

THIRD QUARTER 1995 GROUNDWATER MONITORING 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:

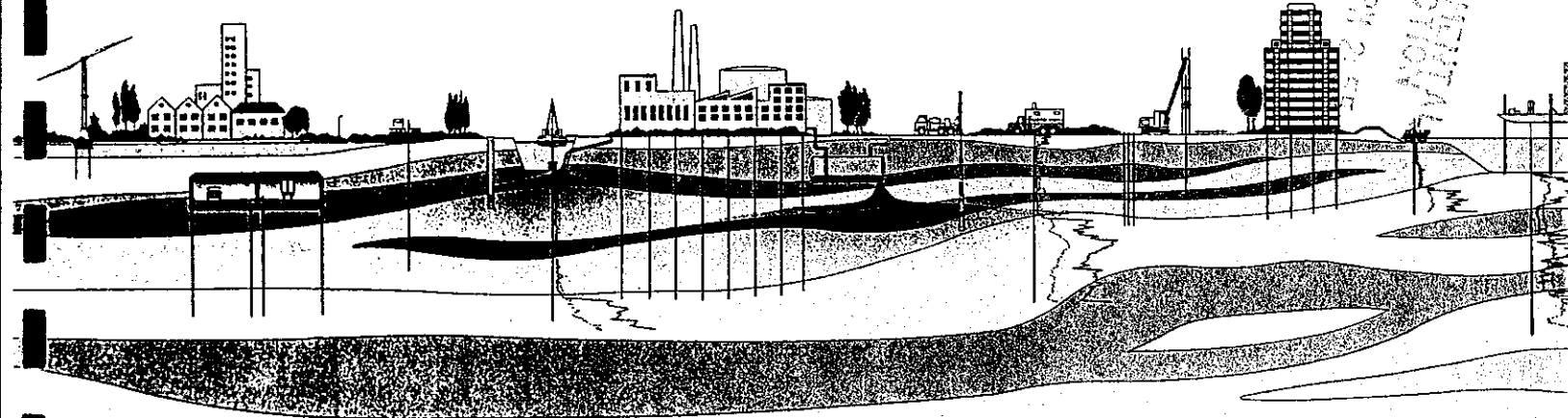
FUGRO WEST, INC.
44 Montgomery, Suite 1010
San Francisco, California 94104

OCTOBER 1995
Fugro Project No. 9437-7623

A Sampling Frequency

MW-1	1 2 X	1st/ 2nd Qtr
MW-2	1X	1st
MW-3	1X	1st
MW-4	4X	
MW-5	4X	
MW-6		Drop

ENVIRONMENTAL
PROTECTION
95 OCT 30 PM 2:57





FUGRO WEST, INC.

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

October 16, 1995
Project No. 9437-7623

Ms. Eileen Duffy
Project Administrator
Housing Authority of the City of Alameda
701 Atlantic Avenue
Alameda, California 94501

Third Quarter 1995 Groundwater Monitoring Report
Housing Authority of the City of Alameda
1916 Webster Street
Alameda, California

Dear Ms. Duffy:

This report represents the results of quarterly ground water monitoring and sampling conducted by Fugro West, Inc., (Fugro) on August 16, 1995, at the Housing Authority of the City of Alameda (HACA) facility located at 1916 Webster Street in Alameda, California (subject property), as shown on the Site Location Map, Figure 1.

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.

Tank Removal and Initial Investigation/Remediation

According to reports provided by HACA, a 280-gallon underground storage tank (UST) was removed from the site during July and August 1986. An environmental investigation was conducted to determine the extent of hydrocarbon-impacted soils. A series of soil borings were drilled at the site and soil samples were collected for laboratory analysis. Ground water monitoring wells MW-1 and MW-2 were installed in two of the borings. Hydrocarbons were identified in all soil and ground water samples analyzed. Additional soil excavation conducted during September 1986 failed to remove all of the impacted soil. Subsequent investigations included drilling and sampling additional soil borings and installing one additional ground water monitoring well (MW-3).

File: 3.0
c:\projects\94\94377623\95762303.qmr



Additional Well Installation

On September 12, 1994, Fugro installed three additional ground water monitoring wells at the site (MW-4, MW-5, and MW-6). Ground water monitoring/extraction well MW-4 was installed within ten feet downgradient of the former UST. Monitoring well MW-5 was installed approximately 27 feet northeast of MW-4. Monitoring well MW-6 was installed south of the warehouse building (upgradient of the former UST).

Previous Ground Water Monitoring

Ground water monitoring and sampling has been conducted at the site since October 1992. Monitoring events prior to July 1994 were performed by consultants other than Fugro. Fugro conducted ground water monitoring and sampling of monitoring wells MW-1 through MW-3 on July 16, 1994. Following the installation of monitoring wells MW-4 through MW-6, Fugro conducted quarterly ground water monitoring and sampling on the six wells on October 10, 1994. The results of these two monitoring events were presented in Fugro's report titled, *Revised Corrective Action Plan*, dated November 9, 1994. Fugro conducted quarterly ground water monitoring and sampling on five wells (well MW-2 was inaccessible due to construction debris) on March 29 and May 25, 1995. The results of this monitoring events were presented in Fugro's *Quarterly Ground Water Monitoring Report*, dated May 25, 1995 and August 23, 1995, respectively.

CURRENT GROUND WATER MONITORING

All field work documented in this report was conducted according to the Fugro standard operation procedures (SOPs) included in Attachment A.

Ground Water Elevations

Since the last quarter monitoring event, ground water elevations in wells MW-1 and MW-3 through MW-6 decreased an average of 0.46 feet. No free product was detected in any of the wells.

Based on field data, the calculated ground water flow direction on August 16, 1995, was north-northeast at a gradient that ranged between 0.007 and 0.017 foot per foot. Figure 2 is a potentiometric surface map of the shallow water-bearing zone beneath the site on August 16, 1995. Current and previous ground water elevation data are summarized in Table 1.

Ground Water Sampling and Analysis

On August 16, 1995, Fugro personnel collected ground water samples from monitoring wells MW-1 through MW-6. The samples were submitted under chain-of-custody to the state-certified analytical laboratory and analyzed for concentrations of total petroleum hydrocarbons as



gasoline (TPH-g) by EPA Method 8015M; benzene, toluene, ethylbenzene, and total xylenes (BTEX) by EPA Method 602; and total lead by EPA Method 7420.

TPHg and BTEX were not detected in the water samples collected from wells MW-1, MW-2, MW-3 and MW-6. Detected concentrations of TPHg and BTEX in wells MW-4 and MW-5 have not changed significantly since the May 1995 sampling event.

Results of laboratory analysis are reported on Table 2. Benzene and TPH-g concentrations are shown on Figure 3. The laboratory analytical reports and chain-of-custody form are included in Attachment B.

REMARKS

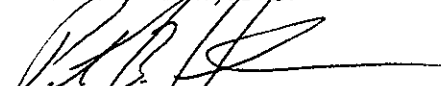
The interpretations contained within this report represent our professional opinions. These opinions are based on available information, and were developed in accordance with currently accepted geologic, hydrogeologic, and engineering practices.

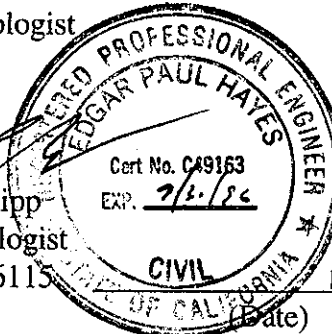
This report has been prepared solely for the use of the HACA. Any reliance on this report by other parties shall be at such parties' own risk. This report was prepared under the review and supervision of the professional geologist, registered with the State of California, whose signature appears below.

We appreciate the opportunity to provide the HACA with environmental consulting services, and trust this report meets your needs. If you have any questions about this or any other matter, please call us at (415) 296-1041.

Sincerely,

FUGRO-WEST, INC.


Peter B. Hudson.
Project Geologist


William Shipp
Senior Geologist
CRG No. 6115
10/17/95
(Date)

Attachments

cc: Eva Chu, Alameda County Environmental Health Department



FIGURES:

FIGURE 1 SITE LOCATION MAP

FIGURE 2 POTENTIOMETRIC SURFACE MAP
AUGUST 16, 1995

FIGURE 3 DISTRIBUTION MAP OF TPH-g AND
BENZENE IN GROUND WATER: AUGUST 16, 1995

TABLES:

TABLE 1 GROUND WATER ELEVATION DATA

TABLE 2 SUMMARY OF GROUND WATER
ANALYTICAL RESULTS

ATTACHMENTS:

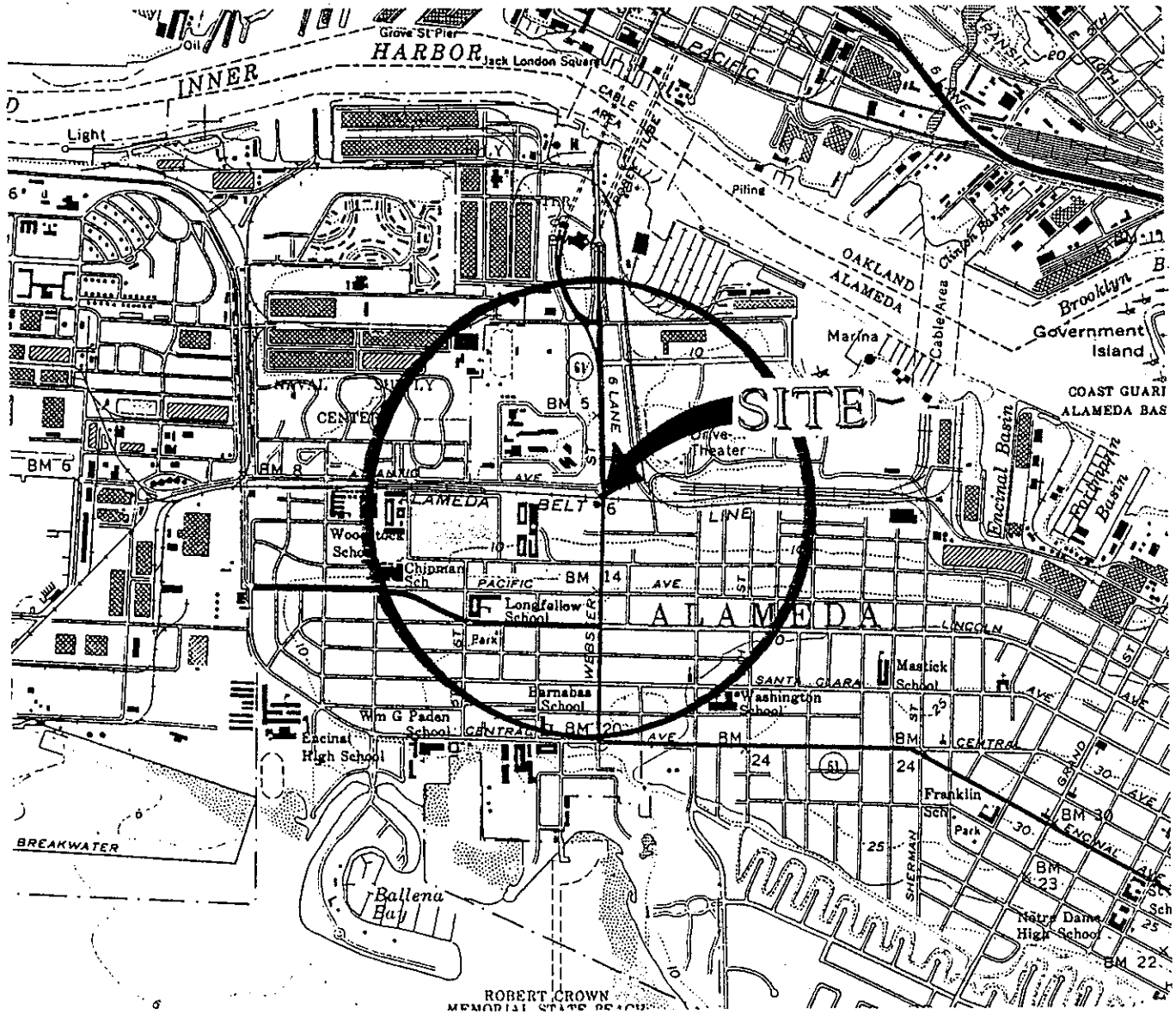
ATTACHMENT 1 STANDARD OPERATING PROCEDURES

ATTACHMENT 2 ANALYTICAL REPORT AND
CHAIN-OF-CUSTODY DOCUMENTATION



FIGURES

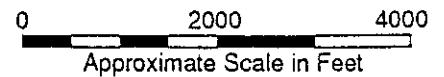




GENERAL NOTES:



BASE MAP FROM USGS
7.5 MINUTE TOPOGRAPHIC
OAKLAND WEST, CA



DRAWN BY:	D. Hada
DATE:	September 19, 1994
REVISED BY:	
DATE:	

SITE LOCATION MAP

Alameda Housing
1916 Webster Street
Alameda, CA

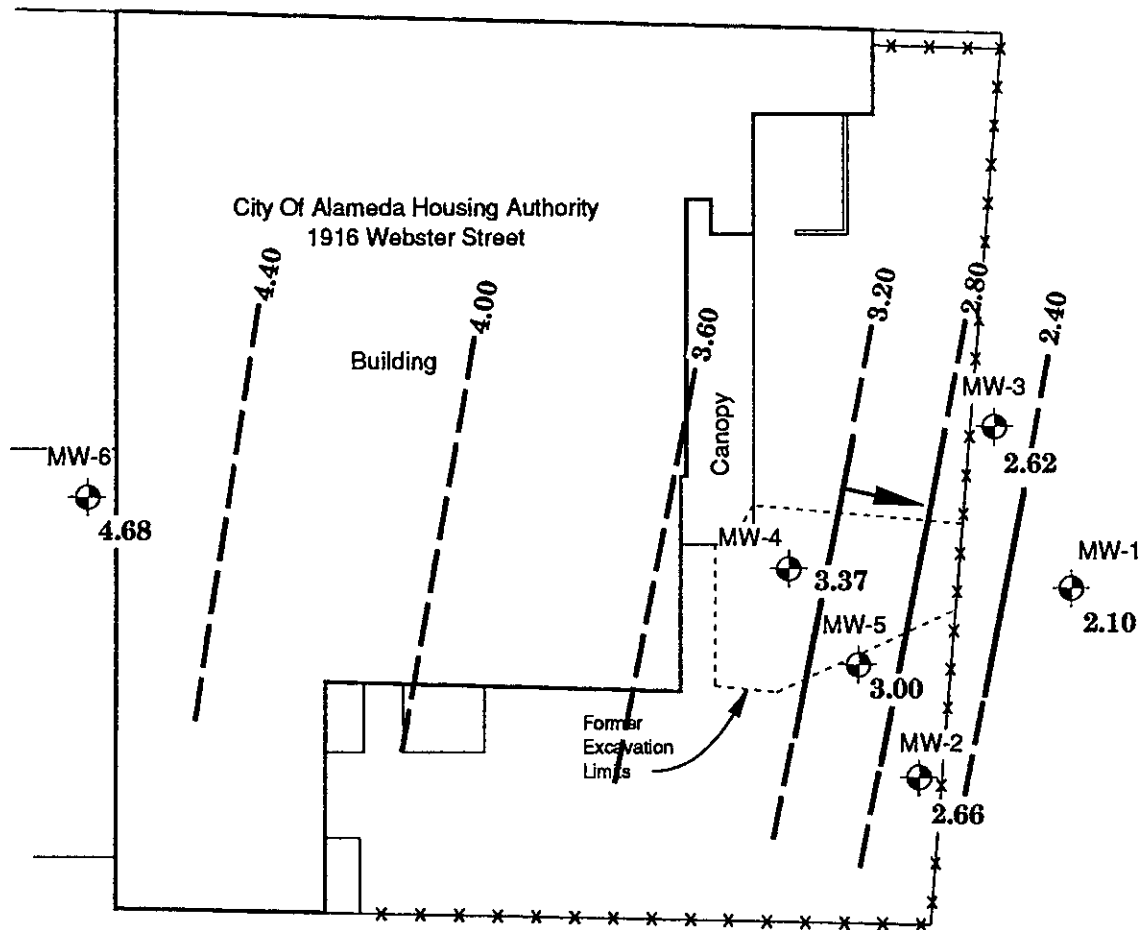
FIGURE

1

PROJECT NUMBER:
94-37-7623

WEBSTER STREET

ATLANTIC AVENUE



LEGEND

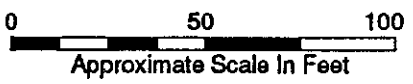
- Monitoring Well
2.10 Ground Water Elevation In Feet
- Fence
- NA** Not Available; Well Inaccessible
- Potentiometric Surface Contour Line
(Dashed Where Inferred)
- Estimated Direction Of Ground Water Flow

Hydraulic Gradient \approx 0.017 ft/ft
Contour Interval = 0.40 ft

NOTES

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

All Locations Are Approximate



DRAWN BY: D. Hada
DATE: August 16, 1995
REVISED BY: J. Paradis
DATE: October 12, 1995

POTENTIOMETRIC SURFACE MAP August 16, 1995
Alameda Housing 1916 Webster Street Alameda, CA

FIGURE 2
PROJECT NUMBER: 94-37-7623

WEBSTER STREET

ATLANTIC AVENUE

City Of Alameda Housing Authority
1916 Webster Street

Building

Canopy

Former
Excavation
Limits

MW-6
ND
ND

MW-4
630
230
2,200
930

MW-5

MW-3
ND
ND

MW-1
ND
ND

MW-2
ND
ND

LEGEND



Monitoring Well

2,200

THP-G (parts per billion)

930

Benzene (parts per billion)



Fence

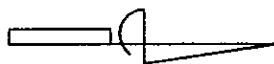
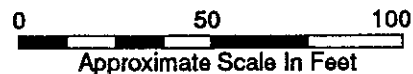
ND


Not Detected At Or Above Laboratory Reporting Limits

NOTES

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

All Locations Are Approximate



	DRAWN BY: D. Hada	DISTRIBUTION MAP OF TPH-G AND BENZENE IN GROUND WATER August 16, 1995	FIGURE 3
	DATE: August 16, 1995		
	REVISED BY: J. Paradis	Alameda Housing 1916 Webster Street Alameda, CA	PROJECT NUMBER: 94-37-7623
	DATE: October 12, 1995		



TABLES





TABLE 1
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	6.51(2)	4.14	5.09
	07/16/94		4.65	4.58
	10/10/94		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
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	7.26(2)	3.98	6.02
	07/16/94		4.86	5.14
	10/10/94		5.02	2.24
	03/29/95		NA	NA
	05/25/95		NA	NA
	08/16/95		4.60	2.66
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	6.71(2)	3.7	5.74
	07/16/94		4.41	5.03
	10/10/94		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
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



TABLE 1
GROUNDWATER ELEVATION DATA
(cont'd)

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
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

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 2
SUMMARY OF GROUNDWATER ANALYTICAL RESULTS

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

Sample ID.	Date (μ/L)	TPH-G (μ/L)	Benzene (μ/L)	Toluene (μ/L)	Ethylbenzene (μ/L)	Xylenes (μ/L)	Organic Lead (μ/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)
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)	.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 (0.5)	ND (20)
	10/10/94	ND (50)	0.5	ND (0.5)	ND (0.5)	1.2	NA
	3/29/95	NS	NS	NS	NS	NS	NS
	05/25/95	ND (50)	NS	NS	NS	ND (0.5)	NS
	08/16/95		ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.01)
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 (250)	ND (52)	ND (50)	ND (59)	ND (152)	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)	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)	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)*
	08/16/95		ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.01)



TABLE 2
SUMMARY OF GROUNDWATER ANALYTICAL RESULTS
 (cont'd)

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

Sample ID.	Date (μ/L)	TPH-G (μ/L)	Benzene (μ/L)	Toluene (μ/L)	Ethylbenzene (μ/L)	Xylenes (μ/L)	Organic Lead (μ/L)
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)
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	6.0	6.5	100	ND(0.01)
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)

NOTES:

μg/L = Micrograms per Liter (ppb)

NA = Not analyzed

NS = No sample collected

Data prior to 1/94 reported by Versar, Inc.

* = Total lead



ATTACHMENT 1
STANDARD OPERATING PROCEDURES



SAMPLE IDENTIFICATION AND CHAIN-OF-CUSTODY PROCEDURES SOP-4

Sample identification and chain-of-custody procedures ensure sample integrity, and document sample possession from the time of collection to its ultimate disposal. Each sample container submitted for analysis is labeled to identify the job number, date, time of sample collection, a sample number unique to the sample, any name(s) of on-site personnel and any other pertinent field observations also recorded on the field excavation or boring log.

Chain-of-custody forms are used to record possession of the sample from time of collection to its arrival at the laboratory. During shipment, the person with custody of the samples will relinquish them to the next person by signing the chain-of-custody form(s) and noting the date and time. The sample-control officer at the laboratory will verify sample integrity, correct preservation, confirm collection in the proper container(s), and ensure adequate volume for analysis.

If these conditions are met, the samples will be assigned unique laboratory log numbers for identification throughout analysis and reporting. The log numbers will be recorded on the chain-of-custody forms and in the legally-required log book maintained in the laboratory. The sample description, date received, client's name, and any other relevant information will also be recorded.

LABORATORY ANALYTICAL QUALITY ASSURANCE AND CONTROL SOP-5

In addition to routine instrument calibration, replicates, spikes, blanks, spiked blanks, and certified reference materials are routinely analyzed at method-specific frequencies to monitor precision and bias. Additional components of the laboratory Quality Assurance/Quality Control program include:

1. Participation in state and federal laboratory accreditation/certification programs;
2. Participation in both U.S. EPA Performance Evaluation studies (WS and WP studies) and inter-laboratory performance evaluation programs;
3. Standard operating procedures describing routine and periodic instrument maintenance;
4. "Out-of-Control"/Corrective Action documentation procedures; and,
5. Multi-level review of raw data and client reports.

GROUNDWATER PURGING AND SAMPLING SOP-7

Prior to water sampling, each well is purged by evacuating a minimum of three wetted well-casing volumes of groundwater. When required, purging will continue until either the discharge water temperature, conductivity, or pH stabilize to within 10% of previously measured values; and a maximum of ten wetted casing volumes of groundwater have been recovered, or the well is bailed dry. When practical, the groundwater sample should be collected when the water level in the well recovers to at least 80 percent of its static level. Field measurements, observations and procedures are noted.

The sampling equipment consists of a clean bailer, or stainless steel bladder pump with a "Teflon" bladder. If the sampling system is dedicated to the well, then the bailer is usually "Teflon," but the bladder pump may be PVC with a polypropylene bladder. Sample container type, preservation, and volume depends on the intended analyses.

The groundwater sample is decanted into each VOA vial in such a manner that there is no meniscus at the top of the vial. A cap is quickly secured to the top of the vial. The vial is then inverted and gently tapped to see if air bubbles are present. If none are present, the vial is labeled and refrigerated for delivery, under strict chain-of-custody, to the analytical laboratory. Label information should include a unique sample identification number, job identification number, date, time, and the sampler's initials.

For quality control purposes, a duplicate water sample may be collected from a well. When required, a trip blank is prepared at the laboratory and placed in the transport cooler. It is labeled similar to the well samples, remains in the cooler during transport, and is analyzed by the laboratory along with the groundwater samples. In addition, a field blank may be prepared in the field when sampling equipment is not dedicated. The field blank is prepared after a pump or bailer has been either steam cleaned or properly washed, prior to use in the next well, and is analyzed along with the other samples. The field blank analysis demonstrates the effectiveness of in-field cleaning procedures to prevent cross-contamination.

To minimize the potential for cross-contamination between wells, all well development and water sampling equipment not dedicated to a well is either steam cleaned or properly washed between use. As a second precautionary measure, wells are sampled in order of lowest to highest concentrations as established by available previous analytical data.

In the event the water samples cannot be submitted to the analytical laboratory on the same day they are collected (e.g., due to weekends or holidays), the samples are temporarily stored until the first opportunity for submittal either on ice in a cooler, such as when in the field, or in a refrigerator.

MEASURING LIQUID LEVELS USING A WATER LEVEL INDICATOR OR INTERFACE PROBE SOP-12

Field equipment used for liquid-level gauging typically includes the measuring probe (water level or interface) and a clean product bailer(s). The field kit also includes cleaning supplies (buckets, TSP, spray bottles, and deionized water) to be used in cleaning the equipment between wells.

Prior to measurement, the probe tip is lowered into the well until it touches bottom. Using the previously established top-of-casing or top-of-box (i.e., wellhead vault) point, the probe cord (or halyard) is marked and a measuring tape (graduated in hundredths of a foot) is used to determine the distance between the probe end and the marking on the cord. This measurement is then recorded on the liquid-level data sheet as the "Measured Total Depth" of the well.

When necessary in using the interface probe to measure liquid levels, the probe is first electrically grounded to either the metal stove pipe or another metal object nearby. When no ground is available, reproducible measurements can be obtained by clipping the ground lead to the handle of the interface probe case.

The probe tip is then lowered into the well and submerged in the groundwater. An oscillating (beeping) tone indicates the probe is in water. The probe is slowly raised until either the oscillating tone ceases or becomes a steady tone. In either case, this is the depth-to-water (DTW) indicator and the DTW measurement is made accordingly. The steady tone indicates floating hydrocarbons. In this case, the probe is slowly raised until the steady tone ceases. This is the depth-to-product (DTP) indicator and the measurement of DTP is recorded. A corrected depth to groundwater to account for floating hydrocarbons can be calculated by using the following formula:

$$CDTW = DTW - (SP.G \times LHT).$$

CDTW = Corrected depth to groundwater.

DTW = Measured depth to groundwater.

SP.G = Specific gravity: unweathered gasoline = 0.75; diesel = 0.80

LHT = Measured liquid hydrocarbon thickness.

The corresponding groundwater elevation is the difference between a previously determined well reference elevation and either the depth to groundwater or the corrected depth to groundwater.

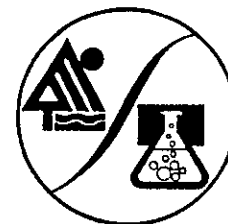
The process of lowering and raising the probe must be repeated several times to ensure accurate measurements. The DTW and DTP measurements are recorded on the liquid-level data sheet. When floating product is indicated by the probe's response, a product bailer is lowered partially through the product-water interface to confirm the product on the water surface, and as further indication of product thickness, particularly in cases where the product layer is quite thin. Either this measurement or the difference between DTW and DTP is recorded on the data sheet as "product thickness."

In order to avoid cross-contamination of wells during the liquid-level measurement process, wells are measured in the order of "clean" to "dirty" (where such information is available). In addition, all measurement equipment is cleaned with TSP or similar solution and thoroughly rinsed with deionized water before use, between measurements in respective wells, and at the completion of the day's activities.



ATTACHMENT 2
LABORATORY ANALYTICAL REPORTS
AND CHAIN-OF-CUSTODY FORMS

**EXCELCHEM
ENVIRONMENTAL LABS**



500 Giuseppe Court, Suite 9
Roseville, CA 95678
Phone#: (916) 773-3664 Fax#: (916) 773-4784

ANALYSIS REPORT

Attention: Mr. Bill Bassett Date Sampled : 08-16-95
FUGRO-WEST, INC. Date Received: 08-22-95
44 Montgomery St., Ste 1010 TPHg Analyzed: 08-28-95
San Francisco, CA 94104 BTEX Analyzed: 08-28-95
Project #: 9437-7623 Matrix : Water

	Benzene PPB	Toluene PPB	Ethyl- benzene PPB	Total Xylenes PPB	TPHg PPB
Reporting Limit:	0.5	0.5	0.5	0.5	50

SAMPLE

Laboratory Identification:

MW-1	ND	ND	ND	ND	ND
W0895316					

ppb = Parts per billion = ug/L = micrograms per liter

ND = Not detected. Compound(s) may be present at concentrations below the reporting limit.

ANALYTICAL PROCEDURES

BTEX-- Benzene, toluene, ethylbenzene, and total xylene isomers (BTEX) are analyzed by using EPA Method 602 which utilizes a gas chromatograph (GC) equipped with a photoionization detector (PID).

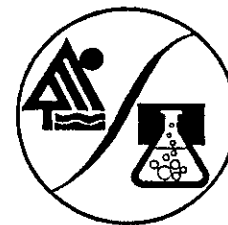
TPHg--Total petroleum hydrocarbons as gasoline (low-to-medium boiling points) are analyzed by using modified EPA Method 8015, which utilizes a GC equipped with an FID.


Laboratory Representative

08-30-95
Date Reported

**EXCELCHEM
ENVIRONMENTAL LABS**

500 Giuseppe Court, Suite 9
Roseville, CA 95678
Phone#: (916) 773-3664 Fax#: (916) 773-4784



ANALYSIS REPORT

Attention: Mr. Bill Bassett
FUGRO-WEST, INC.
44 Montgomery St., Ste 1010
San Francisco, CA 94104
Project #: 9437-7623

Date Sampled : 08-16-95
Date Received: 08-22-95
TPHg Analyzed: 08-29-95
BTEX Analyzed: 08-29-95
Matrix : Water

	<u>Benzene</u>	<u>Toluene</u>	<u>Ethyl- benzene</u>	<u>Total Xylenes</u>	<u>TPHg</u>
	<u>PPB</u>	<u>PPB</u>	<u>PPB</u>	<u>PPB</u>	<u>PPB</u>
Reporting Limit:	0.5	0.5	0.5	0.5	50

SAMPLE

Laboratory Identification:

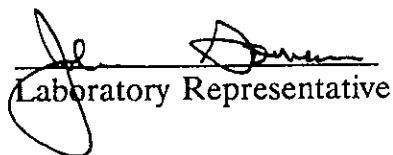
MW-2	ND	ND	ND	ND	ND
W0895317					

ppb = Parts per billion = ug/L = micrograms per liter
ND = Not detected. Compound(s) may be present at concentrations below the reporting limit.

ANALYTICAL PROCEDURES

BTEX-- Benzene, toluene, ethylbenzene, and total xylene isomers (BTEX) are analyzed by using EPA Method 602 which utilizes a gas chromatograph (GC) equipped with a photoionization detector (PID).

TPHg--Total petroleum hydrocarbons as gasoline (low-to-medium boiling points) are analyzed by using modified EPA Method 8015, which utilizes a GC equipped with an FID.


Laboratory Representative

08-30-95
Date Reported

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Phone#: (916) 773-3664 Fax#: (916) 773-4784



ANALYSIS REPORT

Attention: Mr. Bill Bassett
FUGRO-WEST, INC.
44 Montgomery St., Ste 1010
San Francisco, CA 94104
Project #: 9437-7623

Date Sampled : 08-16-95
Date Received: 08-22-95
TPHg Analyzed: 08-30-95
BTEX Analyzed: 08-30-95
Matrix : Water

	Benzene <u>PPB</u>	Toluene <u>PPB</u>	Ethyl- benzene <u>PPB</u>	Total Xylenes <u>PPB</u>	TPHg <u>PPB</u>
Reporting Limit:	0.5	0.5	0.5	0.5	50

**SAMPLE
Laboratory Identification:**

MW-3 W0895318	ND	ND	ND	ND	ND
MW-4 W0895319	230	2.6	23	1.9	650

ppb = Parts per billion = ug/L = micrograms per liter
ND = Not detected. Compound(s) may be present at concentrations below the reporting limit.

ANALYTICAL PROCEDURES

BTEX-- Benzene, toluene, ethylbenzene, and total xylene isomers (BTEX) are analyzed by using EPA Method 602 which utilizes a gas chromatograph (GC) equipped with a photoionization detector (PID).
TPHg--Total petroleum hydrocarbons as gasoline (low-to-medium boiling points) are analyzed by using modified EPA Method 8015, which utilizes a GC equipped with an FID.


Laboratory Representative

08-30-95
Date Reported

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ENVIRONMENTAL LABS**

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Roseville, CA 95678
Phone#: (916) 773-3664 Fax#: (916) 773-4784



ANALYSIS REPORT

Attention: Mr. Bill Bassett
FUGRO-WEST, INC.
44 Montgomery St., Ste 1010
San Francisco, CA 94104
Project #: 9437-7623

Date Sampled : 08-16-95
Date Received: 08-22-95
TPHg Analyzed: 08-29-95
BTEX Analyzed: 08-29-95
Matrix : Water

	Benzene <u>PPB</u>	Toluene <u>PPB</u>	Ethyl- benzene <u>PPB</u>	Total Xylenes <u>PPB</u>	TPHg <u>PPB</u>
Reporting Limit:	5.0	5.0	5.0	5.0	2,000

SAMPLE

Laboratory Identification:

MW-5 930 6.0 6.5 100 2,200
W0895320

ppb = Parts per billion = ug/L = micrograms per liter
ND = Not detected. Compound(s) may be present at concentrations below the reporting limit.

ANALYTICAL PROCEDURES

BTEX-- Benzene, toluene, ethylbenzene, and total xylene isomers (BTEX) are analyzed by using EPA Method 602 which utilizes a gas chromatograph (GC) equipped with a photoionization detector (PID).

TPHg--Total petroleum hydrocarbons as gasoline (low-to-medium boiling points) are analyzed by using modified EPA Method 8015, which utilizes a GC equipped with an FID.

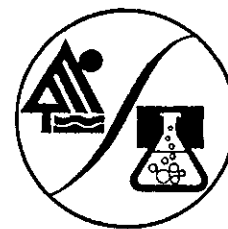


Laboratory Representative

08-30-95
Date Reported

**EXCELCHEM
ENVIRONMENTAL LABS**

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Roseville, CA 95678
Phone#: (916) 773-3664 Fax#: (916) 773-4784



ANALYSIS REPORT

Attention: Mr. Bill Bassett
FUGRO-WEST, INC.
44 Montgomery St., Ste 1010
San Francisco, CA 94104
Project #: 9437-7623

Date Sampled : 08-16-95
Date Received: 08-22-95
TPHg Analyzed: 08-28-95
BTEX Analyzed: 08-28-95
Matrix : Water

	<u>Benzene</u>	<u>Toluene</u>	<u>Ethyl- benzene</u>	<u>Total Xylenes</u>	<u>TPHg</u>
	<u>PPB</u>	<u>PPB</u>	<u>PPB</u>	<u>PPB</u>	<u>PPB</u>
Reporting Limit:	0.5	0.5	0.5	0.5	50

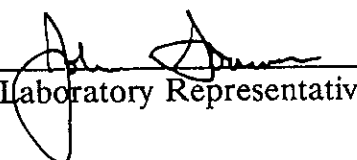
SAMPLE
Laboratory Identification:

MW-6	ND	ND	ND	ND	ND
W0895321					

ppb = Parts per billion = ug/L = micrograms per liter
ND = Not detected. Compound(s) may be present at concentrations below the reporting limit.

ANALYTICAL PROCEDURES

BTEX-- Benzene, toluene, ethylbenzene, and total xylene isomers (BTEX) are analyzed by using EPA Method 602 which utilizes a gas chromatograph (GC) equipped with a photoionization detector (PID).
TPHg--Total petroleum hydrocarbons as gasoline (low-to-medium boiling points) are analyzed by using modified EPA Method 8015, which utilizes a GC equipped with an FID.


Laboratory Representative

08-30-95
Date Reported

Metal, EPA Method 6010
Project: Alameda Housing (9437-7623)

Attention: Mr. John Somers
Excelchem Env. Labs
500 Giuseppe Ct., Suite 9
Roseville, CA 95678

Date Received: Aug 16, 1995
Date Requested: Aug 22, 1995
Date Analyzed: Aug 24, 1995
Invoice #: 5356

Matrix : Water

Units: mg/L

Lab ID	Client ID	Lead (Pb) Result	Reporting Limit	Dilution 1:
ST95-08-1166A	MW-1	ND	0.010	1
ST95-08-1167A	MW-2	ND	0.010	1
ST95-08-1168A	MW-3	ND	0.010	1
ST95-08-1169A	MW-4	ND	0.010	1
ST95-08-1170A	MW-5	ND	0.010	1
ST95-08-1171A	MW-6	ND	0.010	1

ppm = parts per million = mg/L = milligrams per Liter
ND = Not Detected. Compound(s) may be present at concentrations below the detection limit.



R. L. James, Principal Chemist

Aug 25, 1995
Date Reported

SPARGER TECHNOLOGY ANALYTICAL LABORATORY, INC. IS CERTIFIED BY THE STATE OF CALIFORNIA.
DEPARTMENT OF HEALTH SERVICES AS A HAZARDOUS WASTE TESTING LABORATORY
(Certification No. 1614)

Metal LCS / LCSD Recoveries

Attention: Mr. John Somers
Excelchem Env. Labs
500 Giuseppe Ct., Suite 9
Roseville, CA 95678

Date Samples: Aug 16, 1995
Date Received: Aug 22, 1995
Date Analyzed: Aug 24, 1995

Project #: 9437-7623

Project Name: Alameda Housing

Client ID: LCS/LCSD

LAB ID: 950723A

Matrix: Water

Dilution:

Element	Spike Conc.	LCS	LCS % Recovery	LCSD	LCSD % Recovery	% RSD
Lead	1.0	0.99	99%	0.98	98%	1%

Unit: (mg/L)

ppm= parts per million = mg/L = milligram per Liter

ND = Not Detected. Compound(s) may be present at concentrations below the detection limit.



R. L. James, Principal Chemist

Aug. 25, 1995

Date Reported

Metal MS / MSD Recoveries

Attention: Mr. John Somers
Excelchem Env. Labs
500 Giuseppe Ct., Suite 9
Roseville, CA 95678

Date Sampled: Aug 16, 1995
Date Received: Aug 22, 1995
Date Analyzed: Aug 24, 1995

Project #: 9437-7623

Project Name: Alameda Housing

Client ID: MS/MSD

LAB ID: ST95-08-1166A MS
ST95-08-1166A MSD

Matrix: Water

Dilution:

Element	Sample Conc.	Spike Conc.	MS	MS % Recovery	MSD	Units: (mg/L)	
						MSD % Recovery	% RSD
Lead (Pb)	ND	1.0	0.78	78%	0.77	77%	1%

ppm = parts per million = mg/L = milligram per Liter

ND = Not Detected. Compound(s) may be present at concentrations below the detection limit.



R. L. James, Principal Chemist

Aug. 25, 1995
Date Reported

SPARGER TECHNOLOGY ANALYTICAL LABORATORY, INC. IS CERTIFIED BY THE STATE OF CALIFORNIA
DEPARTMENT OF HEALTH SERVICES AS A HAZARDOUS WASTE TESTING LABORATORY
(Certification No. 1814)

