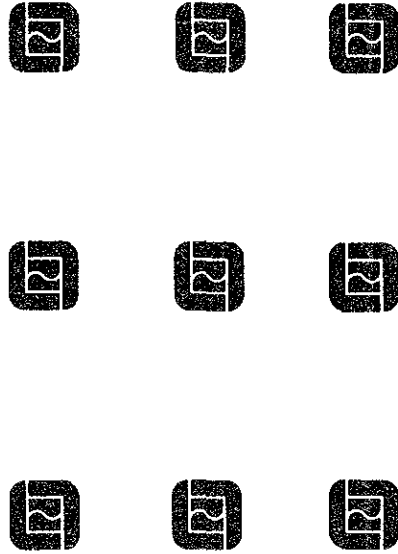


Rec'd 7/30/93
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**Ground-Water Investigation Report and
Quarterly Monitoring Report for
April 1 through June 30, 1993
Former Bay Area Warehouse Property
Emeryville, California**

July 30, 1993
1649.13

Prepared for
Catellus Development Corporation
201 Mission Street
San Francisco, California



LEVINE·FRICKE



LEVINE•FRICKE

ENGINEERS, HYDROGEOLOGISTS & APPLIED SCIENTISTS

July 30, 1993

LF 1649.13

Ms. Susan Hugo
Alameda County Health Care Services Agency
80 Swan Way, Suite 200
Oakland, California 94621

Subject: Ground-Water Investigation Report and Quarterly
Monitoring Report for April 1 through June 30, 1993,
Former Bay Area Warehouse Property, Emeryville,
California

Dear Ms. Hugo:

Enclosed is the ground-water investigation report and quarterly monitoring report for the period from April 1 through June 30, 1993, for the former Bay Area Warehouse (BAW) property, located in Emeryville, California. This report has been prepared on behalf of Catellus Development Corporation ("Catellus") in accordance with Levine-Fricke's work plan dated April 30, 1993, and submitted to the Alameda Health Care Services Agency (ACHA).

As you are aware, this work was conducted in accordance with your October 13, 1992 letter to Mr. Charles Wellnitz of BAW, former tenant at the property and the owner and operator of the gasoline underground storage tank (UST) formerly located at the BAW property. Your October 13, 1992 letter to Mr. Wellnitz directed BAW to conduct a ground-water investigation at the BAW property to assess the possible effect of petroleum hydrocarbons from the former UST on shallow ground water in the vicinity of the tank excavation. Because BAW has failed and refused to perform any such investigation, Catellus, as the current owner of the BAW Property, was compelled to proceed with installation of the monitoring well.

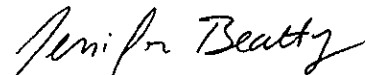
The enclosed report describes field activities conducted and presents the analytical results for soil and ground-water samples collected during investigation and monitoring activities.

1900 Powell Street, 12th Floor
Emeryville, California 94608
(510) 652-4500
Fax (510) 652-2246

LEVINE·FRICKE

Please call me if you have any questions or comments regarding this report.

Sincerely,



Jenifer Beatty
Project Hydrogeologist

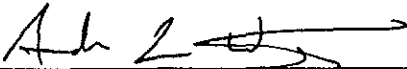
cc: Richard Hiett, RWQCB
Kimberly Brandt, Catellus
Pat Cashman, Catellus

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CERTIFICATION

All hydrogeologic and geologic information, conclusions, and recommendations have been prepared under the supervision of and reviewed by a Levine·Fricke California Registered Geologist.



Andrew L. Wright
Senior Associate Geologist
California Registered Geologist (4592)

7/20/93

Date

July 30, 1993

LF 1649.13

**GROUND-WATER INVESTIGATION REPORT
AND QUARTERLY MONITORING REPORT FOR
APRIL 1 THROUGH JUNE 30, 1993
FORMER BAY AREA WAREHOUSE PROPERTY, EMERYVILLE, CALIFORNIA**

1.0 INTRODUCTION

This report describes field activities and presents analytical results for work conducted at the former Bay Area Warehouse (BAW) property located in Area C of the Yerba Buena/East Baybridge Project Site in Emeryville, California (Figure 1). Work conducted at the former BAW property included the installation, development, and sampling of shallow monitoring well LF-32, located just downgradient from the former BAW underground storage tank (Figure 2). All work was conducted by Levine-Fricke on behalf of Catellus Development Corporation in accordance with the work plan dated April 30, 1993 (Levine-Fricke 1993), and submitted to the Alameda County Health Care Services Agency (ACHA).

2.0 BACKGROUND AND PREVIOUS INVESTIGATIONS

On November 20, 1991, a gasoline underground storage tank (UST) was removed from the BAW property by consultants retained by BAW. A Levine-Fricke geologist was present to collect a sample of the fuel product contained in the UST before the UST was removed and to observe removal of the UST. The product sample was submitted to Friedman & Bruya of Seattle, Washington, for fuel characterization analysis. Results reported by Friedman & Bruya indicated that the product was gasoline with trace amounts of weathered diesel.

Tank removal activities are described in the December 1991 "Report of Findings, Underground Storage Tank Removal," prepared by the consultants for BAW and submitted to the ACHA.

Results presented in that report indicated that benzene was not detected in any soil samples collected by BAW from the UST excavation, and that total petroleum hydrocarbon (TPH) as gasoline (TPHg) concentrations in these soil samples were 3 parts per million (ppm) or less. Results for the grab ground-water sample collected from the UST excavation by BAW

indicated the presence of benzene and TPHg at concentrations of 0.24 ppm and 8.8 ppm, respectively. Soil and ground-water samples were not submitted for laboratory analysis of TPH as diesel (TPHd).

On October 13, 1992, the ACHA sent a letter to Mr. Charles Wellnitz of BAW, directing BAW to conduct a ground-water investigation at the BAW property to assess the possible effect of petroleum hydrocarbons from the former UST on shallow ground water in the vicinity of the tank excavation. Because BAW has refused to perform any such investigation, Catellus was compelled to proceed with installation of the monitoring well.

3.0 INSTALLATION OF GROUND-WATER MONITORING WELL LF-32

Shallow ground-water monitoring well LF-32 was installed on May 20, 1993, downgradient from and within 10 feet of the former UST location, as shown on Figure 2. Well LF-32 was installed to assess whether a possible release of petroleum hydrocarbons has affected shallow ground water in the vicinity of the former UST. The methods used to install, develop, and sample well LF-32 are discussed in Sections 3.1 through 3.3.

Following well installation, a quarterly ground-water monitoring program was implemented at BAW in accordance with Levine·Fricke's work plan dated April 30, 1993 (Levine·Fricke 1993). Quarterly monitoring activities are discussed in Section 4.0.

3.1 Drilling Activities

Before drilling began, the appropriate permits were obtained from the Alameda County Flood Control and Water Conservation District, Zone 7. Drilling activities were conducted under the supervision of a California Registered Geologist. The borehole for the monitoring well was drilled by a licensed well drilling contractor using a truck-mounted drilling rig equipped with 8-inch outside-diameter hollow augers. Ground water was first encountered in the borehole at approximately 7 feet below the ground surface (bgs), and the borehole was completed at a depth of 20 feet bgs.

Soil samples were collected for lithologic description at 2.5-foot-depth intervals by driving a brass-tube-lined split-spoon sampler ahead of the auger into undisturbed soil. Sediments encountered during drilling consisted primarily of gravelly silty clays to silty sandy gravel to gravelly sandy

clay. All downhole drilling and sampling equipment were either steam cleaned or washed with Alconox detergent and water before use.

3.2 Soil Sampling and Chemical Analysis Results

Soil samples were field screened with a hand-held organic vapor meter (OVM) and described using the Unified Soil Classification System. Lithologic descriptions and OVM measurements were recorded in the field on a borehole log form, a copy of which is contained in Appendix A.

No OVM measurements greater than 1.0 ppm above background readings were recorded and no evidence of staining was observed for the soil samples collected during drilling. One soil sample was collected from just above the ground-water interface (LF-32-5) and submitted for laboratory analysis to American Environmental Network of Pleasant Hill, California. The soil sample was submitted for analysis of TPHg and benzene, toluene, ethylbenzene, and xylenes (BTEX) using EPA Methods 8020/5030 GCFID; TPHd using EPA Method 3550 GCFID; and organic lead.

The analytical results for soil sample LF-32-5 did not indicate the presence of TPHg, BTEX, TPHd, or organic lead above laboratory detection limits. Laboratory data sheets are presented in Appendix B.

3.3 Monitoring Well Installation

A flush-threaded, 2-inch-diameter polyvinyl chloride (PVC) blank casing with factory-made slotted well screen (0.02-inch-wide slots) was installed into the completed borehole through the hollow augers. The screened interval in the well extends from approximately 3 to 18 feet bgs.

A filter pack consisting of Number 3 Monterey sand was poured into the annular space between the hollow auger and the slotted PVC well casing as the auger was gradually removed from the borehole. The filter pack extends approximately 6 inches above the top of the slotted PVC casing. Prehydrated bentonite slurry was placed above the sand pack to isolate the perforated interval from material above and prevent the entrance of grout into the sand pack. A cement-bentonite grout was then placed above the bentonite to the land surface to seal the remainder of the borehole interval from surface-water infiltration. The well was completed above

grade with a locking cap and a steel field monument set in concrete to protect the well from surface water and damage. Well construction data are presented in Appendix A.

4.0 QUARTERLY MONITORING ACTIVITIES CONDUCTED DURING APRIL 1 THROUGH JUNE 30, 1993

A quarterly monitoring program has been implemented at BAW in accordance with Levine-Fricke's work plan dated April 30, 1993 (Levine-Fricke 1993). The activities conducted and the results obtained are presented below.

4.1 Collection of Water-Level Measurements

The top-of-casing elevation of newly installed monitoring well LF-32 was surveyed to the nearest 0.01 foot by Nolte Associates of Walnut Creek, California, a licensed surveyor. Depth to water was measured using an electric water-level sounding probe to the nearest 0.01 foot, relative to the top of the PVC well casing. The depth to water measured in well LF-32 on May 24, 1993, was 6.35 feet bgs.

4.2 Well Development

Well LF-32 was developed on May 26, 1993, by overpumping and surging the well to remove sediment from around the screened interval and enhance hydraulic communication with the surrounding formation. Approximately 18 well casing volumes of ground water were removed from the well using a centrifugal pump. Parameters such as pH, temperature, specific conductance, quantity, and clarity of water withdrawn were measured and recorded during this process. Water-quality sampling sheets are included in Appendix C.

4.3 Ground-Water Sampling and Laboratory Analysis

Ground-water samples were collected immediately following well development using a clean Teflon bailer. Ground-water samples were submitted to Anametrix, Inc., of San Jose, California, a state-certified laboratory, and analyzed for TPHg and BTEX using modified EPA Method 8015/8020, TPHd using EPA Method 3510 GCFID, and organic lead.

Samples collected for analysis of TPHg and BTEX were placed into laboratory-supplied, 40-milliliter glass vials preserved with hydrochloric acid. The glass vials were filled to capacity, capped, and checked for trapped air bubbles. Samples collected for TPHd and organic lead analyses were

poured into laboratory-supplied 1-liter amber bottles. Samples were placed in an ice-chilled cooler immediately after collection for transportation under chain-of-custody protocols to a state-certified laboratory for chemical analysis.

4.4 Results of Monitoring Activities

Ground-water elevation measurements for BAW and vicinity are included on Figure 2, which presents ground-water elevation data and ground-water elevation contours for the entire Yerba Buena Project Site. Depth-to-water measurements collected on May 24, 1993, indicate that shallow ground-water flow beneath BAW is toward the southwest, with an average hydraulic gradient of approximately 0.009 ft/ft. These results are consistent with ground-water flow directions previously reported for this area of the Site.

Analytical results for ground-water samples collected from newly installed well LF-32 do not indicate the presence of TPHg, BTEX, or organic lead. TPHd was detected at a concentration of 0.440 ppm. Laboratory data sheets for ground-water samples are presented in Appendix D.

5.0 CONCLUSIONS AND RECOMMENDATIONS

Analytical results for the soil sample collected from the boring for monitoring well LF-32 indicate that soil above the ground-water interface in the boring has not been affected by petroleum hydrocarbons. These results are consistent with OVM readings recorded during drilling.

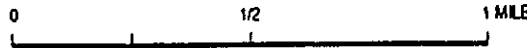
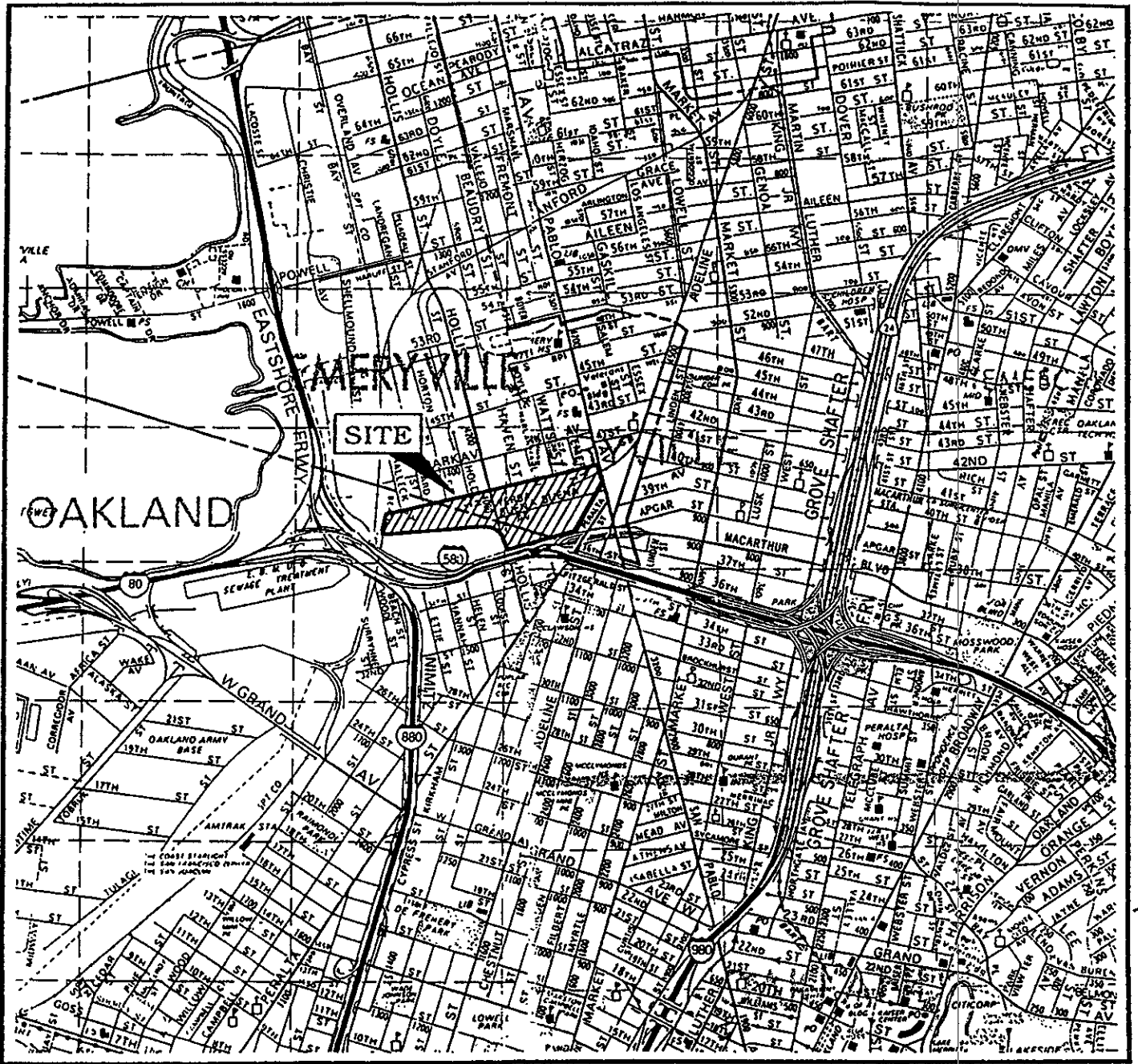
Analytical results for ground-water samples collected from well LF-32 indicate that shallow ground water has not been significantly affected by petroleum hydrocarbons. TPHg and BTEX, which were previously detected at low concentrations in soil and ground-water samples collected during tank removal activities, were not identified above method detection limits in the ground-water samples collected from well LF-32. The detection of a low concentration of TPHd in ground water may be related to the trace amount of diesel detected in the product sample collected from the UST. Soil and ground-water samples collected during tank removal activities were not analyzed for the presence of TPHd.

Well LF-32 will continue to be monitored on a quarterly basis through March 1994 to assess the potential effects on shallow ground water from the possible release of petroleum hydrocarbons from the former UST.

REFERENCES

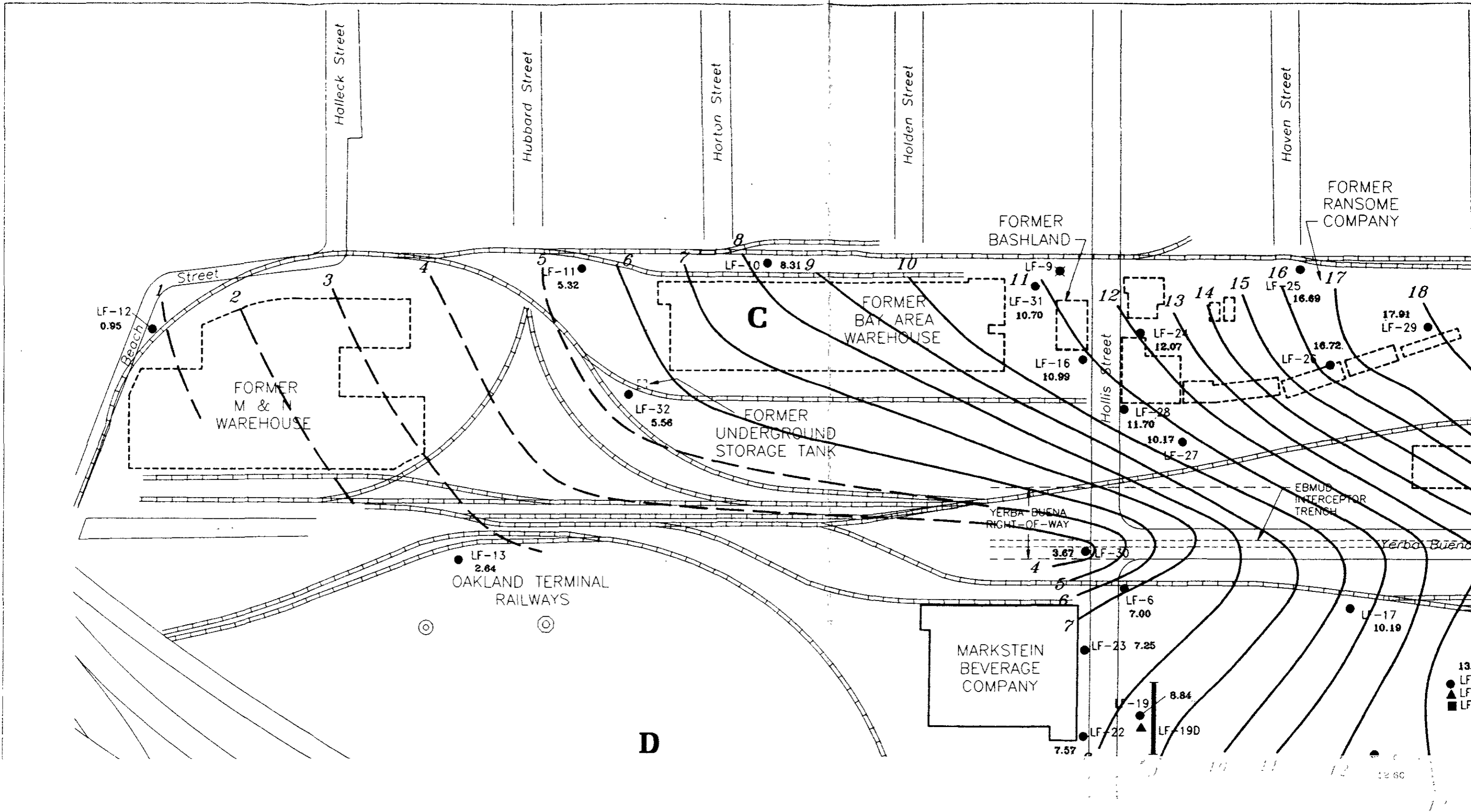
Levine-Fricke, Inc. 1991. Correspondence to Mr. Don Marini of Catellus Development Corporation. Subject: Summary of Underground Fuel Storage Tank Removal, Former Bay Area Warehouse, Yerba Buena Project Site, Emeryville and Oakland, California. December 9.

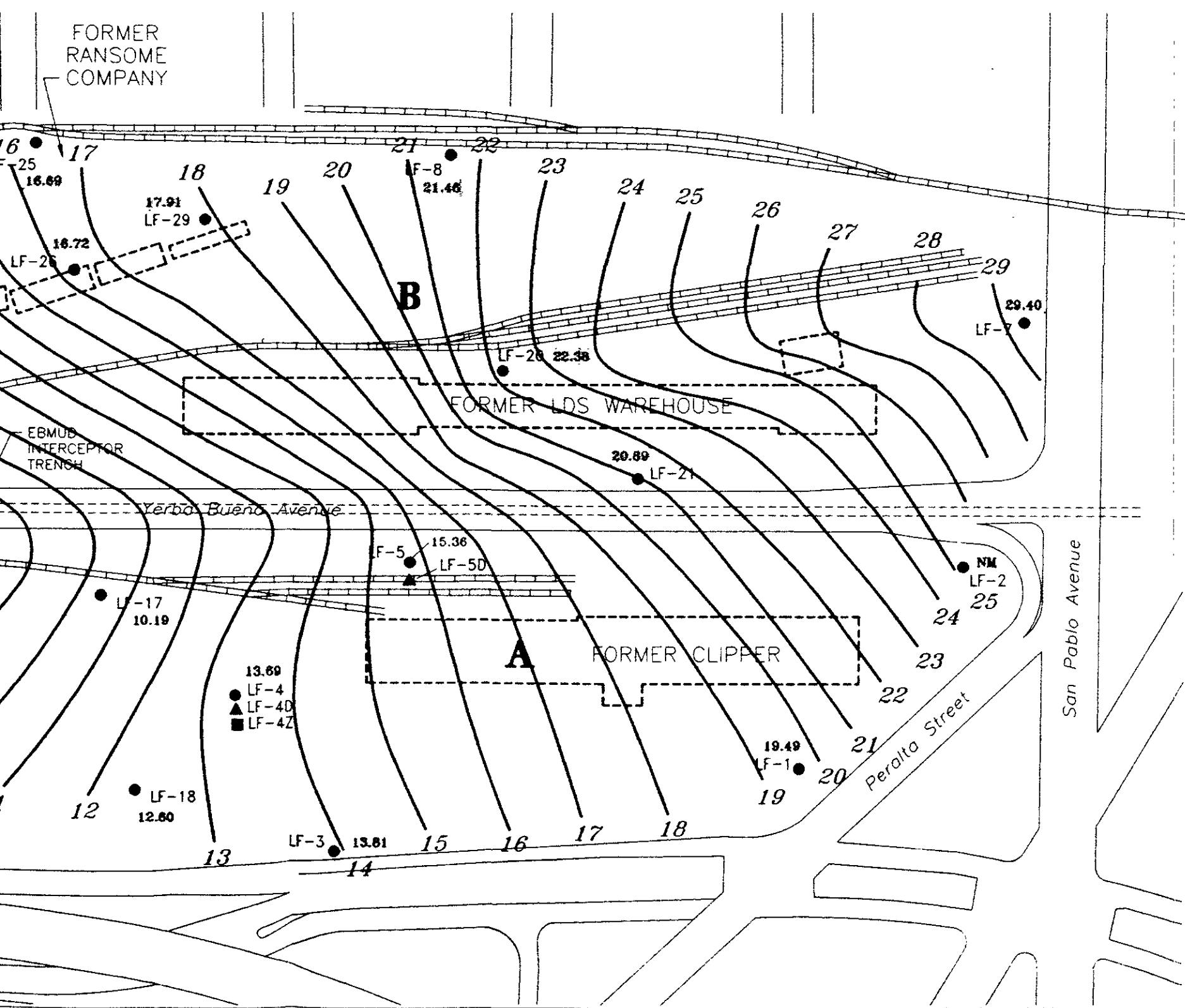
———. 1993. Levine-Fricke, Inc. 1993. Work Plan to Install One Ground-Water Monitoring Well and Conduct Quarterly Monitoring, Bay Area Warehouse Property, Emeryville, California. April 30.



MAP SOURCE:
Alameda & Contra Costa Counties,
Thomas Bros. map, 1990 Edition

Figure 1: SITE LOCATION MAP
YERBA BUENA PROJECT SITE





- MONITORING WELL
- ▲ MONITORING WELL
- DEEPER (62 FEET) MONITORING WELL LOCATION
- ABANDONED WELL
- LOCATION OF FORMER BUSINESSES
- 29.40 GROUND-WATER ELEVATION (FEET, MEAN SEA LEVEL)
- 26 GROUND-WATER ELEVATION CONTOUR (FEET, MEAN SEA LEVEL)
- NM NOT MEASURED

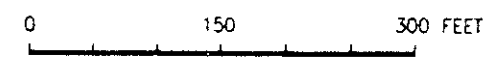
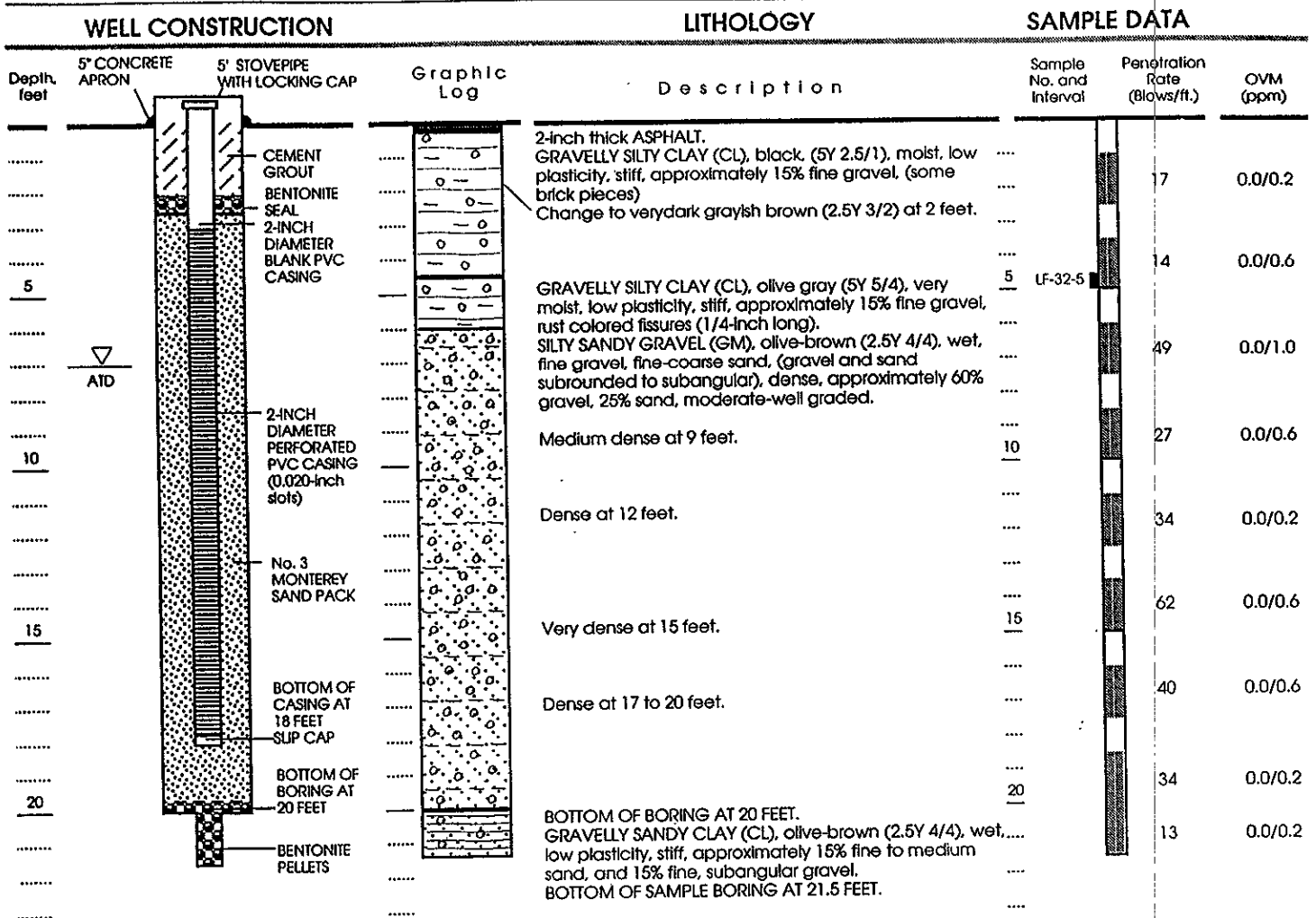


Figure 2 :
 SHALLOW GROUND-WATER
 ELEVATION CONTOURS
 MAY 24, 1993
 YERBA BUENA PROJECT SITE
 EMERYVILLE AND OAKLAND, CALIFORNIA

Project No 1649 **LEVINE-FRICKE**
 ENGINEERS, HYDROGEOLOGISTS, & APPLIED SCIENTISTS

APPENDIX A
LITHOLOGIC LOG FOR MONITORING WELL LF-32



EXPLANATION

- Clay
- Silt
- Sand
- Gravel

Well Permit No.: 93262
 Date well drilled: MAY 20, 1993
 LF Geologist: W.E. Madson
 Sampling method: Split Spoon with Hammer
 Drilling method: Hollow Stem Auger
 Drilling company: Gregg Drilling
 Driller: Chris St. Pierre
 Boring size: 8"

- Split Spoon Sampler
- OVM (ppm) Organic Vapor Meter reading in parts per million (ppm)
- Water level at time of drilling
- Sample retained for chemical analysis

Approved by: *Daniel J. Buehler R.G. 5300*

Figure A1: WELL CONSTRUCTION AND LITHOLOGY FOR WELL LF-32

APPENDIX B
LABORATORY DATA SHEETS FOR SOIL SAMPLES

American Environmental Network

Certificate of Analysis

DOHS Certification: 1172

AIHA Accreditation 94523-001

PAGE 1 OF 7

LEVINE-FRICKE
1900 POWELL STREET
12TH FLOOR
EMERYVILLE, CA 94608
ATTN: JENIFER BEATTY

REPORT DATE: 06/24/93
DATE SAMPLED: 05/20/93
DATE RECEIVED: 05/21/93

CLIENT PROJECT ID: 1649.13
C.O.C. SERIAL NO: 9849
PROJ. NAME: YERBA BUENA-BAY
AREA WAREHOUSE

AEN JOB NO: 9305145

PROJECT SUMMARY:

On May 21, 1993, this laboratory received one (1) soil sample.

Client requested the sample be analyzed for organic parameters. Portion of soil sample for Organic Lead was subcontracted to a DOHS certified laboratory. Sample identification, methodologies, results and dates analyzed are summarized on the following pages.

All laboratory quality control parameters were found to be within established limits. Batch QC data is included at the end of this report.

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


Larry Klein
General Manager

Results FAXed 06/02/93

COPY

RECEIVED

JUN 25 1993

LEVINE-FRICKE

LEVINE-FRICKE

DATE SAMPLED: 05/20/93
DATE RECEIVED: 05/21/93
CLIENT PROJECT ID: 1649.13

REPORT DATE: 06/24/93

AEN JOB NO: 9305145

Client Sample Id.	AEN Lab Id.	Extractable Hydrocarbons as Diesel (mg/kg)
----------------------	----------------	---

LF-32-5.0	01A	ND
-----------	-----	----

Reporting Limit		1
-----------------	--	---

EPA Method: 3550 GCFID

Instrument: C

Date Extracted: 05/27/93

Date Analyzed: 06/01/93

ND = Not Detected

LEVINE-FRICKE

SAMPLE ID: LF-32-5.0
 CLIENT PROJ. ID: 1649.13
 DATE SAMPLED: 05/20/93
 DATE RECEIVED: 05/21/93
 REPORT DATE: 06/24/93

AEN LAB NO: 9305145-01A
 AEN JOB NO: 9305145
 DATE ANALYZED: 06/01/93
 INSTRUMENT: F

BTEX AND HYDROCARBONS (SOIL MATRIX)
 METHOD: EPA 8020, 5030 GCFID

COMPOUND	CAS #	CONCENTRATION (ug/kg)	REPORTING LIMIT (ug/kg)
Benzene	71-43-2	ND	5
Toluene	108-88-2	ND	5
Ethylbenzene	100-41-4	ND	5
Xylenes, Total	1330-20-7	ND	5

PURGEABLE HYDROCARBONS AS:

Gasoline ND mg/kg 0.2 mg/kg

ND = Not Detected

QUALITY CONTROL DATA

DATE EXTRACTED: 05/26/93
 DATE ANALYZED: 05/27/93
 CLIENT PROJ. ID: 1649.13

AEN JOB NO: 9305145
 SAMPLE SPIKED: 9305188-01A
 INSTRUMENT: C

MATRIX SPIKE RECOVERY SUMMARY
 TPH EXTRACTABLE SOIL
 METHOD: EPA 3550 GCFID

ANALYTE	Spike Conc. (mg/kg)	Sample Result (mg/kg)	MS Result (mg/kg)	MSD Result (mg/kg)	Average Percent Recovery	RPD
Diesel	40.0	ND	30.0	25.4	69.3	16.6

CURRENT QC LIMITS (Revised 05/15/92)

Analyte	Percent Recovery	RPD
Diesel	(44.1-105.8)	24.3

METHOD BLANK RESULT

Lab Id.	Extractable Hydrocarbons as Diesel (mg/kg)
052793-METHOD BLANK	ND

Reporting Limit: 1
 Method: 3550 GCFID
 Instrument: C
 Date Extracted: 05/27/93
 Date Analyzed: 06/01/93

MS = Matrix Spike
 MSD = Matrix Spike Duplicate
 RPD = Relative Percent Difference
 ND = Not Detected

INSTRUMENT: F
CLIENT PROJ. ID: 1649.13

AEN LAB NO: DAILY BLANK
DATE ANALYZED: 06/01/93

BTXE AND HYDROCARBONS (METHOD BLANK)
METHOD: EPA 8020, 5030 GCFID
(SOIL MATRIX)

	CAS #	CONCENTRATION (ug/kg)	REPORTING LIMIT (ug/kg)
Benzene	71-43-2	ND	5
Toluene	108-88-3	ND	5
Ethylbenzene	100-41-4	ND	5
Xylenes, Total	1330-20-7	ND	5
PURGEABLE HYDROCARBONS AS:			
Gasoline		ND mg/kg	0.2 mg/kg

ND = Not Detected

QUALITY CONTROL DATA

CLIENT PROJ. ID: 1649.13

AEN JOB NO: 9305145

INSTRUMENT: F

SURROGATE STANDARD RECOVERY SUMMARY
METHOD: EPA 8020
(SOIL MATRIX)

Date Analyzed	SAMPLE IDENTIFICATION		SURROGATE RECOVERY (PERCENT)
	Client Id.	Lab Id.	Fluorobenzene
06/01/93	LF-32-5.0	01A	98.8
06/01/93		Daily Blank	99.4

CURRENT QC LIMITS

<u>ANALYTE</u>	<u>PERCENT RECOVERY</u>
Fluorobenzene	(70-115)

QUALITY CONTROL DATA

DATE ANALYZED: 06/01/93
 SAMPLE SPIKED: 9305166-09A
 CLIENT PROJ. ID: 1649.13

AEN JOB NO: 9305145
 INSTRUMENT: F

MATRIX SPIKE RECOVERY SUMMARY
 METHOD: EPA 8020, 5030 GCFID
 (SOIL MATRIX)

ANALYTE	Spike Conc. (ug/kg)	Sample Result (ug/kg)	MS Result (ug/kg)	MSD Result (ug/kg)	Average Percent Recovery	RPD
Benzene	14.3	ND	13.9	14.1	97.9	1.4
Toluene	49.1	ND	49.0	50.4	101.6	2.8
Hydrocarbons as Gasoline	500	ND	467	524	99.1	11.5

CURRENT QC LIMITS (Revised 05/14/92)

Analyte	Percent Recovery	RPD
Benzene	(79.4-125.2)	9.8
Toluene	(84.4-116.8)	10.0
Gasoline	(53.7-124.2)	15.1

MS = Matrix Spike
 MSD = Matrix Spike Duplicate
 RPD = Relative Percent Difference
 ND = Not Detected

APPENDIX C
WATER-QUALITY SAMPLING SHEETS

DEVELOP & SAMPLE

LEVINE-FRICKE

PAGE 1/2

WATER-QUALITY SAMPLING INFORMATION

Project Name Verbo Buenas Project No. 1649.13
 Date 5/26/93 Sample No. LF-32
 Samplers Name WEA, SCH (SKS) LF-132
 Sampling Location LF-32
 Sampling Method Cent. pump w/ Teflon bailer
 Analyses Requested TPHg/BTEX / IFA Method 3510-TPHg Pb
 Number and Types of Sample Bottles used Glass Litr Bottles
 Method of Shipment Courier

20.22
- 6.04

14.18
x .16

85.08
141.80

2.2688

GROUND WATER	SURFACE WATER
Well No. <u>LF-32</u>	Stream Width _____
Well Diameter (in.) <u>2</u>	Stream Depth _____
Depth to Water, Static (ft) <u>6.04</u>	Stream Velocity _____
Water in Well Box <u>No</u>	Rained recently? _____
Well Depth (ft) <u>22.20</u>	Other _____
Height of Water Column in Well <u>20.22</u>	2-inch casing = 0.16 gal/ft
Water Volume in Well <u>2.2688 ~ 2.5</u>	4-inch casing = 0.65 gal/ft
	5-inch casing = 1.02 gal/ft
	6-inch casing = 1.47 gal/ft

LOCATION MAP

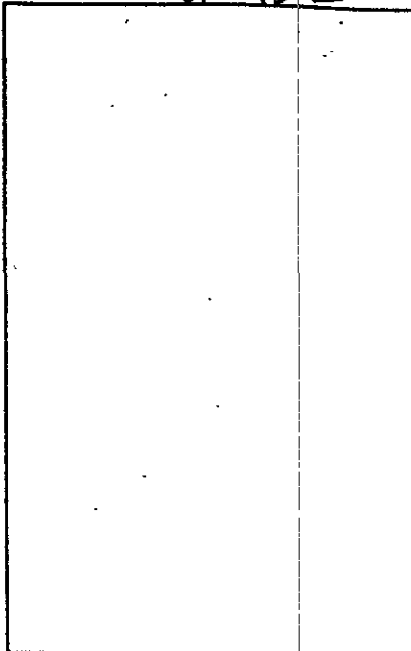
TIME	DEPTH TO WATER (feet)	VOLUME WITHDRAWN (gallons)	TEMP (deg. C)	pH (S.U.)	COND (mhos/cm)	OTHER		REMARKS
9:31								START
9:33		5	19.2	7.46	1712			VERY TURBID
9:36								STOP PUMP
9:36								START PUMP
9:38		10	18.7	7.09	1279			VERY TURBID
9:41		15	18.3	6.92	1261			VERY TURBID
9:44								STOP PUMP
9:44								START PUMP
9:46		20	18.5	6.92	1002			VERY TURBID
9:49		25	18.5	6.84	1058			VERY TURBID
9:53		30	18.57	6.88	1020			VERY TURBID - STOP PUMP
10:02								START PUMP

Suggested Method for Purging Well _____

Centrifugal Pump. Hand bail

WATER-QUALITY SAMPLING INFORMATION

Project Name YORBA BUENA Project No. 1049.13
 Date 5/26/93 Sample No. LF-32
 Samplers Name WBM, SAM, XLS LF-132
 Sampling Location LF-32
 Sampling Method CENT. PUMP / TETLON BOTTLES
 Analyses Requested TPH(A) / BTEX, TRHd, Organic Pb
 Number and Types of Sample Bottles used Glass LITER BOTTLES
 Method of Shipment CARRIER



LOCATION MAP

GROUND WATER	SURFACE WATER
Well No. <u>LF-32</u>	Stream Width _____
Well Diameter (in.) <u>2"</u>	Stream Depth _____
Depth to Water, Static (ft) _____	Stream Velocity _____
Water in Well Box <u>NO</u>	Rained recently? _____
Well Depth (ft) _____	Other _____
Height of Water Column in Well _____	2-inch casing = 0.16 gal/ft
Water Volume in Well <u>~ 2.5</u>	4-inch casing = 0.65 gal/ft
	5-inch casing = 1.02 gal/ft
	6-inch casing = 1.47 gal/ft

TIME	DEPTH TO WATER (feet)	VOLUME WITHDRAWN (gallons)	TEMP (deg. C)	pH (S.U.)	COND (mhos/cm)	OTHER		REMARKS
10:03		35	18.5	6.84	930			VERY TURBID
10:06		40	18.5	6.78	1005			VERY TURBID
10:09		45	18.2	6.84	1065			VERY TURBID
10:09								STOP PUMP.
10:15								SAMPLE LF-32
11:15								SAMPLE LF-132
10:26	6.17							

FEET Sampling

Suggested Method for Purging Well CENT. PUMP.

APPENDIX D

LABORATORY DATA SHEETS FOR GROUND-WATER SAMPLES



Inchcape Testing Services

Anamatrix Laboratories

1961 Concourse Drive #E
 San Jose, CA 95131
 Tel: 408-432-8192
 Fax: 408-432-8198

MS. JENIFER BEATTY
 LEVINE-FRICKE
 1900 POWELL STREET 12TH FLOOR
 EMERYVILLE, CA 94608

Workorder # : 9305286
 Date Received : 05/27/93
 Project ID : 1649.13
 Purchase Order: N/A

The following samples were received at Anamatrix, Inc. for analysis :

ANAMATRIX ID	CLIENT SAMPLE ID
9305286- 1	LF-32
9305286- 2	LF-132

This report consists of 12 pages not including the cover letter, and is organized in sections according to the specific Anamatrix laboratory group or section which performed the analysis(es) and generated the data. The Report Summary that precedes each section will help you determine which Anamatrix group is responsible for those test results, and will bear the signatures of the department supervisor and the chemist who have reviewed the analytical data. Please refer all questions to the department supervisor who signed the form.

Anamatrix is certified by the California Department of Health Services (DHS) to perform environmental testing under Certificate Number 1234. A detailed list of the approved fields of testing can be obtained by calling our office, or the DHS Environmental Laboratory Accreditation Program at (415)540-2800.

If you have any further questions or comments on this report, please give us a call as soon as possible. Thank you for using Anamatrix.

Sarah Schoen, Ph.D.
 Laboratory Director

JUN 15 1993

06-14-93
 Date

COPY

REPORT SUMMARY
ANAMETRIX, INC. (408)432-8192

MS. JENIFER BEATTY
LEVINE-FRICKE
1900 POWELL STREET 12TH FLOOR
EMERYVILLE, CA 94608

Workorder # : 9305286
Date Received : 05/27/93
Project ID : 1649.13
Purchase Order: N/A
Department : GC
Sub-Department: TPH

SAMPLE INFORMATION:

ANAMETRIX SAMPLE ID	CLIENT SAMPLE ID	MATRIX	DATE SAMPLED	METHOD
9305286- 1	LF-32	WATER	05/26/93	TPHd
9305286- 1	LF-32	WATER	05/26/93	TPHgBTEX

REPORT SUMMARY
ANAMETRIX, INC. (408)432-8192

MS. JENIFER BEATTY
LEVINE-FRICKE
1900 POWELL STREET 12TH FLOOR
EMERYVILLE, CA 94608

Workorder # : 9305286
Date Received : 05/27/93
Project ID : 1649.13
Purchase Order: N/A
Department : GC
Sub-Department: TPH

QA/QC SUMMARY :

- No QA/QC problems encountered for this sample.

Cheryl Bolmer
Department Supervisor

6/9/93
Date

CR Patel
Chemist

06/09/93
Date

ANALYSIS DATA SHEET - TOTAL PETROLEUM HYDROCARBONS
(GASOLINE WITH BTEX)
ANAMETRIX, INC. - (408) 432-8192

Anamatrix W.O.: 9305286
Matrix : WATER
Date Sampled : 05/26/93

Project Number : 1649.13
Date Released : 06/08/93

COMPOUNDS	Reporting Limit (ug/L)	Sample I.D.# LF-32	Sample I.D.# BU0101E3
Benzene	0.5	ND	ND
Toluene	0.5	ND	ND
Ethylbenzene	0.5	ND	ND
Total Xylenes	0.5	ND	ND
TPH as Gasoline	50	ND	ND
% Surrogate Recovery		117%	117%
Instrument I.D.		HP4	HP4
Date Analyzed		06/01/93	06/01/93
RLMF		1	1

- ND - Not detected at or above the practical quantitation limit for the method.
- TPHg - Total Petroleum Hydrocarbons as gasoline is determined by GCFID using modified EPA Method 8015 following sample purge and trap by EPA Method 5030.
- BTEX - Benzene, Toluene, Ethylbenzene, and Total Xylenes are determined by modified EPA Method 8020 following sample purge and trap by EPA Method 5030.
- RLMF - Reporting Limit Multiplication Factor.

Anamatrix control limits for surrogate p-Bromofluorobenzene recovery are 61-139%

All testing procedures follow California Department of Health Services (Cal-DHS) approved methods.

Ch Patel
Analyst

06/09/93
Date

Cheryl Bauman
Supervisor

6/9/93
Date

ANALYSIS DATA SHEET - TOTAL PETROLEUM HYDROCARBONS AS DIESEL
ANAMETRIX, INC. (408) 432-8192

Anametrix W.O.: 9305286
Matrix : WATER
Date Sampled : 05/26/93
Date Extracted: 06/03/93

Project Number : 1649.13
Date Released : 06/08/93
Instrument I.D.: HP23

Anametrix I.D.	Client I.D.	Date Analyzed	Reporting Limit (ug/L)	Amount Found (ug/L)
9305286-01	LF-32	06/04/93	54	440
BU0311F9	METHOD BLANK	06/04/93	50	ND

Note : Reporting limit is obtained by multiplying the dilution factor times 50 ug/L.

ND - Not detected at or above the practical quantitation limit for the method.

TPHd - Total Petroleum Hydrocarbons as diesel is determined by GC/FID following sample extraction by EPA Method 3510.

All testing procedures follow California Department of Health Services (Cal-DHS) approved methods.

OP Peter
Analyst

06/09/93
Date

Cheryl Balmer
Supervisor

6/15/93
Date

TOTAL VOLATILE HYDROCARBON MATRIX SPIKE REPORT
 EPA METHOD 5030 WITH GC/FID
 ANAMETRIX, INC. (408) 432-8192

Sample I.D. : 1649.13 LF-32
 Matrix : WATER
 Date Sampled : 05/26/93
 Date Analyzed : 06/01/93

Anamatrix I.D. : 05286-01
 Analyst : APC
 Supervisor : CS
 Date Released : 06/09/93
 Instrument ID : HP4

COMPOUND	SPIKE AMT (ug/L)	SAMPLE AMT (ug/L)	REC MS (ug/L)	% REC MS	REC MD (ug/L)	% REC MD	RPD	% REC LIMITS
GASOLINE	500	0	470	94%	410	82%	-14%	48-149
P-BFB				94%		96%		61-139

* Limits established by Anamatrix, Inc.

TOTAL VOLATILE HYDROCARBON LABORATORY CONTROL SAMPLE REPORT
 EPA METHOD 5030 WITH GC/FID
 ANAMETRIX, INC. (408) 432-8192

Sample I.D. : LAB CONTROL SAMPLE
 Matrix : WATER
 Date Sampled : N/A
 Date Analyzed : 06/02/93

Anamatrix I.D. : LCSW0602
 Analyst : APP.
 Supervisor : *cb*
 Date Released : 06/09/93
 Instrument I.D.: HP4

COMPOUND	SPIKE AMT. (ug/L)	REC LCS (ug/L)	%REC LCS	% REC LIMITS
GASOLINE	500	390	78%	67-127
SURROGATE			95%	61-139

* Quality control established by Anamatrix, Inc.

TOTAL EXTRACTABLE HYDROCARBON LABORATORY CONTROL SAMPLE REPORT
 EPA METHOD 3510 WITH GC/FID
 ANAMETRIX, INC. (408) 432-8192

Sample I.D. : LAB CONTROL SAMPLE
 Matrix : WATER
 Date Sampled : N/A
 Date Extracted: 06/03/93
 Date Analyzed : 06/04/93

Anamatrix I.D. : MU0311F9
 Analyst : *APP.*
 Supervisor :
 Date Released : *CA* 06/09/93
 Instrument I.D.: HP9

COMPOUND	SPIKE AMT (ug/L)	LCS REC (ug/L)	% REC LCS	LCSD REC (ug/L)	% REC LCSD	RPD	% REC LIMITS
DIESEL	1250	700	56%	800	64%	.13%	47-130

*Quality control established by Anamatrix, Inc.

ANAMETRIX REPORT DESCRIPTION

INORGANICS

Analytical Data Report (ADR)

The ADR contains tabulated results for inorganic analytes. All field samples, QC samples and blanks were prepared and analyzed according to procedures in the following references:

- EPA Method 6010/7000/9000 series - "Test Methods for Evaluating Solid Waste," SW-846, EPA, 3rd Edition, November 1986.
- EPA Method 100, 200, 300 series - "Methods for Chemical Analysis of Water and Wastes," EPA, 3rd Edition, 1983.
- Toxicity Characteristic Leaching Procedure (EPA Method 1311) - 40 CFR, Part 268, Appendix 1, June 1990.
- Waste Extraction Test - Results are reported in mg/L of extract according to procedures of CCR Title 22, Section 66261, Appendix II.
- Organic Lead - CCR Title 22, Section 66261, Appendix XI.
- Standard Method 2340B - "Standard Methods for the Examination of Water and Wastewater," APHA, AWWA, WEF, 18th Edition, 1992.

Matrix Spike Report (MSR)

The MSR summarizes percent recovery and relative percent difference information for matrix spikes and matrix spike duplicates. This information is a statement of both accuracy and precision. MSRs may not be provided with all analytical reports. Anamatrix control limit for MSR is 75-125% with 25% for RPD limits..

Laboratory Control Sample Report (LCSR)

The LCSR summarizes percent recovery information for laboratory control spikes on reagent water or soil. This information is a statement of performance for the method, i.e., the samples are properly prepared and analyzed according to the applicable methods. Anamatrix control limit for LCSR is 80-120%.

Method Blank Report (MBR)

The MBR summarizes quality control information for reagents used in preparing samples. The absolute value of each analyte measured in the method blank should be below the method reporting limit for that analyte.

Post Digestion Spike Report (PDSR)

The PDSR summarizes percent recovery information for post digestion spikes. A post digestion spike is performed for a particular analyte if the matrix spike recovery is outside of established control limits. Any percent recovery for a post digestion spike outside of established limits for an analyte indicates probable matrix effects and interferences for that analyte. Anamatrix control limit for PDSR is 85-115%.

Qualifiers (Q)

Anamatrix uses several data qualifiers in inorganic reports. These qualifiers give additional information on the analytes reported. The following is a list of qualifiers and their meanings:

- I - Sample was analyzed at the stated dilution due to spectral interferences.
- U - Analyte concentration was below the method reporting limit. For matrix and post digestion spike reports, a value of "0.0" is entered for calculation of the percent recovery.
- B - Sample concentration was below the reporting limit but above the instrument detection limit. Result is entered for calculation of the percent recovery only.
- H - Spike percent recovery was outside of Anamatrix control limits due to interferences from relatively high concentration level of the analyte in the unspiked sample.

Comment Codes

In addition to qualifiers, the following codes are used in the comment section of all reports to give additional information about sample preparation methods:

- A - Sample was prepared for silver based on the silver digestion method developed by the Southern California Laboratory, Department of Health Services, "Acid Digestion for Sediments, Sludges, Soils and Solid Wastes. A Proposed Alternative to EPA SW846, Method 3050." Environmental Science and Technology, 1989, 23, 898-900.
- T - Spikes were prepared after extraction by the Toxicity Characteristic Leaching Procedure (TCLP).
- C - Spikes were prepared after extraction by the California Waste Extraction Test (CWET) method.
- D - Reported results are dissolved, not total, metals.

Reporting Conventions

Analytical values reported are gross values, i.e., not corrected for method blank contamination. Solid matrices are reported on a wet weight basis, unless specifically requested otherwise.

REPORT SUMMARY
ANAMETRIX, INC. (408)432-8192

MS. JENIFER BEATTY
LEVINE-FRICKE
1900 POWELL STREET 12TH FLOOR
EMERYVILLE, CA 94608

Workorder # : 9305286
Date Received : 05/27/93
Project ID : 1649.13
Purchase Order: N/A
Department : METALS
Sub-Department: METALS

SAMPLE INFORMATION:

ANAMETRIX SAMPLE ID	CLIENT SAMPLE ID	MATRIX	DATE SAMPLED	METHOD
9305286- 1	LF-32	WATER	05/26/93	ORG Pb

REPORT SUMMARY
ANAMETRIX, INC. (408)432-8192

MS. JENIFER BEATTY
LEVINE-FRICKE
1900 POWELL STREET 12TH FLOOR
EMERYVILLE, CA 94608

Workorder # : 9305286
Date Received : 05/27/93
Project ID : 1649.13
Purchase Order: N/A
Department : METALS
Sub-Department: METALS

QA/QC SUMMARY :

- No QA/QC problems encountered for sample.

Wanda Meyer 6/16/93
Department supervisor Date

Mona Kamel 6/14/93
Chemist Date

INORGANIC ANALYSIS DATA SHEET
 ANAMETRIX, INC. (408) 432-8192

Analyte-Method: Organic Lead
 Project I.D. : 1649.13
 Matrix : WATER
 Reporting Unit: ug/L

Analyst : MK
 Supervisor : MN
 Date Sampled : 05/26/93
 Date Released : 06/11/93
 Instrument I.D. : AA1

ANAMETRIX SAMPLE I.D.	CLIENT I.D.	DATE PREPARED	DATE ANALYZED	REP. LIMIT	DIL. FACTOR	RESULT	Q
9905286-01	LF-32	06/08/93	06/11/93	30.0	1	ND	
OMB0608W	METHOD BLANK	06/08/93	06/11/93	30.0	1	ND	

COMMENT:

LABORATORY CONTROL SAMPLE REPORT
ANAMETRIX, INC. (408) 432-8192

Anamatrix W.O.# : 9305286
 Spike I.D. : LCS0608W
 Project I.D. : 1649.13
 Matrix : WATER
 Reporting Unit : ug/L

Analyst : *MJK*
 Supervisor : *MJK*
 Date Released : 06/11/93
 Instrument I.D : AA1

ANALYTE-METHOD	DATE PREPARED	DATE ANALYZED	SPIKE AMT.	METHOD SPIKE	% REC.	Q
Organic Lead	06/08/93	06/11/93	200	238	119	

COMMENT:

MATRIX SPIKE REPORT
 ANAMETRIX, INC. (408) 432-8192

Spike I.D. : 9305286-01MS,MD
 Client I.D. : LF-32
 Project I.D. : 1649.13
 Matrix : WATER
 Reporting Unit: ug/L

Date Prepared : 06/08/93
 Date Analyzed : 06/11/93
 Analyst : *AK*
 Supervisor : *MW*
 Date Released : 06/11/93
 Instrument I.D. : AA1

ANALYTE-METHOD	SPIKE AMOUNT	SAMPLE CONC.	M.S. CONC.	% REC.	M.S.D. CONC.	% REC.	RPD	Q
Organic Lead	200	0.0	217	109	204	102	6.2	U

COMMENT:

CHAIN OF CUSTODY / ANALYSES REQUEST FORM

Project No.: 1649.13			Field Logbook No.:			Date: 5-26-93			Serial No.:			
Project Name: Yerba Buena			Project Location: Emeryville						11630			
Sampler (Signature): Priscott C. Field			ANALYSES			SAMPLERS: SCH WEM			REMARKS			
SAMPLES												
SAMPLE NO.	DATE	TIME	LAB SAMPLE NO.	NO. OF CON-TAINERS	SAMPLE TYPE	EPA 601	EPA 624	TPH+BTX	TPH diesel	ORGANIC Pb	HOLD	RUSH
① LF-32	5-26-93	1015		7	H2O		3	2	2			
② LF-132	↓	1115		7	↓		3	2	2		X	
Normal TAT												
Contact Jenifer Beatty												
Ref. # 2561C												
RELINQUISHED BY: (Signature) Priscott C. Field			DATE 5/27/93	TIME 1020	RECEIVED BY: (Signature) Denny S. Conroy			DATE 5/27/93	TIME 1020			
RELINQUISHED BY: (Signature) Denny S. Conroy			DATE 5/27/93	TIME 1240	RECEIVED BY: (Signature) Neil P.			DATE 5/27/93	TIME 12:40			
RELINQUISHED BY: (Signature)			DATE	TIME	RECEIVED BY: (Signature)			DATE	TIME			
METHOD OF SHIPMENT: Courier			DATE	TIME	LAB COMMENTS:							
Sample Collector: LEVINE-FRICKE 1900 Powell Street, 12th Floor Emeryville, Ca 94608 (415) 652-4500					Analytical Laboratory: ARCUMETRIX, S.J.							