

ERAS

Environmental, Inc.

20861 Wilbeam Ave., #4

Castro Valley, CA 94546

(510) 247-9885; fax (510) 886- 5399

WORKPLAN FOR SOIL AND GROUNDWATER INVESTIGATION

FOR

**1549 32nd Street
OAKLAND, CALIFORNIA**

*Alameda County
MAR 04 2003
Environmental Health*

Prepared for

**Mr. Francis Rush
Rush Property Group
2200 Adeline Street, #350
Oakland, CA 94607**

February 28, 2003

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CERTIFICATION

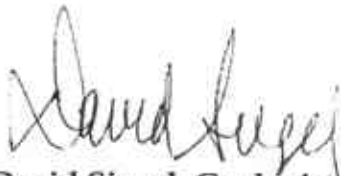
This **Workplan for Soil and Groundwater Investigation** for 1549 32nd Street, Oakland, California has been prepared by ERAS Environmental, Inc. (ERAS) under the professional supervision of the Geologist whose signature appears hereon.

This workplan was prepared in general accordance with the accepted standard of practice that exists in Northern California at the time the investigation was performed. Judgements leading to conclusions and recommendations are generally made with an incomplete knowledge of the conditions present. More extensive studies, including additional environmental investigations, can tend to reduce the inherent uncertainties associated with such studies.


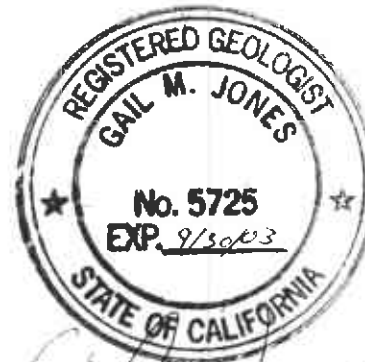
Our firm has prepared this workplan for the Client's exclusive use for this particular project and in accordance with generally accepted professional practices within the area at the time of our investigation. No other representations, expressed or implied, and no warranty or guarantee is included or intended.

This workplan may be used only by the client and only for the purposes stated within a reasonable time from its issuance. Land use, site conditions (both on-site and off-site) or other factors may change over time, and additional work may be required with the passage of time. Any party other than the client who wishes to use this report shall notify ERAS of such intended use. Based on the intended use of report, ERAS may require that additional work be performed and that an updated report be issued. Non-compliance with any of these requirements by the client or anyone else will release ERAS from any liability resulting from the use of this report by any unauthorized party.

Respectfully submitted,



David Siegel, Geologist, R.E.A. II
President, ERAS Environmental, Inc.



Gail M. Jones
California Registered Geologist 5725

28 February 2003

1.0 INTRODUCTION

The purpose of this proposed investigation at the former Precision Foundry at 1549 32nd Street in Oakland, California (Property) is to provide additional soil and groundwater analytical data toward achievement of site closure or no further action status with respect to contamination in soil and groundwater. The location of the Property is shown on Figure 1.

Mr. Barney Chan of the Alameda County Health Care Services Agency indicated in a letter dated February 5, 2003, that based on the review of ERAS October 9, 2002 Technical Summary Report, additional lateral and vertical investigation of the contamination at the subject site would be required. ERAS proposes the drilling of eleven borings to attempt to delineate the extent of free product and the lateral and vertical extent of soil and groundwater contamination.

The scope of work to be performed includes field-testing, data evaluation, and preparation of an investigation report. The tasks to be completed are as follows.

- Procure a drilling permit from the Alameda County Department of Public Works.
- Prepare a Site Safety Plan.
- Clear boring locations with regard to underground utilities prior to fieldwork.
- Advance eleven soil borings using a Geoprobe™ direct-push soil-coring device. The soil borings will be drilled to a depth of approximately 15 feet below ground surface (bgs). Temporary casing will be placed in four selected borings. 11 or 4 ?
- Collect two soil samples and two groundwater grab-samples from each boring for chemical analyses.
- Measure static depth to groundwater and survey top of casing elevations in the four temporary piezometers for delineation of the groundwater flow direction and gradient.
- Analyze two selected samples of the oil from the borings for the presence of poly aromatic hydrocarbons (PAHs) and poly chlorinated biphenyls (PCBs). If no oil is encountered, a sample will be collected from one of the open excavation pits. The oil analysis will be requested on a rush turnaround basis in order to determine if soil and groundwater samples should be analyzed for these constituents.

- Analyze soil and groundwater samples for total recoverable petroleum hydrocarbons (TRPH) by Standard Method 418.1, total petroleum hydrocarbon as gasoline (TPH-g) by EPA Method 8015, for benzene, toluene, ethylbenzene, total xylene isomers, (BTEX), methyl tert-butyl-fether (MTBE) halogenated volatile organic compounds (HVOCs) by EPA Method 8021, and for chromium, copper and nickel by EPA Method 6020.
- Soil and groundwater samples will be analyzed for semi-volatile organic compounds (SVOCs) including polychlorinated biphenyls (PCBs) and polynuclear aromatic hydrocarbons (PAHs), if these compounds are detected in the oil free product analysis.
- Evaluate the findings from these activities and prepare a report.

2.0 BACKGROUND

The following description is taken in part from the Technical Summary Report by ERAS dated 9 October, 2002. The locations of some of the results for soil and groundwater samples collected during investigations described below are included in Figures 2 and 3, respectively.

A Phase I Environmental Site Assessment (ESA) was prepared by Lumina Technologies (Lumina), dated January 4, 2001. At the time of the site inspection by Lumina, the building was vacant. Lumina noted poor maintenance and housekeeping in most areas. Lumina noted the spillage of dry materials associated with former foundry operations, and the storage of isopropyl alcohol on the Property. Lumina also noted the presence of an underground storage tank on the west side of the property under the sidewalk which was abandoned for at least 20 years.

Former uses of the Property were identified as a foundry by former owner Lindbergh Heating. Lumina indicated that the Property was developed with the current building in 1946. The Regional Water Quality Control Board (RWQCB), County of Alameda Environmental Health Department (EHD) and Department of Toxic Substance Control (DTSC) were contacted for file reviews. The RWQCB files indicated that no leaks or spills have occurred on the subject site. The EHD was contacted concerning spills of hazardous materials at the subject site, and no records were found which indicated that

the subject site was involved in such a spill. Lumina indicated that the DTSC found no records that indicated any usage or storage of hazardous materials on the subject site.

Lumina concluded that there is evidence of potential environmental impairment of the site from prior site operations, and recommended subsurface sampling to test for heavy metals and total petroleum hydrocarbons.

City of Oakland Records

ERAS reviewed the file for the Property at the City of Oakland Fire Department Emergency Services Division on March 12, 2002. The file for the Property contained a Hazardous Materials Business Plan (HMBP), dated July 18, 1997. The HMBP listed eight items that included a total of 990 gallons of liquid, 24,650 pounds of solid, and 275 cubic feet of gas. The hazardous materials inventory form listed the following:

- chromium, 2 containers @ 4,000 pounds
- copper, 55 gallon container ~500 pounds
- manganese, 55 gallon container ~500 pounds
- nickel, two 55 gallon container ~1,000 pounds
- urethane, 55 gallons
- isopropyl alcohol, 55 gallons
- acetylene
- liquid petroleum gas
- oxygen

Inspection forms on file indicated the Property contained a steel foundry since 1983. An inspection dated October 15, 1996 indicated some resin on the ground in the drum storage area. The fire department did not indicate this was a serious problem and did not require any investigation or further action. No other violations were noted in the file other than minor compliance issues such as posting proper signs and labeling containers. The latest information, dated November 21, 2000, was another HMBP for Precision Cast that listed the same hazardous materials and no hazardous waste.

The file also contained an Analytical Request from the Alameda County Health Care Services Agency (ACHCSA) for analysis of a sample of the waste foundry sand that was stockpiled outside on the sidewalk along the Hannah Street side of the building. The sample was collected in response to a report by a concerned citizen, dated April 27, 1992, of the possibility of mishandling of hazardous waste and potentially discharging

waste on the adjacent properties of others. ACHCSA collected a sand sample the same day and submitted it for analysis of heavy metals. The sample was found to contain metals well below the Total Threshold Limit Concentration (TTLC) that would deem the waste hazardous.

locations unknown

Soil samples were collected from four soil borings drilled on the Property in 1988 by Property Contamination Control, Inc. Although the report did not include information regarding the location of these borings, the results indicated concentrations of methanol in soil ranging from 0.68 milligrams per kilogram (mg/Kg) to 1.2 mg/Kg. Ethanol was detected in one sample at a concentration of 0.68 mg/Kg. Metals were detected at concentrations below TTLCs. Analysis for solvents indicated the presence of 1,1-dichloroethene (1,1-DCE) at concentrations ranging from 0.0076 mg/Kg to 0.1849 mg/Kg.

The concentration of 1,1-DCE detected in one of the borings (B-4, samples at 5 feet and 10 feet) is above the Regional Water Quality Control Board (RWQCB) Risk Based Screening Level (RBSL) for 1,1-DCE for residential land use of 0.028 mg/Kg (RWQCB, Table B, December 2001).

Summary of Subsurface Investigations in 2002

GGTR

A 700-gallon underground storage tank located along the Hannah Street side of the building was removed by Golden Gate Tank Removal (GGTR) on February 1, 2002 under permit requirements of the City of Oakland Fire Department (OFD). Evidence of staining was observed. Soil sample CTR collected at the base of the excavation was found to contain 7.95 mg/Kg TPH-g. GGTR performed additional excavation and a sample (CTR2) collected from the bottom of the excavation was found to contain less than 1 mg/Kg TPH-g. The OFD agreed that no further action was required and provided an underground storage tank case closure letter dated April 15, 2002.

ERAS

ERAS Environmental, Inc. (ERAS) performed a limited Phase 2 soil investigation at the Property on March 27, 2002. Four soil borings were dug to about 3 feet bgs using a hand auger. The results of laboratory analysis of soil samples collected by ERAS from the base of each boring indicated elevated concentrations of total recoverable petroleum hydrocarbons (TRPH) in three of the samples (SB-1, SB-3 and SB-4). The sample

collected in the southwest portion of the Property was not found to contain detectable TRPH or TPH-g concentrations.

The concentrations of TRPH were above the RBSLs for TRPH of 500 milligrams per kilogram (mg/Kg) in the samples collected from the northern, central, and south central portions of the site. The concentrations of total petroleum hydrocarbons as gasoline (TPH-g) and benzene, toluene, ethyl benzene, and xylenes (BTEX) were below the RBSLs for those respective constituents. During the investigation, a 4-inch diameter well pipe was observed near the location of SB-3. The well pipe was assumed to access an underground storage tank (UST). ERAS recommended the UST be removed.

Enrest

Environmental Restoration Services (Enrest) was contracted by the owner to remove the UST and initiated excavation activities on April 15, 2002. During this work, Enrest found that the well pipe was actually a waste percolation well. The well extended to 7 feet bgs and was perforated at the bottom 18 inches. The base of the well was encased in drain rock that extended from 5 to 10 feet bgs. A representative of the Oakland Fire Department (OFD) requested that further soil be removed in the vicinity of the percolation well. On April 26, 2002, Enrest demolished the concrete lining of Pit B and excavated soil to 12 feet bgs. An excavation sidewall soil sample (SS-N) was collected near the top of groundwater at 10 feet bgs. This sample was found to contain 3,300 mg/Kg total petroleum hydrocarbons as motor oil (TPH-mo) but no detectable BTEX. Oil sheen was noted on groundwater collected in the excavation. Enrest also excavated casting sand backfill from Pit A and Pit C and collected sand samples. The locations of excavations are shown on Figure 2.

The owner requested that Enrest drill additional borings to further evaluate the extent and type of contaminants that might be present in the subsurface soil. Enrest drilled seven borings using a Geoprobe rig on April 26, 2002. A soil sample was collected from boring P/A at 8 feet bgs and analyzed for VOCs. No detectable BTEX was detected in the soil sample SS-P/A.

Boring SB-6 was found to contain free-floating oil. Analysis of the oil indicated concentrations of benzene, toluene, xylenes (BTX), 1,2-dichlorobenzene (1,2-DCB) and naphthalene above the RBSLs for these constituents in soil. The oil sample was also analyzed for PCBs, but the previous reports did not contain a copy of the results of that

analysis. Analysis of groundwater samples collected from borings (SB-1 through SB-5) indicated the concentrations of 1,2-DCB, BTX and naphthalene were below detection limits.

During this work in April 2002, Enrest noticed another 4-inch diameter well pipe near the southeast corner of the building.

Enrest recommended that the extent of product oil in the subsurface should be further investigated. In addition, Enrest recommended the City of Oakland review the results prior to performing additional investigation or remediation. On May 21, 2002, soil was excavated in the area of boring SB-6 and around the 4-inch pipe. Three soil borings, SP-1, SP-2, SP-3, were drilled for the collection of groundwater samples in locations north, west, and south, respectively, of the boring SB-6.

The 4-inch pipe was found to be another waste percolation well constructed the same as the one near Pit B. A sidewall soil sample (Source Pt) was collected at 7 feet bgs, near the top of groundwater, from the south wall of the excavation around the waste percolation well. This sample contained elevated concentrations of TPH-mo (20,800 mg/Kg) but no detectable concentrations of BTEX. Free-floating oil accumulated to a thickness of about 3/8-inch and was removed using a wet-vacuum prior to the collection of a sample of the standing groundwater. This sample was analyzed for VOCs only, and was found to contain only low concentrations of some compounds. However, because the top of groundwater in an open pit was subjected to a vacuum immediately prior to sample collection, which may have aerated the top of the groundwater, the usefulness of analysis of this sample for volatile compounds is uncertain.

Groundwater samples from SP-1, SP-2 and SP-3, and the location designated Source, all within the estimated area of floating oil, contained high levels of TPH-mo (up to 5,780,000 ug/L). Concentrations of BTEX and solvents were much lower and below the RBSLs except for the sample from SP-3 which was found to contain benzene, xylenes, 1,2-dichlorobenzene, and naphthalene above the RBSLs.

On November 21, 2002, ERAS collected a sample of oil from the excavation pit located near the southeast corner of the building. The oil sample was shipped to Friedman and Bruya, environmental chemists in Seattle, Washington. The analysis of the oil indicated

it was similar to mineral oil, foundry quenching oil or similar materials. ~~The predominant composition of hydrocarbons was near n-C₂₁.~~ This peak correlates to a boiling temperature range near 360 degrees centigrade. Details of the analysis are included in the Report of Oil Sampling in **Appendix A**. The laboratory analysis indicates the free product at the subject site is heavier than gasoline or diesel fuel hydrocarbons and is in the range of total oil and grease or total recoverable petroleum hydrocarbons.

3.0 WORKPLAN

The proposed additional field sampling is designed to delineate the extent of free product and the lateral and vertical extent of soil and groundwater contamination.

The proposed soil boring and groundwater sample locations are shown on **Figure 4**.

3.1 FIELD WORK COORDINATION

ERAS will obtain a drilling permit from the Alameda County Public Works Department. In addition, ERAS will prepare a project Site Safety Plan. The proposed boring locations will be marked and Underground Service Alert notified of the subsurface work at least two days prior to drilling. This will allow the various utilities with underground lines in the area to mark their line locations before final clearance. Before drilling is begun, a private underground line locator will be used to give final clearance for each proposed location.

3.2 SOIL BORING AND GROUNDWATER SAMPLING

Eleven 2-inch diameter boreholes will be advanced to depths of approximately 10 feet below ground surface (ft bgs) using a Geoprobe™ direct-push coring device. The boring locations will be advanced through the surface paving and native soils into groundwater. Soil cores will be continuously sampled for lithologic description and possible chemical analyses.

In each soil boring two soil samples will be collected for chemical analysis from the natural formation at about 4 and 8 feet bgs. Based on the information from the previous subsurface investigation, it is estimated groundwater will be encountered at a depth of approximately 7-8 feet bgs. Soil cores will be screened for total organic vapors using a PID or FID to aide soil sample selection for chemical analyses.

The soil borings will be advanced to about 10 feet bgs and a groundwater grab sample will be collected from the top of the water-bearing zone. Then a Hydropunch-type groundwater sampler will be driven to about 15 feet bgs. A 2-foot interval of the sampler screen will be exposed (13 to 15 feet bgs) and a second groundwater grab-sample will be collected. A more detailed discussion of Geoprobe boring and soil and groundwater sampling is included in the Standard Operating Procedures (SOP) in Appendix B.

Temporary PVC casing will be installed in the three borings located outside the building at the extremities of the investigation and another inside the building. The 3/4-inch diameter casing will be set to about 15 feet bgs with a screened interval from 5 to 15 feet bgs. The following morning the depth to static water will be measured in the temporary wells. The well casing elevations will be surveyed by a licensed surveyor so that the elevation of the water surface can be calculated.

Oil samples will be collected for analysis from two selected borings. The oil samples will be collected using a bailer into unpreserved 40-ml vials. If oil is not encountered in any of the borings, a sample will be collected from one of the excavation pits inside the building.

The soil, groundwater, and oil samples will be stored in a cooler with ice and transferred under chain-of-custody procedures to a state-certified environmental laboratory for analysis.

All soil boring and sampling equipment will be steam-cleaned for decontamination between soil borings. Soil cuttings and decontamination water will be temporarily stored at the subject site until proper disposal is arranged.

After all measurements and samples are collected and the well casing removed if present, all soil borings will be grouted to the surface with neat cement. The surface of each borehole will be topped with concrete patch.

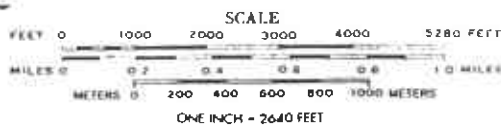
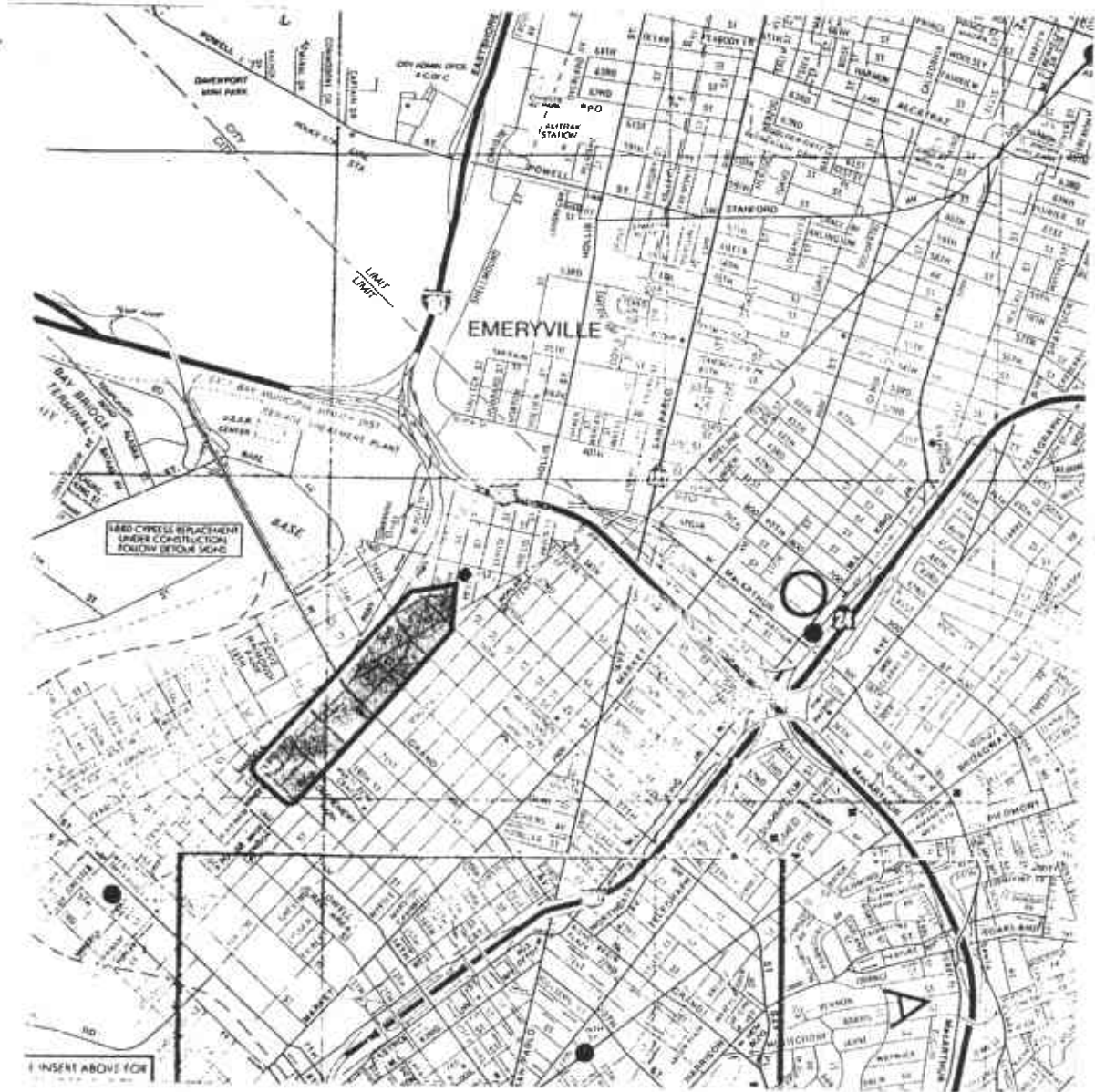
3.3 CHEMICAL ANALYSES OF SOIL AND GROUNDWATER

Two samples of oil will be analyzed for PAHs by EPA Methods 8100/610 and PCBs by EPA Method 8080/608. These analyses will be requested on a rush basis. Depending upon the results of this analysis, some or all of the other samples may be analyzed for these constituents.

The soil and groundwater samples will be analyzed at Entech Analytical Labs of Santa Clara, California. The samples will be analyzed for TRPH by EPA Method 418.1, TPH-g by EPA Method 8015, for BTEX, MTBE and HVOCs by EPA Method 8021, and for SVOCs including PCBs and PAHs by EPA Method 8270 if these compounds are detected in the oil samples. The samples will also be analyzed for the metals Cr, Cu, and Ni by EPA Method 6020.

3.4 REPORT PREPARATION

At the completion of all fieldwork and following receipt of state-certified laboratory analyses, ERAS will prepare an investigation report. The report will include a description of all field procedures and activities, a sample location map, tabulated analytical results, maps showing contaminant distribution in soil and groundwater if appropriate, laboratory reports, and discussion of the investigation results.



Base Map: AAA Street Map Oakland, CA

SITE LOCATION MAP

FORMER PRECISION CAST
 1549 32nd Street
 Oakland, California

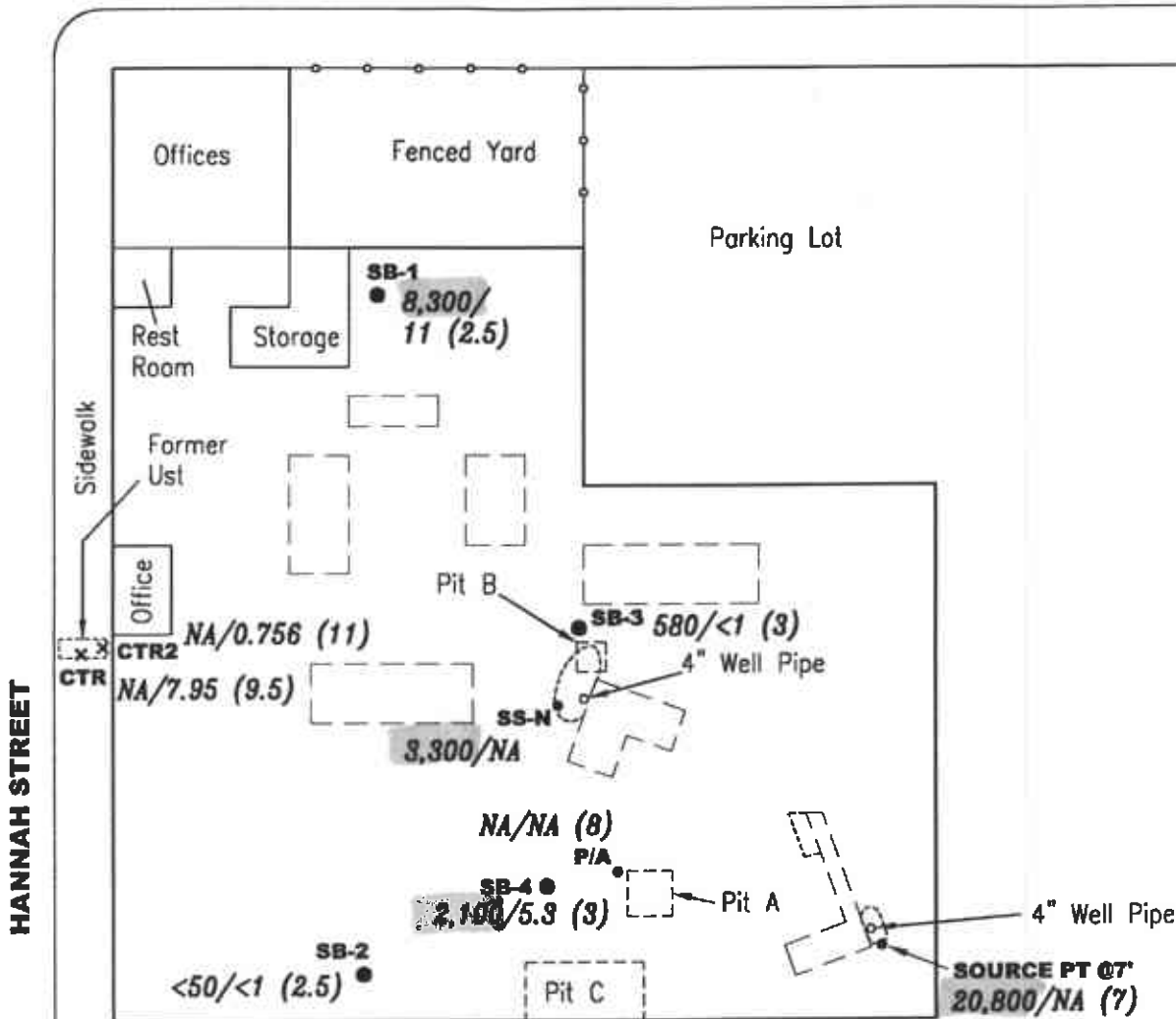
JOB NUMBER
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 FIGURE

1

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ERAS Environmental Inc.

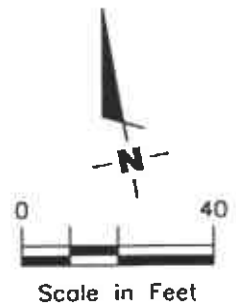
32ND STREET



EXPLANATION

- UG Vaults (Filled & Capped)
- Excavations
- Concrete Lined Pit
- Soil Sample by Enrest
- Soil Boring ERAS Environmental
- × Soil Sample GGTR
- 500 Concentrations of TRPH or TPH-mo/
TPH-g (depth bgs) in mg/Kg
- NA Not analyzed

Outside Yard



Base Map: Enrest, Fig. 2, dated 5/22/02

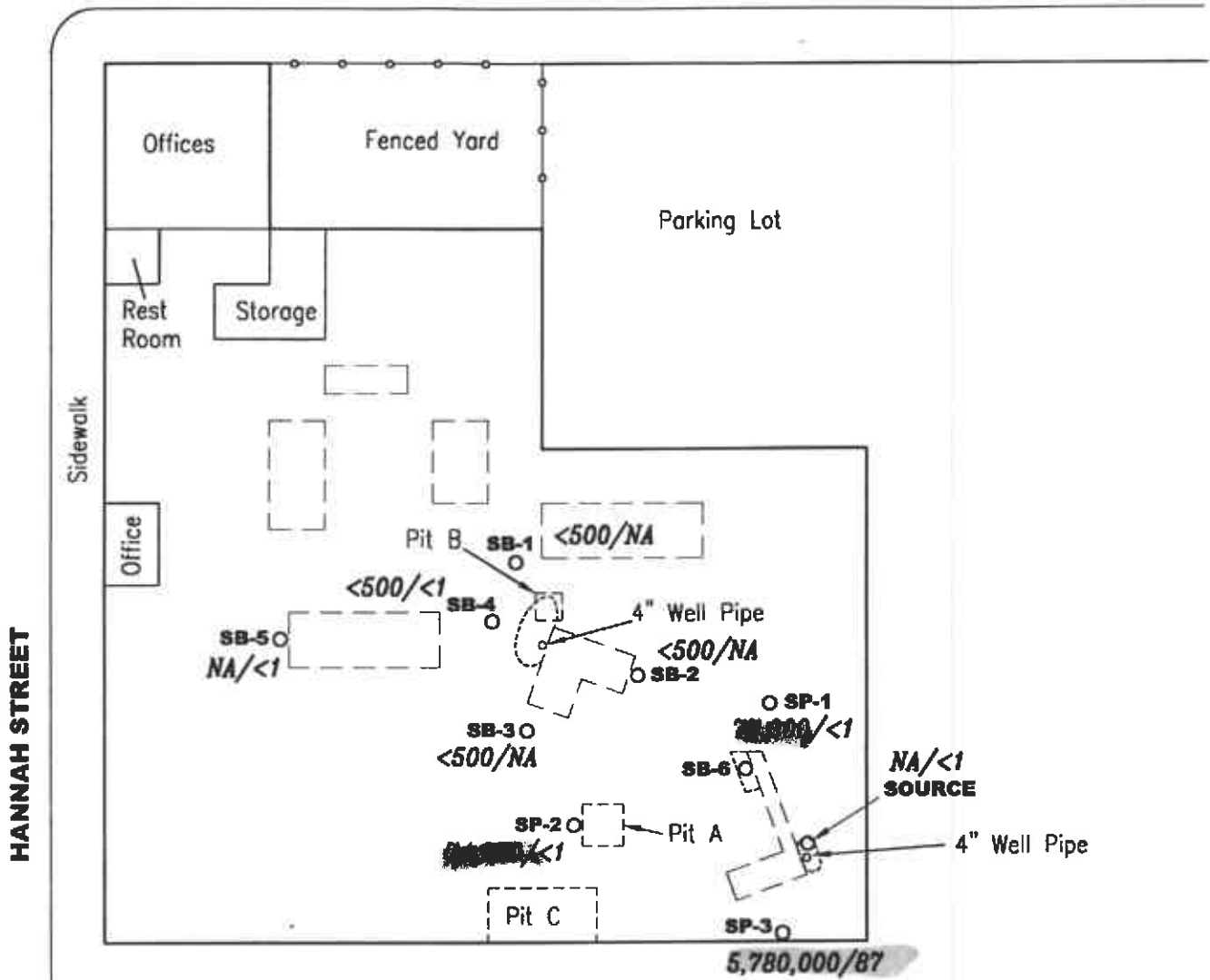
SOIL RESULTS FROM PREVIOUS INVESTIGATIONS

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



FORMER PRECISION CAST
1549 32nd Street
Oakland, California

JOB NUMBER
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FIGURE
2

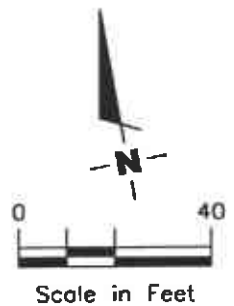
32ND STREET



EXPLANATION

-  UG Vaults (Filled & Capped)
-  Excavations
-  Concrete Lined Pit
-  Groundwater Sample by Enrest
- 500** Concentrations of TPH-mo/benzene in ug/L
- NA** Not analyzed

Outside Yard



Base Map: Enrest, Fig. 2, dated 5/22/02

GROUNDWATER RESULTS FROM PREVIOUS INVESTIGATIONS

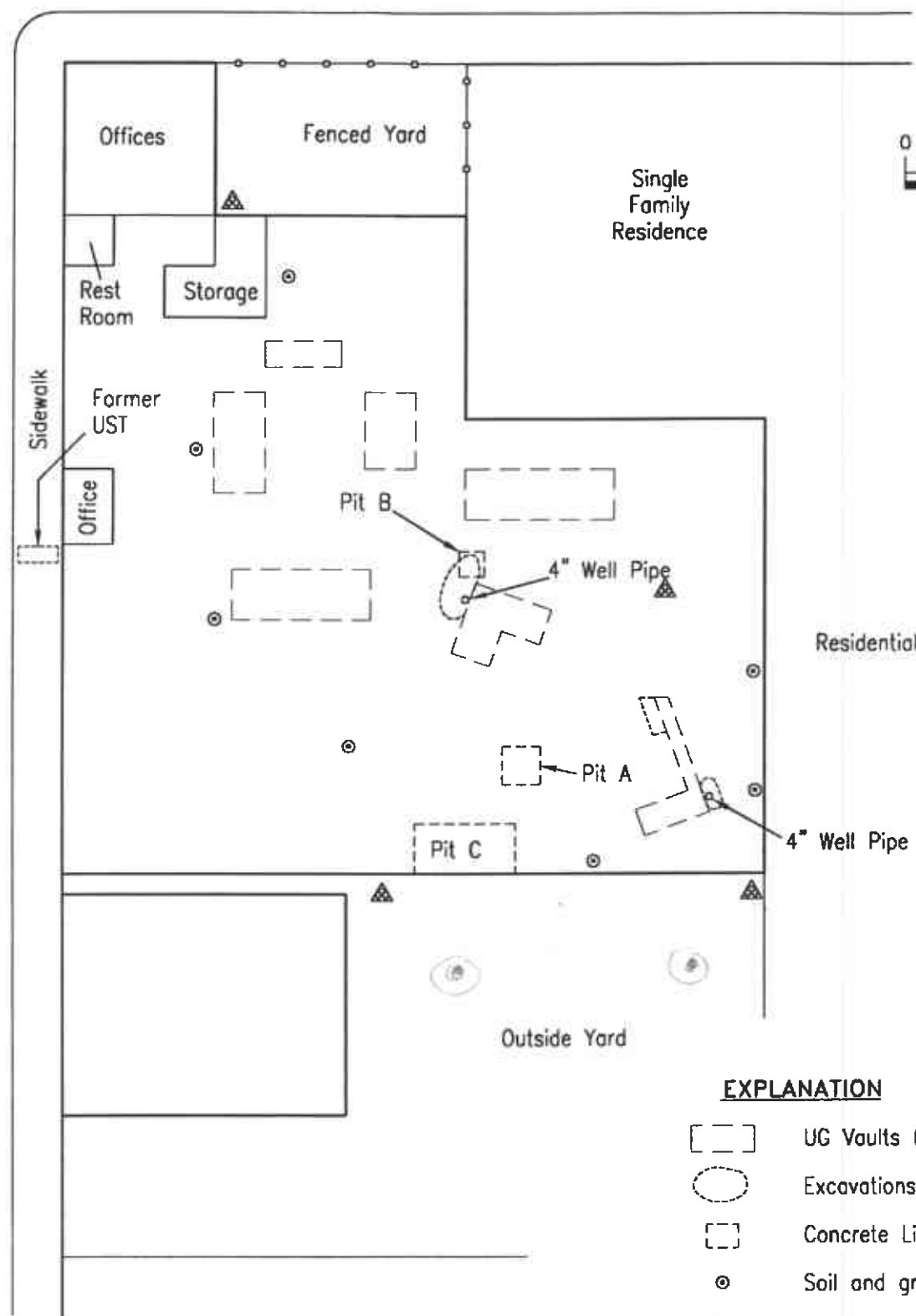
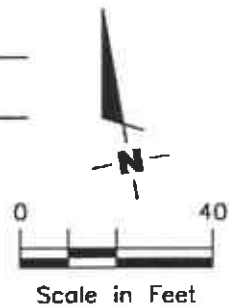
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10/02
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FORMER PRECISION CAST
1549 32nd Street
Oakland, California

JOB NUMBER
02-006-01
FIGURE
3

32ND STREET

HANNAH STREET



EXPLANATION

- UG Vaults (Filled & Capped)
- Excavations
- Concrete Lined Pit
- Soil and groundwater sample
- Temporary piezometer

Base Map: Ernest, Fig. 2, dated 5/22/02

PROPOSED BORING LOCATIONS

DATE
02-03
REVIEWED BY
GJ

FORMER PRECISION CAST
1549 32nd Street
Oakland, California

JOB NUMBER
02-006-02
FIGURE
4

APPENDIX A
OIL SAMPLING REPORT

ERAS

Environmental, Inc.

20861 Wilbeam Avenue, Suite 4

Castro Valley, CA 94546-5832

(510) 247-9885 Facsimile: (510) 886-5399

December 16, 2002

Mr. John Torkington
217 Westcot Drive
Friday Harbor, WA 98250

**Subject: Report of Oil Sampling at
Former Precision Casting, Inc.
1549 32nd Street
Oakland, California**

Dear Mr. Torkington:

ERAS Environmental, Inc. (ERAS) is pleased to present the results of the sampling and analysis of oil collected at the subject site (hereinafter the "Property") in San Jose, California. The subject site was vacant at the time of the sampling. The last occupant was Precision Casting, Inc., a metal foundry operation. This work was authorized by the owner of the Property, Mr. John Torkington, on November 19, 2002 in response to ERAS proposal dated the same day.

ERAS personnel visited the Property on November 21, 2002 to collect a sample of oil that was reported to be floating on groundwater in pits that remain open following previous subsurface investigation. Five open excavation pits were observed in the inside of the former foundry work area. Three of these appeared to have been concrete vaults, the excavation walls were lined or partially lined with concrete.

Two of the excavation pits, nearest to the southeast corner of the building, and containing dirt walls, were observed to be full of liquid. A new polyethylene bailer was used to collect samples of the liquid and to transfer the materials directly to laboratory-supplied sample containers. The containers were quickly placed in a chilled cooler for storage until delivery to the analytical laboratory.

The cooler was deliver to the Federal Express Office in Dublin, California and shipped via overnight shipping to Freidman and Bruya, Inc., in Seattle, Washington, a laboratory specializing in environmental and forensic chemistry.

The results were received by ERAS on December 16, 2002 and a copy of the laboratory

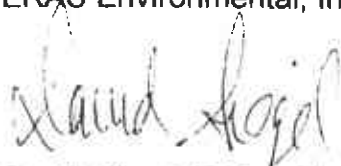
report is attached to this letter. The analysis of the oil sample revealed the chromatogram pattern of the oil sample was indicative of mineral oil, foundry quenching oil or similar materials.

The lab indicated the sample shows a maximum concentration of hydrocarbons near n-C₂₁. This peak correlates to a temperature range of 270 to 440 degrees centigrade with a maximum near 360 degrees centigrade. The chromatogram shows peaks that are indicative of the isoprenoid compounds including norpristane, pristane and phytane.

The chemical information that is indicated by this analysis could be compared with the compounds in an oil product, if an analysis of that product is available. For example, the physical characteristics of the oil and its chemical makeup could be compared with that listed on the material safety data sheet (MSDS) of an oil product, if that information is available.

ERAS hopes this information is helpful for your needs. It has been a pleasure working with you on this project. Please call if you have any questions.

Respectfully,
ERAS Environmental, Inc.



David Siegel, R.E.A. II
Project Manager

Attachment: Laboratory Report

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Charlene Morrow, M.S.
Yelena Aravkina, M.S.
Bradley T. Benson, B.S.
Kurt Johnson, B.S.

3012 16th Avenue West
Seattle, WA 98119-2029
TEL: (206) 285-8282
FAX: (206) 283-5044
e-mail: fbi@isomedia.com

December 11, 2002

David Siegel, Project Manager
ERAS Environmental, Inc.
20861 Wilbeam Avenue, Suite 4
Castro Valley, CA 94546

DEC 16 2002

RCVD

Dear Mr. Siegel:

Included are the results from the testing of material submitted on November 22, 2002 from your 02213, 1549 32nd St., Oakland project. The product sample submitted for forensic evaluation arrived in good condition. Upon its arrival, the sample Oil-1 was assigned our laboratory project number 211174 and was placed in a refrigerator maintained at 4°C until removed for sample processing.

The sample Oil-1 was diluted and analyzed using a gas chromatograph with a flame ionization detector (GC/FID) and an electron capture detector (ECD). The data generated yielded information on the boiling range and general chemical composition of the material present. The GC/FID and GC/ECD traces are enclosed. A GC/FID trace of a standard consisting of normal alkanes is also provided for reference purposes.

Please contact us if additional consultation is needed by our firm in the interpretation of the analytical results provided. We appreciate this opportunity to be of service to you and hope you will call if you should have any questions. We will hold your samples for 30 days before disposal unless directed otherwise.

Sincerely,

FRIEDMAN & BRUYA, INC.



Yelena Aravkina
Chemist

Enclosures
NAA1211R.DOC

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 12/11/02
Date Received: 11/22/02
Project: 02213, 1549 32nd St., Oakland
Date Extracted: 12/05/02
Date Analyzed: 12/05/02

RESULTS FROM THE ANALYSIS OF THE PRODUCT SAMPLE
FOR FORENSIC EVALUATION
BY CAPILLARY GAS CHROMATOGRAPHY
USING A FLAME IONIZATION DETECTOR (FID)
AND ELECTRON CAPTURE DETECTOR (ECD)

Sample ID

GC Characterization

Oil-1

The GC trace using the flame ionization detector (FID) showed the presence of medium to high boiling compounds. The patterns displayed by these peaks are indicative of mineral oil, foundry quenching oil or similar materials.

The medium to high boiling compounds appear as an irregular pattern of peaks on top of a broad hump or unresolved complex mixture (UCM). This material elutes from $n\text{-C}_{15}$ to $n\text{-C}_{29}$ showing a maximum near $n\text{-C}_{21}$. This correlates with a temperature range of approximately 270°C to 440°C with a maximum near 360°C . Within this range, peaks are present which are indicative of the isoprenoids including norpristane, pristane, and phytane.

The large peak seen near 25 minutes on the GC/FID trace is pentacosane, added as a quality assurance check for this GC analysis. There is a second surrogate present that is seen on the GC/ECD trace at about 26 minutes which is dibutyl chlorendate.

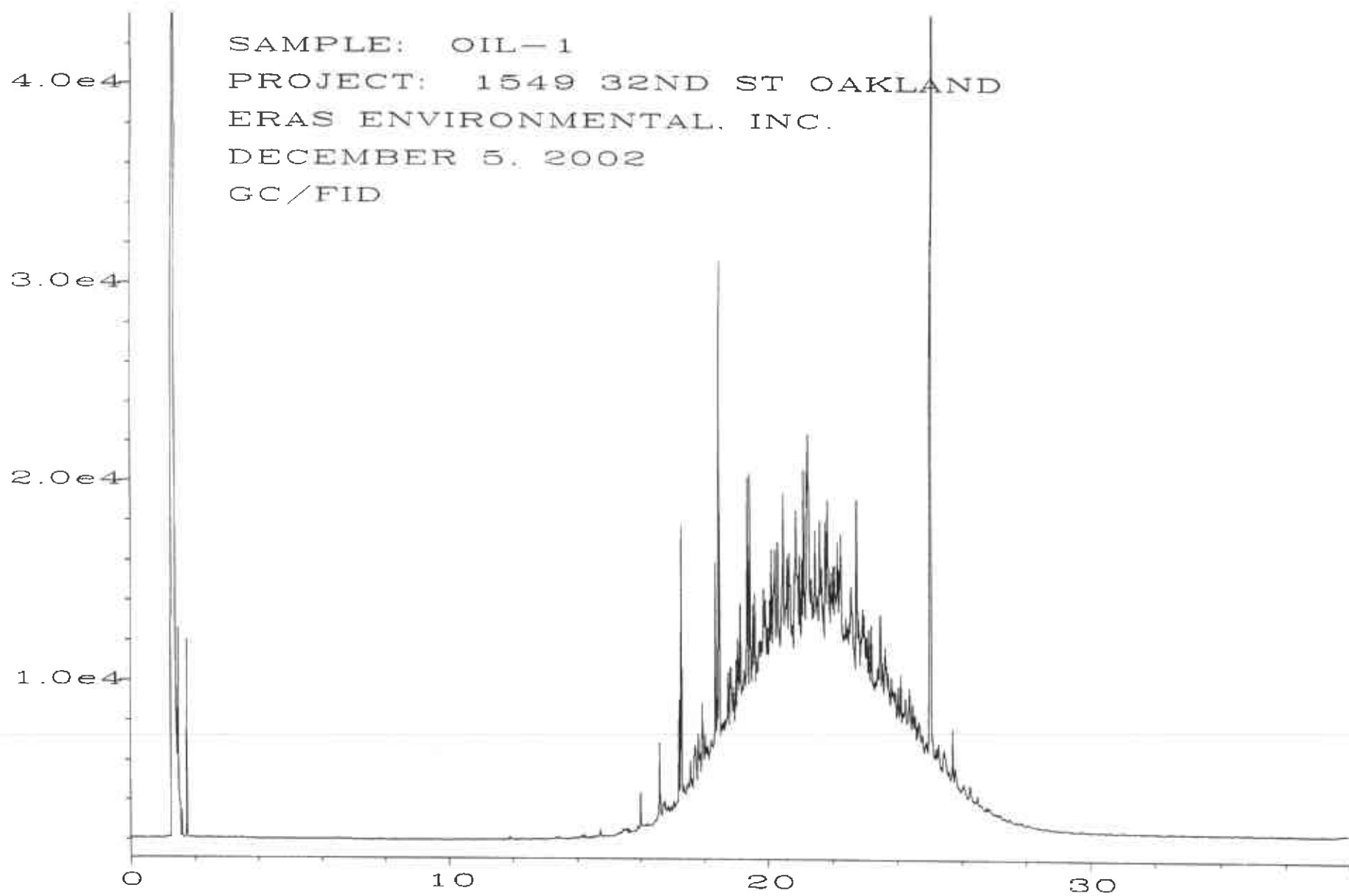


Fig. 1 in C:\HPCHEM\1\DATA\12-05-02\023F0201.D

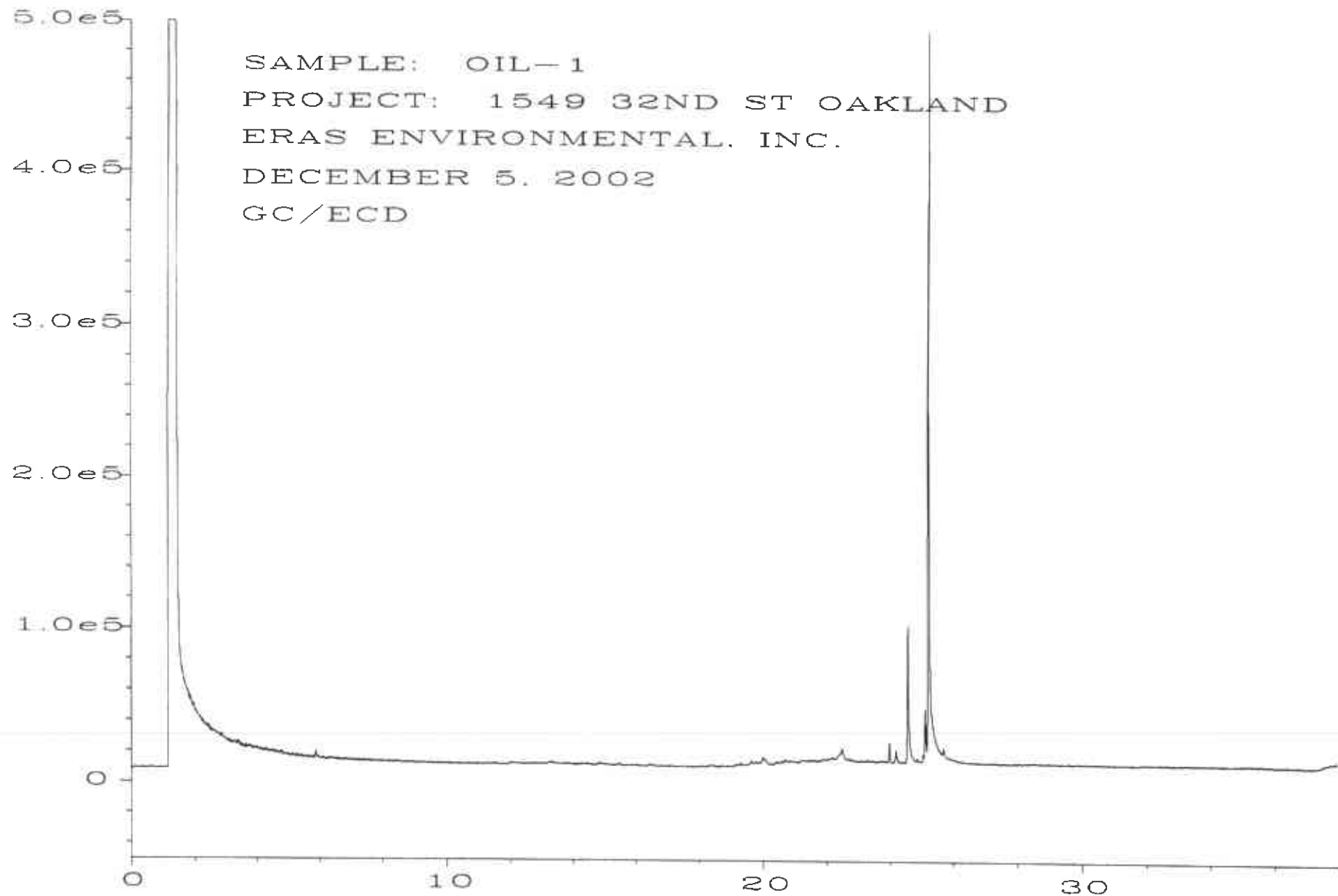


Fig. 2 in C:\HPCHEM\1\DATA\12-05-02\023R0201.D

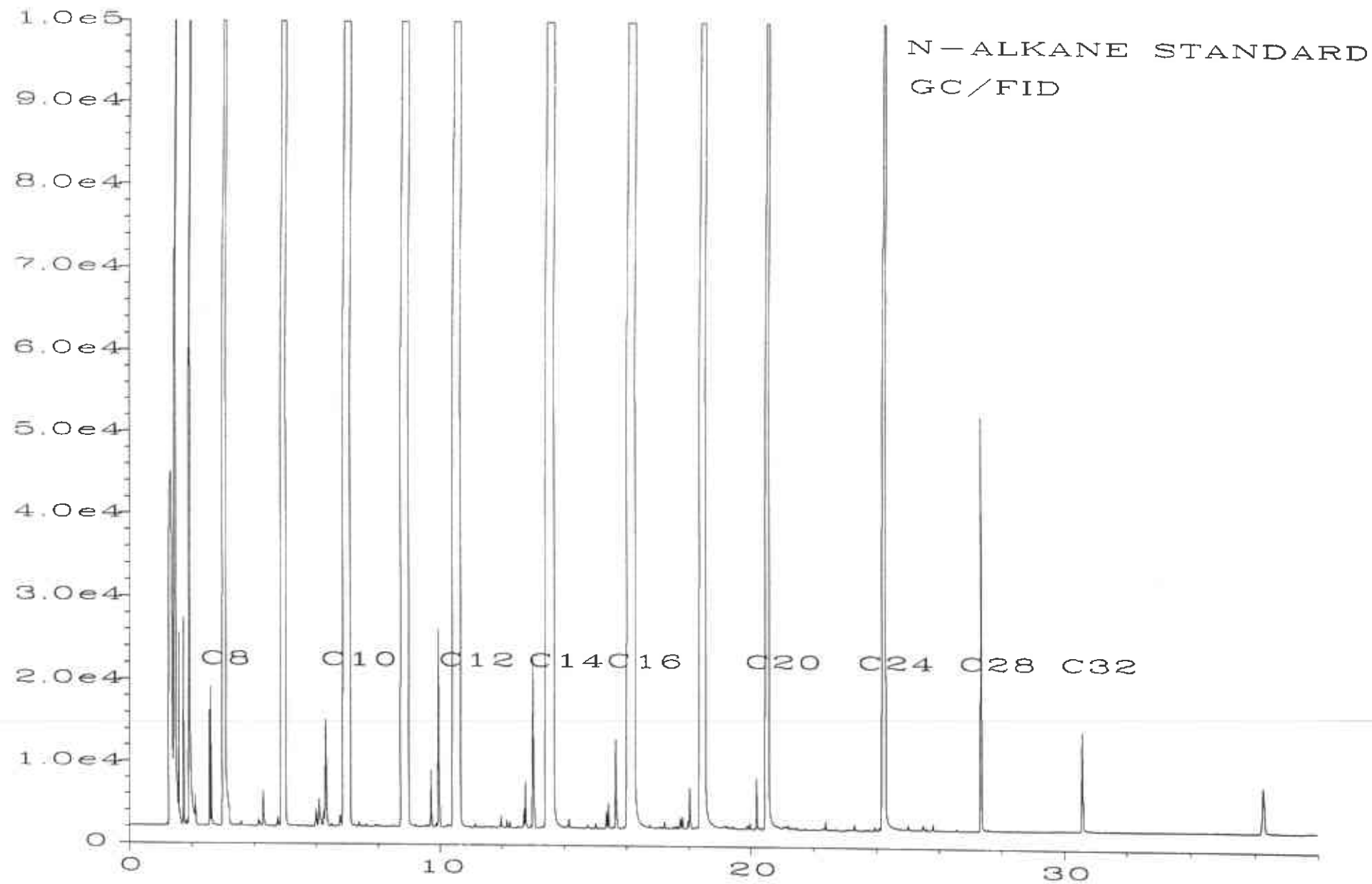


Fig. 1 in C:\HPCHEM\1\DATA\12-05-02\100F0601.D

1.0e5
9.0e4
8.0e4
7.0e4
6.0e4
5.0e4
4.0e4
3.0e4
2.0e4
1.0e4
0

SAMPLE: METHOD BLANK
PROJECT: 1549 32ND ST OAKLAND
ERAS ENVIRONMENTAL, INC.
DECEMBER 5, 2002
GC/FID

0 10 20 30

Fig. 1 in C:\HPCHEM\1\DATA\12-05-02\002F0201.D

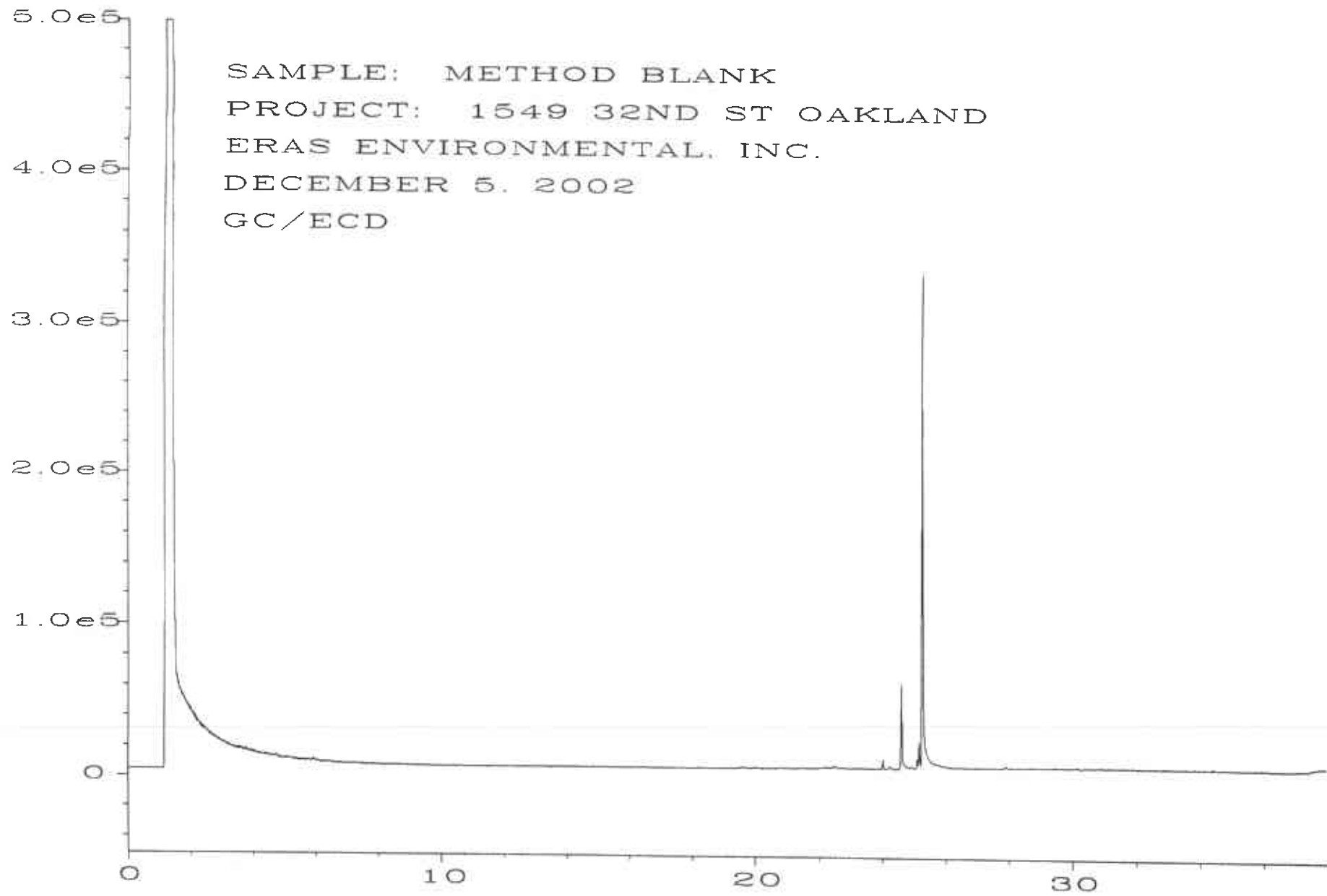


Fig. 2 in C:\HPCHEM\1\DATA\12-05-02\002R0201.D

1211174

KJ 11/22/02 Bay

SAMPLE CHAIN OF CUSTODY

Send Report To David Siegel
 Company ERAS Environmental, Inc.
 Address 2086 Wilbur Avenue, Suite 4
 City, State, ZIP Castro Valley CA 94546
 Phone # _____ Fax # _____

SAMPLERS (signature) _____

PROJECT NAME/NO. 1549 32nd St, Oakland PO # _____
Project 02213

REMARKS Fingerprint oil, may be laundry
'quenching' oil

Page # _____ of _____

TURNAROUND TIME
 Standard (2 Weeks)
 RUSH
 Rush charges authorized by _____

SAMPLE DISPOSAL
 Dispose after 30 days
 Return samples
 Will call with instructions

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of containers	ANALYSES REQUESTED								Notes		
						TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260	SVOCs by 8270	HFS	X				
Oil-1	01	11/21/02	11:15		4 (3 VOCS, 1 Jar)							X				ABCD

Friedman & Bruya, Inc.
 3012 16th Avenue West
 Seattle, WA 98119-2029
 Ph. (206) 285-8282
 Fax (206) 283-5044
 FORMS\COO\COO.DOC

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
<u>David Siegel</u>	<u>David Siegel</u>	<u>ERAS</u>	<u>11/21/02</u>	<u>14:58</u>
<u>[Signature]</u>	<u>Kasey Cordoza</u>	<u>ERAS</u>	<u>11/21/02</u>	<u>14:58</u>
<u>[Signature]</u>	<u>Kasey Cordoza</u>	<u>ERAS</u>	<u>11/21/02</u>	<u>16:15</u>
<u>[Signature]</u>	<u>Mec [unclear]</u>	<u>Pikme</u>	<u>11/22/02</u>	<u>12:15 pm</u>

Note: sent via Fedex overnight

APPENDIX B
STANDARD OPERATING PROCEDURES

STANDARD OPERATING PROCEDURE – DIRECT PUSH BORINGS

SOIL CORING AND SAMPLING PROCEDURES

Prior to drilling, all boreholes will be hand dug to a depth of 4 feet below ground surface (bgs) to check for underground utility lines.

Soil and groundwater samples are collected for lithologic and chemical analyses using a direct driven soil coring system. A hydraulic hammer drives sampling rods into the ground to collect continuous soil cores. As the rods are advanced, soil is driven into an approximately 1.5-inch-diameter sample barrel that is attached to the end of the rods. Soil samples are collected in sleeves inside the sample barrel as the rods are advanced. After being driven 3 to 4 feet into the ground, the rods are removed from the borehole. The sleeve containing the soil core is removed from the sample barrel, and can then be preserved for chemical analyses, or used for lithologic description. This process is repeated until the desired depth is reached.

A soil core interval selected for analyses is cut from the sleeve using a hacksaw. The ends of the tube are covered with aluminum foil or Teflon liner and sealed with plastic caps. The soil-filled liner is labeled with the bore number, sample depth, site location, date, and time. The samples are placed in bags and stored in a cooler containing ice. Soil from the core adjacent to the interval selected for analyses is placed in a plastic zip-top bag. The soil is allowed to volatilize for a period of time, depending on the ambient temperature. The soil is scanned with a flame-ionization detector (FID) or photo-ionization detector (PID).

All sample barrels, rods, and tools are cleaned with Alconox or equivalent detergent and de-ionized water. All rinsate from the cleaning is contained in 55-gallon drums at the project site.

GROUNDWATER SAMPLING FROM DIRECT PUSH BORINGS

After the targeted water-bearing zone has been penetrated, the soil-sample barrel is removed from the borehole. Small-diameter well casing with 0.010-inch slotted well screen may be installed in the borehole to facilitate the collection of groundwater samples. Threaded sections of PVC are lowered into the borehole. Groundwater samples may then be collected with a bailer, peristaltic pump, or WaTerra pump until adequate sample volume is obtained.

Groundwater samples are preserved, stored in an ice-filled cooler, and are delivered, under chain-of-custody, to a laboratory certified by the California Department of Health Services (DHS) for hazardous materials analysis.

BOREHOLE GROUTING FOR DIRECT PUSH BORINGS

Upon completion of soil and water sampling, boreholes will be abandoned with neat cement grout. If the borehole was advanced into groundwater, the grout is pumped through a grouting tube positioned at the bottom of the borehole.