DATE: 05/21/96

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
BTEX & Gasoline HCs	EPA 8020				
Benzene	71-43-2	8 *	5	ug/kg	05/07/96
Toluene	108-88-3	ND	5	ug/kg	05/07/96
Ethylbenzene	100-41-4	ND	5	ug/kg	05/07/96
Xylenes, Total	1330-20-7	ND	5	ug/kg	05/07/96
Purgeable HCs as Gasoline	5030/GCFID	0.4 *	0.2	mg/kg	05/07/96

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

FUGRO WEST, INC.

SAMPLE ID: FB-4
AEN LAB NO: 9605053-04
AEN WORK ORDER: 9605053
CLIENT PROJ. ID: 9437.7623

DATE SAMPLED: 05/03/96
DATE RECEIVED: 05/03/96
REPORT DATE: 05/21/96

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
BTEX & Gasoline HCs	EPA 8020				
Benzene	71-43-2	19 *	5	ug/kg	05/07/96
Toluene	108-88-3	ND	5	ug/kg	05/07/96
Ethylbenzene	100-41-4	7 *	5	ug/kg	05/07/96
Xylenes, Total	1330-20-7	28 *	5	ug/kg	05/07/96
Purgeable HCs as Gasoline	5030/GCFID	1.1 *	0.2	mg/kg	05/07/96

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

FUGRO WEST, INC.

SAMPLE ID: FB-5
AEN LAB NO: 9605053-05
AEN WORK ORDER: 9605053
CLIENT PROJ. ID: 9437.7623

DATE SAMPLED: 05/03/96
DATE RECEIVED: 05/03/96
REPORT DATE: 05/21/96

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
BTEX & Gasoline HCs	EPA 8020				
Benzene	71-43-2	4,000 *	1000	ug/kg	05/09/96
Toluene	108-88-3	63,000 *	1000	ug/kg	05/09/96
Ethylbenzene	100-41-4	33,000 *	1000	ug/kg	05/09/96
Xylenes, Total	1330-20-7	130,000 *	3000	ug/kg	05/09/96
Purgeable HCs as Gasoline	5030/GCFID	3,000 *	200	mg/kg	05/09/96

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: FB-6
AEN LAB NO: 9605053-06
AEN WORK ORDER: 9605053
CLIENT PROJ. ID: 9437.7623

DATE SAMPLED: 05/03/96
DATE RECEIVED: 05/03/96
REPORT DATE: 05/21/96

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
BTEX & Gasoline HCs	EPA 8020				
Benzene	71-43-2	ND	5	ug/kg	05/08/96
Toluene	108-88-3	8 *	5	ug/kg	05/08/96
Ethylbenzene	100-41-4	ND	5	ug/kg	05/08/96
Xylenes, Total	1330-20-7	8 *	5	ug/kg	05/08/96
Purgeable HCs as Gasoline	5030/GCFID	ND	0.2	mg/kg	05/08/96

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

FUGRO WEST, INC.

SAMPLE ID: FB-7
AEN LAB NO: 9605053-07
AEN WORK ORDER: 9605053
CLIENT PROJ. ID: 9437.7623

DATE SAMPLED: 05/03/96
DATE RECEIVED: 05/03/96
REPORT DATE: 05/21/96

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
BTEX & Gasoline HCs	EPA 8020				
Benzene	71-43-2	43,000 *	5000	ug/kg	05/09/96
Toluene	108-88-3	210,000 *	5000	ug/kg	05/09/96
Ethylbenzene	100-41-4	52,000 *	5000	ug/kg	05/09/96
Xylenes, Total	1330-20-7	200,000 *	5000	ug/kg	05/09/96
Purgeable HCs as Gasoline	5030/GCFID	4,400 *	200	mg/kg	05/09/96

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: FB-8
AEN LAB NO: 9605053-08
AEN WORK ORDER: 9605053
CLIENT PROJ. ID: 9437.7623

DATE SAMPLED: 05/03/96
DATE RECEIVED: 05/03/96
REPORT DATE: 05/21/96

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
BTEX & Gasoline HCs	EPA 8020				
Benzene	71-43-2	46 *	5	ug/kg	05/15/96
Toluene	108-88-3	ND	5	ug/kg	05/15/96
Ethylbenzene	100-41-4	ND	5	ug/kg	05/15/96
Xylenes, Total	1330-20-7	ND	5	ug/kg	05/15/96
Purgeable HCs as Gasoline	5030/GCFID	0.3 *	0.2	mg/kg	05/15/96

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

FUGRO WEST, INC.

SAMPLE ID: FB-9
AEN LAB NO: 9605053-09
AEN WORK ORDER: 9605053
CLIENT PROJ. ID: 9437.7623

DATE SAMPLED: 05/03/96
DATE RECEIVED: 05/03/96
REPORT DATE: 05/21/96

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
BTEX & Gasoline HCs	EPA 8020				
Benzene	71-43-2	ND	5	ug/kg	05/08/96
Toluene	108-88-3	ND	5	ug/kg	05/08/96
Ethylbenzene	100-41-4	ND	5	ug/kg	05/08/96
Xylenes, Total	1330-20-7	ND	5	ug/kg	05/08/96
Purgeable HCs as Gasoline	5030/GCFID	ND	0.2	mg/kg	05/08/96

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

FUGRO WEST, INC.

SAMPLE ID: FB-10
AEN LAB NO: 9605053-10
AEN WORK ORDER: 9605053
CLIENT PROJ. ID: 9437.7623

DATE SAMPLED: 05/03/96
DATE RECEIVED: 05/03/96
REPORT DATE: 05/21/96

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
BTEX & Gasoline HCs	EPA 8020				
Benzene	71-43-2	15 *	5	ug/kg	05/08/96
Toluene	108-88-3	ND	5	ug/kg	05/08/96
Ethylbenzene	100-41-4	ND	5	ug/kg	05/08/96
Xylenes, Total	1330-20-7	ND	5	ug/kg	05/08/96
Purgeable HCs as Gasoline	5030/GCFID	ND	0.2	mg/kg	05/08/96

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

FUGRO WEST, INC.

SAMPLE ID: FB-11 SOIL
AEN LAB NO: 9605053-11
AEN WORK ORDER: 9605053
CLIENT PROJ. ID: 9437.7623

DATE SAMPLED: 05/03/96
DATE RECEIVED: 05/03/96
REPORT DATE: 05/21/96

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
BTEX & Gasoline HCs	EPA 8020				
Benzene	71-43-2	ND	5	ug/kg	05/08/96
Toluene	108-88-3	ND	5	ug/kg	05/08/96
Ethylbenzene	100-41-4	ND	5	ug/kg	05/08/96
Xylenes, Total	1330-20-7	ND	5	ug/kg	05/08/96
Purgeable HCs as Gasoline	5030/GCFID	ND	0.2	mg/kg	05/08/96

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

FUGRO WEST, INC.

SAMPLE ID: FB-11 WATER
AEN LAB NO: 9605053-12
AEN WORK ORDER: 9605053
CLIENT PROJ. ID: 9437.7623

DATE SAMPLED: 05/03/96
DATE RECEIVED: 05/03/96
REPORT DATE: 05/21/96

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
BTEX & Gasoline HCs	EPA 8020				
Benzene	71-43-2	ND	0.5	ug/L	05/10/96
Toluene	108-88-3	ND	0.5	ug/L	05/10/96
Ethylbenzene	100-41-4	ND	0.5	ug/L	05/10/96
Xylenes, Total	1330-20-7	ND	2	ug/L	05/10/96
Purgeable HCs as Gasoline	5030/GCFID	ND	0.05	mg/L	05/10/96

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

FUGRO WEST, INC.

SAMPLE ID: FB-12
AEN LAB NO: 9605053-13
AEN WORK ORDER: 9605053
CLIENT PROJ. ID: 9437.7623

DATE SAMPLED: 05/03/96
DATE RECEIVED: 05/03/96
REPORT DATE: 05/21/96

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
BTEX & Gasoline HCs	EPA 8020				
Benzene	71-43-2	300 *	20	ug/kg	05/09/96
Toluene	108-88-3	180 *	20	ug/kg	05/09/96
Ethylbenzene	100-41-4	60 *	20	ug/kg	05/09/96
Xylenes, Total	1330-20-7	210 *	60	ug/kg	05/09/96
Purgeable HCs as Gasoline	5030/GCFID	23 *	4	mg/kg	05/09/96

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: FB-13
AEN LAB NO: 9605053-14
AEN WORK ORDER: 9605053
CLIENT PROJ. ID: 9437.7623

DATE SAMPLED: 05/03/96
DATE RECEIVED: 05/03/96
REPORT DATE: 05/21/96

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
BTEX & Gasoline HCs	EPA 8020				
Benzene	71-43-2	ND	5	ug/kg	05/08/96
Toluene	108-88-3	ND	5	ug/kg	05/08/96
Ethylbenzene	100-41-4	ND	5	ug/kg	05/08/96
Xylenes, Total	1330-20-7	ND	5	ug/kg	05/08/96
Purgeable HCs as Gasoline	5030/GCFID	ND	0.2	mg/kg	05/08/96

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

AEN (CALIFORNIA)
QUALITY CONTROL REPORT

AEN JOB NUMBER: 9605053

CLIENT PROJECT ID: 9437-7623

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: 9605053
INSTRUMENT: E
MATRIX: SOIL

Surrogate Standard Recovery Summary

Date Analyzed	Client Id.	Lab Id.	Percent Recovery Fluorobenzene
05/07/96	FB-1	01	104
05/07/96	FB-2	02	117
05/07/96	FB-3	03	113
05/07/96	FB-4	04	113
05/09/96	FB-5	05	95
05/08/96	FB-6	06	105
05/09/96	FB-7	07	102
05/15/96	FB-8	08	99
05/08/96	FB-9	09	104
05/08/96	FB-10	10	101
05/08/96	FB-11 SOIL	11	105
05/09/96	FB-12	13	101
05/08/96	FB-13	14	102
QC Limits:			70-130

DATE ANALYZED: 05/07/96
SAMPLE SPIKED: LCS
INSTRUMENT: E

Laboratory Control Sample Recovery

Analyte	Spike Added (ug/kg)	Average Percent Recovery	RPD	QC Limits Percent Recovery	QC Limits RPD
Benzene	34.5	107	4	60-120	20
Toluene	105	114	6	60-120	20
Hydrocarbons as Gasoline	1000	110	7	60-120	20

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

QUALITY CONTROL DATA

METHOD: EPA 8020, 5030 GCFID

AEN JOB NO: 9605053
INSTRUMENT: F
MATRIX: WATER

Surrogate Standard Recovery Summary

Date Analyzed	Client Id.	Lab Id.	Percent Recovery Fluorobenzene
05/10/96	FB-11 WATER	12	90
QC Limits:			70-130

DATE ANALYZED: 05/08/96
SAMPLE SPIKED: 9605015-12
INSTRUMENT: F

Matrix Spike Recovery Summary

Analyte	Spike Added (ug/L)	Average Percent Recovery	RPD	QC Limits Percent Recovery	QC Limits RPD
Benzene	17.3	94	6	85-109	17
Toluene	57.0	103	3	87-111	16
Hydrocarbons as Gasoline	500	107	2	66-117	19

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

*** END OF REPORT ***

American Environmental Network

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

Page ____ of ____

REQUEST FOR ANALYSIS / CHAIN OF CUSTODY

1. Client: [illegible]
Address: [illegible]
[illegible] 94104 [illegible]
Contact: [illegible] Hudson
Alt. Contact: [illegible]

Address Report To:
2. Above

Send Invoice To:
3. Above

Lab Job Number: 9605053
Lab Destination:
Date Samples Shipped:
Lab Contact:
Date Results Required:
Date Report Required:
Client Phone No.:
Client FAX No.:

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

Client P.O. No.: ____ Client Project I.D. No.: 9437-7623

Sample Team Member (s) [illegible]

7 DAY TURN-AROUND TIME

Lab Number	Client Sample Identification	Air Volume	Date/Time Collected	Sample Type*	Pres.	No. of Cont.	Type of Cont.	TPH-GAS	BTEX	ORGANIC CARBON	BULK DENSITY	WATER CONTENT	[illegible]	[illegible]			Comments / Hazards
01A	FB-1		5/3 AM	8				X	X								
02A	FB-2		5/3 AM	8				|	|								
03A	FB-3		5/3 AM	8				|	|								
04A	FB-4		5/3 AM	8				|	|								
05A	FB-5		5/3 AM	8				|	|								
06A	FB-6		5/3 AM	8				|	|								
07A	FB-7		5/3 AM	8				|	|								
08A	FB-8		5/3 AM	8				|	|								
09A	FB-9		5/3 AM	8				|	|								
10A	FB-10		5/3 AM	8				|	|								
11AB	[illegible] Soil		5/3 AM	8				|	|	X	X	X	X				
12AD	FB-11 Drain		5/3 PM	7										X			Client Contact Sample on hold [illegible]
13AB	FB-12		5/3 PM	8				X	X								
14A	[illegible]		5/3 PM	8				X	X								

Relinquished by: (Signature) [signature]	DATE 5/3/96	TIME 9:20	Received by: (Signature) [signature] DATE 5-3-96 TIME 1620
Relinquished by: (Signature) [signature]	DATE 5-3-96	TIME 1700	Received by: (Signature) [signature] DATE 5-3-96 TIME 1700
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

Woodward-Clyde

TOTAL POROSITY BASED ON ESTIMATED SPECIFIC GRAVITY

Project Name A.E.N. P.O. 9605053 Project No. 90C0368A

Date 05/10/96 Tested By: S. Capps Checked By: C. Wason

SPECIMEN NUMBER	ESTIMATED SPECIFIC GRAVITY	TOTAL POROSITY %	DRY UNIT WEIGHT, PCF
FB-11	2.65	37.11	104.00
	2.70	38.27	
	2.75	39.39	
	2.65		
	2.70		
	2.75		
	2.65		
	2.70		
	2.75		
	2.65		
	2.70		
	2.75		
	2.65		
	2.70		
	2.75		
	2.65		
	2.70		
	2.75		

Reporting Information:

1. Client: [illegible]
   Address: [illegible]
   [illegible]
   Contact: [illegible] Hudson
   Alt. Contact: Jeff [illegible]

American Environmental Network

AEN

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

REQUEST FOR ANALYSIS / CHAIN OF CUSTODY

Lab Job Number: 9605098
Lab Destination:
Date Samples Shipped:
Lab Contact:
Date Results Required:
Date Report Required:
Client Phone No.:
Client FAX No.:

Address Report To:

2. Above

Send Invoice To:

3. Above

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

Client P.O. No.: ____ Client Project I.D. No.: 9437-7603

Sample Team Member (s) Jeff [illegible]

7 Day Turn Around Time

Lab Number	Client Sample Identification	Air Volume	Date/ Time Collected	Sample Type*	Pres.	No. of Cont.	Type of Cont.	ANALYSIS: TPH [illegible]	BTEX	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]				Comments / Hazards
01A	FB-1		5/3 AM	8				X	X									
02A	FB-2		5/3 AM	8				↓	↓									
03A	FB-3		5/3 AM	8				↓	↓									
04A	FB-4		5/3 AM	8				↓	↓									
05A	FB-5		5/3 AM	8				↓	↓									
06A	FB-6		5/3 AM	8				↓	↓									
07A	FB-7		5/3 AM	8				↓	↓									
08A	FB-8		5/3 AM	8				↓	↓									
09A	FB-9		5/3 AM	8				↓	↓									
10A	FB-10		5/3 AM	8				↓	↓									
11AB	FB-11 Soil		5/3 AM	8				↓	↓	X	X	X	X					
12A-D	FB-11 Water		5/3 PM	7				↓	↓					X				Client Contact Sample on Hold [illegible] 5/6/96
13AB	FB-12		5/3 PM	8				X	X									
14A	FB-13		5/3 PM	8				X	X									

Relinquished by: (Signature) [signature]	DATE 5/3/96	TIME 9:20	Received by: (Signature) Michael E. [illegible]	DATE 5-3-96	TIME 1600
Relinquished by: (Signature) Michael E. [illegible]	DATE 5-3-96	TIME 1700	Received by: (Signature) [signature]	DATE 5-3-96	TIME 1700
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 ____

ASTM D2850

WATER CONTENT(%), WET AND DRY UNIT WEIGHT(PCF)

Project Name A. E. N. Project Number 90C0368A Date 05/10/96

Tested By S. CAPPS Reduced By S. CAPPS Checked By C. WASON

Location P.O. 9605053 (9437-7623) Page 1 of 1

Specimen Number	Diam. Inch	Height CM.	Wet Wt. Grams	Dry Wt. Grams	Visual Description	Water Content	Wet Unit Weight	Dry Unit Weight
FB-11	1.70	14.6	430.2	356.2	grayish brown silty sand to sandy silt	20.77	125.6	104.0

Woodward-Clyde

NEI/GTEL
ENVIRONMENTAL LABORATORIES, INC.

Midwest Region
4211 May Avenue
Wichita, KS 67209
(316) 945-2624
(800) 633-7936
(316) 945-0506 (FAX)

Project ID (Number): ANE01.ANE01
9437-7623

Work Order Number: W6-05-0120

May 22, 1996

Robin Byars
American Environmental Network
3440 Vincent Road
Pleasant Hills, CA 94523

Dear Robin Byars:

Enclosed please find the analytical results for samples received by GTEL Environmental Laboratories on 05-07-96 under your chain-of-custody record.

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

GTEL is certified by the California Department of Health Services under Certification Number 1845.

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

Sincerely,

Terry R. Loucks
Laboratory Director

GTEL Wichita, KS
COVLET.SET

Project ID (Number): ANE01.ANE01
9437-7623
Work Order Number: W6-05-0120
Date Reported: 05-22-96

ANALYTICAL RESULTS

Inorganics in Soil

GTEL Sample Number			01			
Client Identification			FB-11			
Date Sampled			05-03-96			
Date Analyzed			05-21-96			
Analyte	Concentration					
Total Organic Carbon	CFA 18.0[a]	100 mg/kg	**1000[b]**			
Percent Solids			84.9			

* Quantitation Limit.

NA Not applicable

a California Fertilizer Association, Soil Testing Procedures for California, CFA-SIC Publication, 1980.

b Recovery limits were exceeded for the matrix spike duplicate and relative percent difference acceptability limits were exceeded due to sample heterogeneity.

Reporting Information:

1. Client: AEN
Address:
Contact: BILL SVOBODA
Alt. Contact: ROBIN BYARS

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:
Lab Destination: CITEL
Date Samples Shipped: 5-6-96
Lab Contact:
Date Results Required: Standard
Date Report Required:
Client Phone No.:
Client FAX No.:

Address Report To:

2. #1

Send Invoice To:

3. #1

Send Report To: (1) or 2 (Circle one)
Client P.O. No.: 9605053 Client Project I.D. No.: 9437-7623
Sample Team Member (s)

Lab Number	Client Sample Identification	Air Volume	Date/ Time Collected	Sample Type*	Pres.	No. of Cont.	Type of Cont.	ANALYSIS: TDC	Comments / Hazards
01	FB-11	—	5-3-96	8	Cold	1	jar	✓	Please include P.O.# + proj. I.D. on report + invoice
02									Please FAX results
03									03542285855 60° Seal absent

		DATE	TIME
Relinquished by: (Signature)	Lynn Gillespie	5-6-96	1000
Relinquished by: (Signature)		DATE	TIME
Relinquished by: (Signature)		DATE	TIME
Relinquished by: (Signature)		DATE	TIME
Method of Shipment			

		DATE	TIME
Received by: (Signature)		DATE	TIME
Received by: (Signature)		DATE	TIME
Received by: (Signature)		5.7.96	1000
Lab Comments	return cooler + ice		

*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 ____