ERAS

Environmental, Inc.

1533 B Street

Hayward, CA 94541

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

LIMITED GROUNDWATER INVESTIGATION
1614 Campbell Street
Oakland, California
ERAS Project Number 03184B

Prepared for:

Mr. Mark Johnson
Nas Construction Company, Inc.
6428 Sombrero Avenue
Cypress, CA 90630

Prepared by:

ERAS Environmental, Inc.
March 22, 2004

ERAS

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Mr. Mark Johnson
Nas Construction Company, Inc.
6428 Sombrero Avenue
Cypress, CA 90630

Subject: **Limited Groundwater Investigation**
1614 Campbell Street
Oakland, California
ERAS Project Number 03184B

Dear Mr. Johnson:

ERAS Environmental, Inc. is pleased to present the results of the Limited Groundwater Investigation conducted at 1614 Campbell Street in Oakland, California (the "Property). A total of 7 soil borings were drilled on the Property on March 5, 2004. Seven groundwater samples were collected and submitted for laboratory chemical analysis. The results of the investigation are presented in the attached report.

Please call if you have any questions regarding the information presented in this report.

Respectfully,
ERAS Environmental, Inc.

David Siegel, R.E.A. II 20200
Project Manager

Gail Jones, R.G. 5725
Senior Geologist

TABLE OF CONTENTS

Figures

Tables

Appendices

1.0 Introduction

This report presents the results of the Limited Groundwater Investigation conducted by ERAS Environmental, Inc. (ERAS) at 1614 Campbell Street in Oakland, California (hereinafter the Property). The location of the Property is shown on **Figure 1.**

2.0 Background

ERAS Environmental, Inc. (ERAS) conducted a Phase 1 Environmental Site Assessment (ESA) for the Property at 1614 Campbell Street in Oakland. The results of the ESA were presented in ERAS report dated December 15, 2003.

As part of the ESA project, ERAS reviewed historical Sanborn Fire Insurance maps, which included the Property, at the University of California, Berkeley Geoscience Library Maps dated in 1912, and 1951 were reviewed. In both years the Property was used as an industrial manufacturing warehouse. A 1,000-gallon underground storage tank (UST) for gasoline in the parking area and a fuel oil UST on the eastern side of the building were identified on the maps. It was unknown whether the fuel oil tank was an underground or aboveground tank.

The ESA also identified an off-site source of contamination that was considered a potential threat to groundwater beneath the Property. Manny Services/McKinney Gas at 1600 Peralta Street is located approximately 350 feet from the Property in an estimated up-gradient direction and was listed in the environmental database search as a State Site. This site was considered a potential environmental concern due to its location and proximity to the Property.

ERAS contacted Ms. Lule Varella of the Department of Toxic Substances Control (DTSC) to request a file review for the 1600 Peralta Street site. The DTSC reported that no files were found for the site. ERAS also contacted the California Regional Water Quality Board about 1600 Peralta Street site, and they also reported no available files regarding this site.

ERAS Environmental, Inc. (ERAS) conducted a Limited Soil and Groundwater Investigation for the Property at 1614 Campbell Street in Oakland in January 2004. The results were presented in an ERAS report dated February 18, 2004. The locations of borings A' and B' from that investigation are shown on **Figure 2.**

In the Limited Soil and Groundwater Investigation dated February 18, 2004 the results of the analysis of soil sample collected from boring A' in the area believed to be at or near the gasoline UST (underground storage tank) indicated the presence of petroleum hydrocarbons above RWQCB (Regional Water Quality Board) ESLs (Environmental Screening Levels). The groundwater sample collected at boring B' located adjacent to the former fuel oil UST was found to contain petroleum hydrocarbons in the motor oil range at 3,200µg/L, above the current RWQCB ESL for residual fuels of 640µg/L. No contamination was found to have migrated from Manny Services/McKinney Gas at 1600 Peralta Street.

3.0 Field Investigation

The purpose of the investigation was to further assess the presence of residual contamination in the subsurface water-bearing zone due to the former use of the gasoline UST and former fuel oil UST. In addition, the investigation was designed to assess whether contamination may be migrating down gradient off of the Property.

Prior to performing the field investigation, the depth to groundwater under the Property was expected to be at a depth of 4 feet due to our previous investigation. The groundwater flow direction was estimated to be westward toward San Francisco Bay.

3.1 Pre-Drilling Activities

A drilling permit was obtained from the County of Alameda County Public Works Agency and an excavation permit was obtained from the City of Oakland **(Appendix A)**. The proposed work area was outlined with white paint and Underground Service Alert was

notified three working days prior to drilling to allow utility companies to mark their underground lines. On March 4, 2004, Subdynamics Locating Services, a private utility locator, cleared the boring locations to assure that no utility lines were beneath the asphalt and concrete surfaces. Osborne Concrete Coring then removed a core of asphalt or concrete from the surface in the drilling locations. Prior to drilling, all locations were hand-dug to 4 to 5 feet bgs as a precaution against damage to undetected utility lines.

3.2 Soil Boring and Groundwater Sampling

Based on the shallow depth to groundwater under the Property, it was determined that the collection of groundwater samples would be appropriate to assess subsurface environmental conditions. On March 5, 2004, 7 soil cores were advanced to a depth of 10 feet below ground surface (bgs) by Vironex, Inc. of San Leandro, California using a Geoprobe™ direct-push sampling rig. Continuous soil cores were collected for lithologic logging in the field. The logs are included as **Appendix D**. The locations of borings A through G are shown on the **Figure 2**. Borings A through C were drilled in the parking lane along the southeast side of Campbell Street. Borings D through G were drilled in the rear yard of the Property surrounding the former gasoline UST (at or near location A').

Temporary 0.75-inch PVC well casings with 5-foot screened intervals at the base of the casings were placed into boring A through G to total depth of 10 feet bgs. Standard Operating Procedures for Geoprobe™ soil boring and groundwater sampling are included as **Appendix C**. Water samples were taken using a plastic tube with a ball check in the end. Prior to surveying there was about 6 feet of water in the well borings. However, the wells would go dry due to the collection of silt on the casing screen.

The groundwater samples were labeled and stored in a cooler with ice in the field and transferred to a refrigerator in the office until they were relinquished to the analytical laboratory using standard chain-of-custody procedures.

3.3 Groundwater Monitoring and Survey of Temporary Wells

In order to assess weather the groundwater is tidally influenced groundwater elevations were taken at high tide and at low tide on March 8, 2003. CSS Environmental Services of San Rafael, California surveyed the elevations of the top of the temporary casings. The surveyor report is included as **Appendix B**.

3.4 Waste Removal

Soil cuttings and decontamination water from this investigation were temporarily stored at the site in labeled 55-gallon drum and 5-gallon bucket. Removal by a waste management contractor for proper disposal is pending.

4.0 Results of Investigation

4.1 Subsurface Conditions Encountered

Details of the subsurface conditions encountered are shown of the field boring logs in **Appendix D.**

All of the borings consisted of either silty sand or a combination of silty sand and fine to medium grain sand from beneath the asphalt or concrete to a depth of at least 10 feet bgs.

Shallow groundwater was first encountered in Borings A through G at depths of approximately four feet bgs. The groundwater appears to be under water table conditions (unconfined).

Using the groundwater elevations compiled from high tide and low tide on **Table 1** the flow direction and gradient was determined. The flow direction only changed slightly. The flow direction was westerly. At high tide the flow gradient was .01 foot/foot and at low tide the gradient was .02 foot/foot. The high tide groundwater map is included as **Figure 2**, and the

low tide groundwater map is included as **Figure 3**.

4.2 Analytical Results

The groundwater samples were submitted to North State Labs, a State of California-certified environmental laboratory, in South San Francisco, California. The laboratory analytical reports and chain-of-custody forms are included as **Appendix E**.

The groundwater samples collected from borings A through G were analyzed for gasoline, diesel, BTEX (benzene, toluene, ethylbenzene, xylenes), MTBE (methyl-tert-butyl ether), and motor oil. No BTEX or MTBE concentrations were detected except for 1.2µg/L ethylbenzene in the sample from boring A (ESL 290µg/L). Gasoline concentrations were detected in the onsite borings A, B, and C 284µg/L, 96µg/L, and 57µg/L respectively. The concentrations were below the ESL for gasoline of 500µg/L.

5.0 Summary and Recommendations

The distribution of petroleum hydrocarbons in groundwater samples is shown on **Figure 4**. The groundwater samples from borings D through G were not found to contain any detectable gasoline, diesel, BTEX, MTBE, or motor oil. These borings were located on four sides of the former gasoline UST (at or near location A'). Thus, there appears to be no impact to groundwater from any leakage from the gasoline UST.

Petroleum hydrocarbons in the gasoline range were detected in the borings on Campbell Street up to 284µg/L in boring A. This concentration is below the ESL (500µg/L). Based upon the westerly groundwater flow direction found during this investigation, boring A appears to be directly down-gradient of boring B' drilled during the January investigation. The groundwater sample from boring B' was not analyzed for gasoline-range hydrocarbons, but was found to contain 3,200µg/L motor oil, Groundwater from boring A was analyzed for petroleum hydrocarbons in the diesel and motor oil ranges but was not found to contain detectable concentrations of these compounds. Therefore, the evidence suggests that the

dissolved petroleum hydrocarbon plume above the ESLs for gasoline, diesel, and/or motor oil has not migrated beyond the subject site.

6.0 Limitations

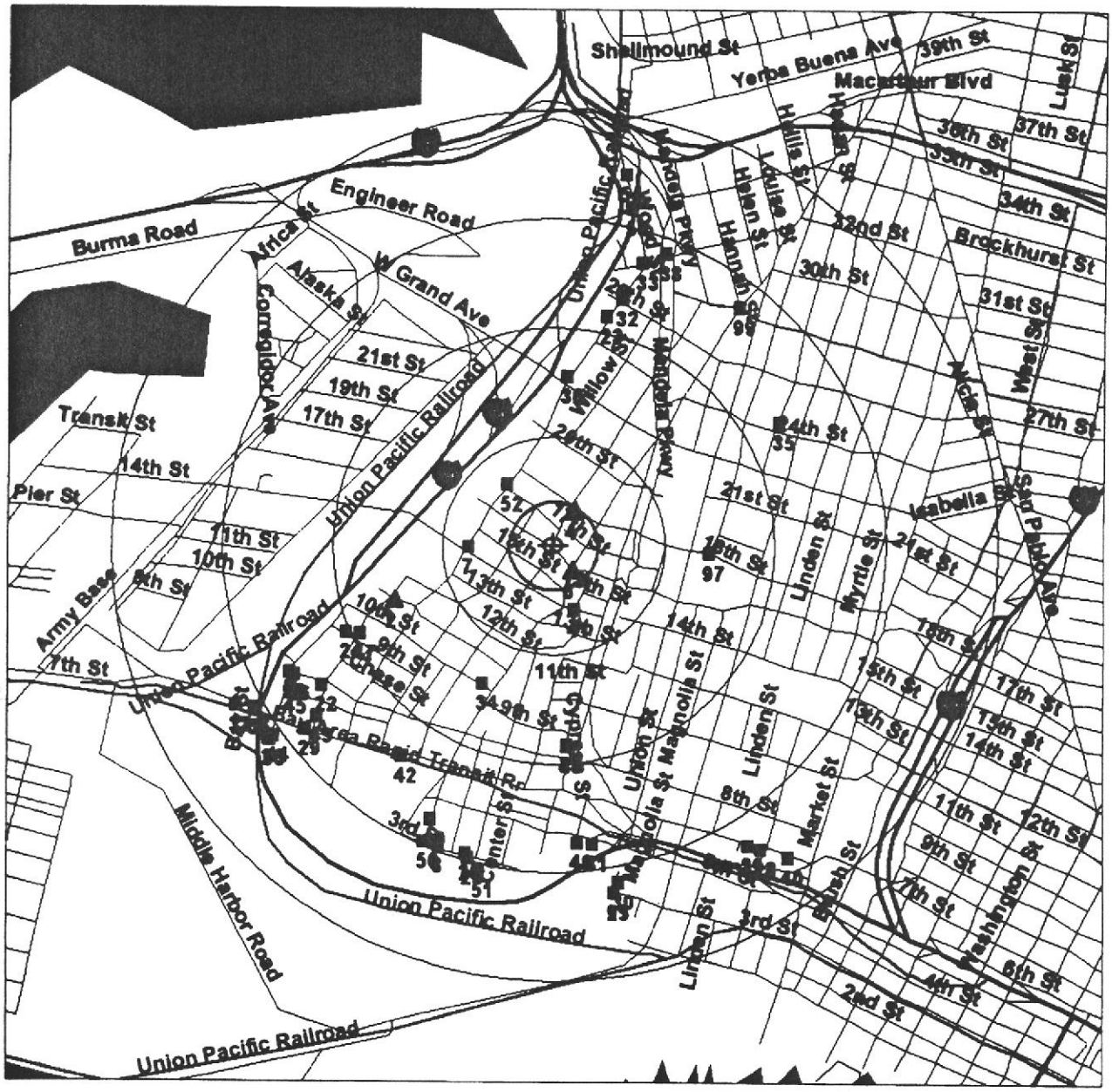
This report has been prepared by ERAS according to the State and local agency suggested guidance documents for these investigations and in general accordance with the accepted standard of practice that exists in Northern California at the time the investigation was performed. The interpretations, conclusions and recommendations made herein are based upon the data and analysis for the soil and water samples collected on-site. ERAS is not responsible for errors in laboratory analysis and reporting, or for information withheld during the course of the study. The purpose of this study is to screen for the presence of contamination that may affect the use or value of the Property. As such, the evaluation of the geologic and environmental conditions on this site is made with very limited data. Judgements leading to conclusions are generally made with an incomplete knowledge of the conditions present. Additional conditions and materials at the site could exist that were not encountered during this investigation. No warranty or guarantee is expressed or implied therein.

Environmental FirstSearch

1 Mile Radius

ASTM: NPL, RCRACOR, STATE

1614 CAMPBELL ST, OAKLAND CA 94607



Source: 1999 U.S. Census TIGER Files

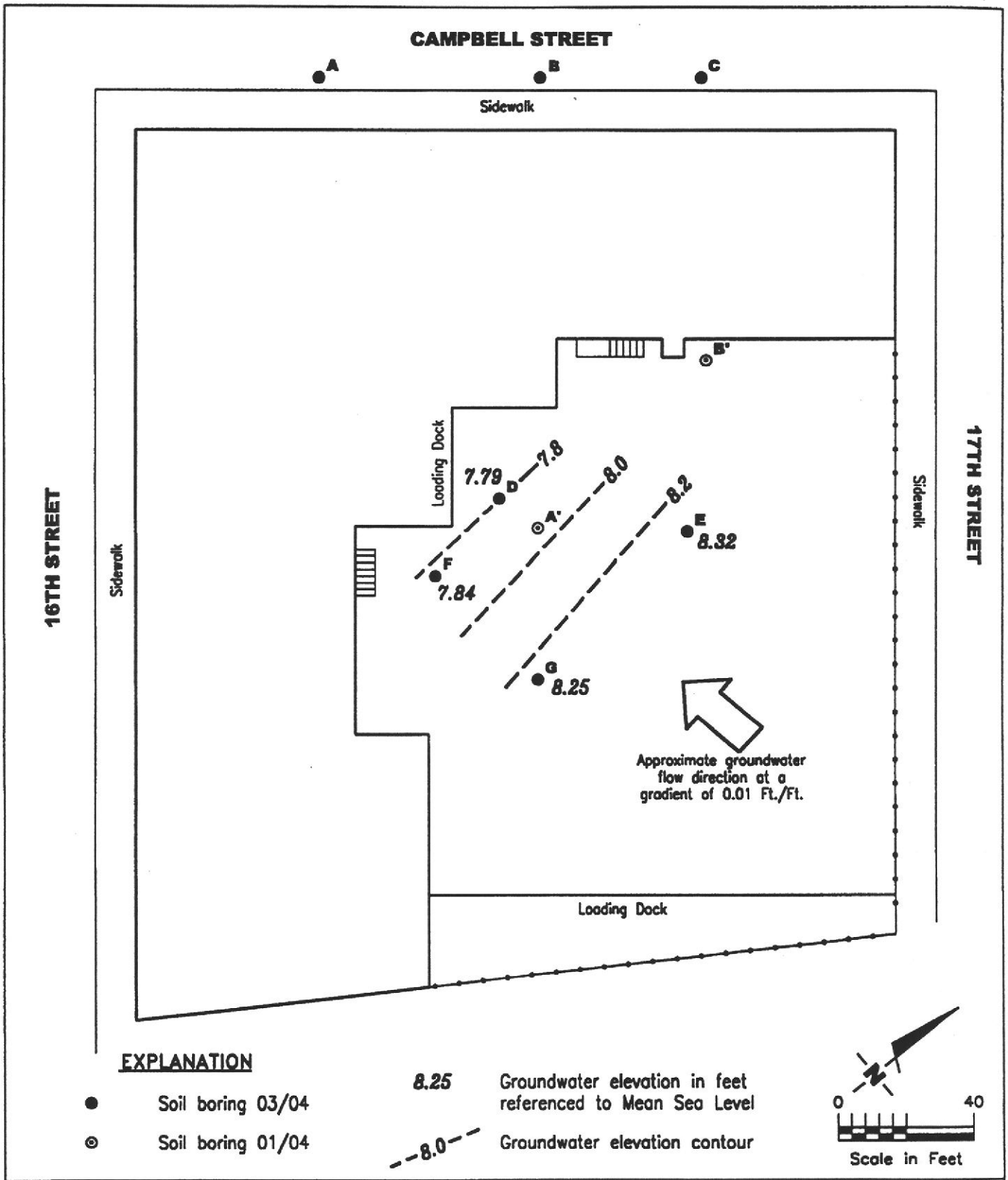
Target Site (Latitude: 37.813568 Longitude: -122.294144) .....

Identified Site, Multiple Sites, Receptor .....

NPL, Solid Waste Landfill (SWL) or Hazardous Waste .....

Railroads .....

Black Rings Represent 1/4 Mile Radii; Red Ring Represents 500 ft. Radius

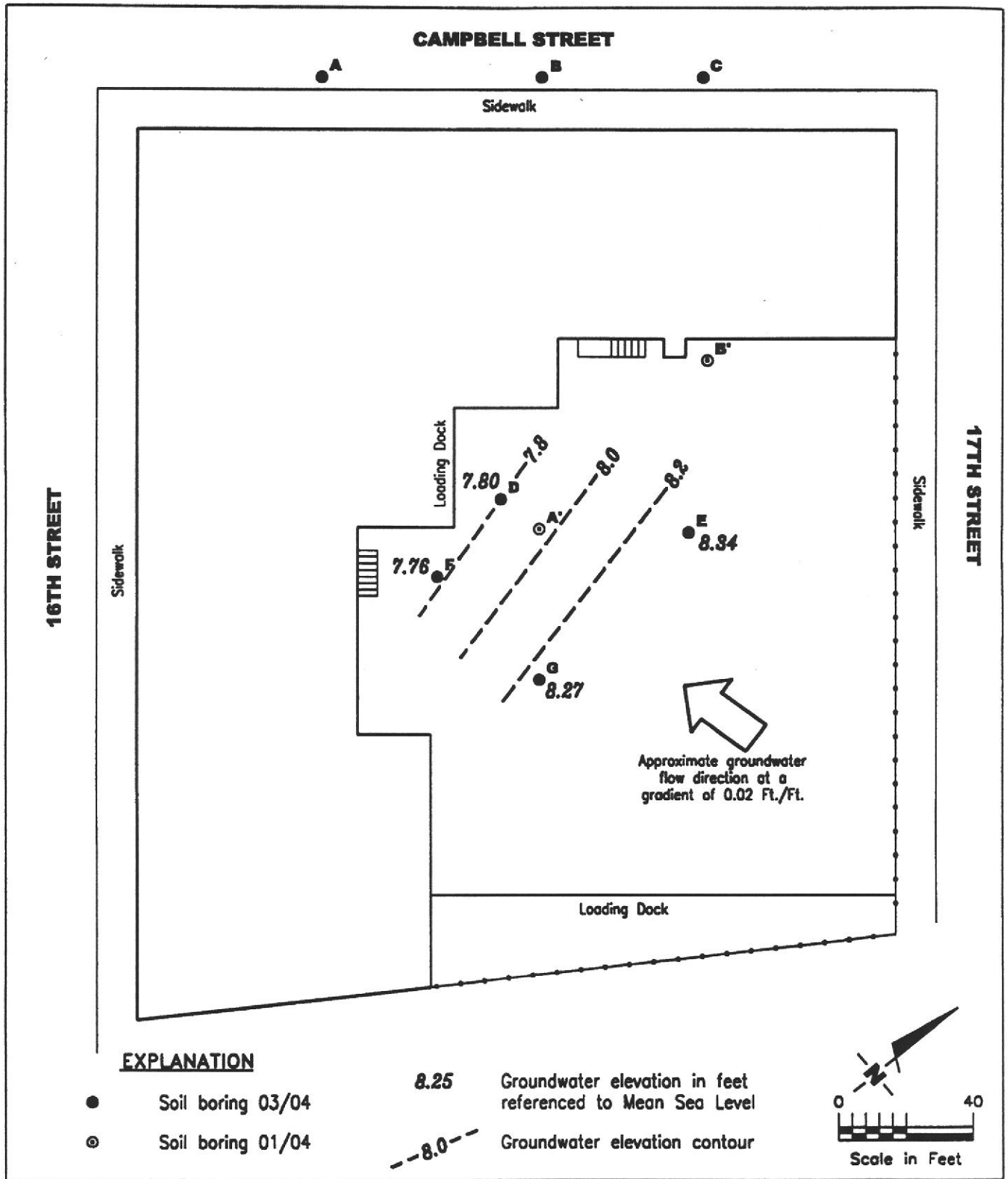


GROUNDWATER ELEVATION MAP for HIGH TIDE - MARCH 8, 2004

DATE 03/04 REVIEWED BY DS	1614 Campbell Street Oakland, California	JOB NUMBER 03184B FIGURE 2

ERAS Environmental Inc.

ERAS 03-21-04 GWEN1803-04.dwg

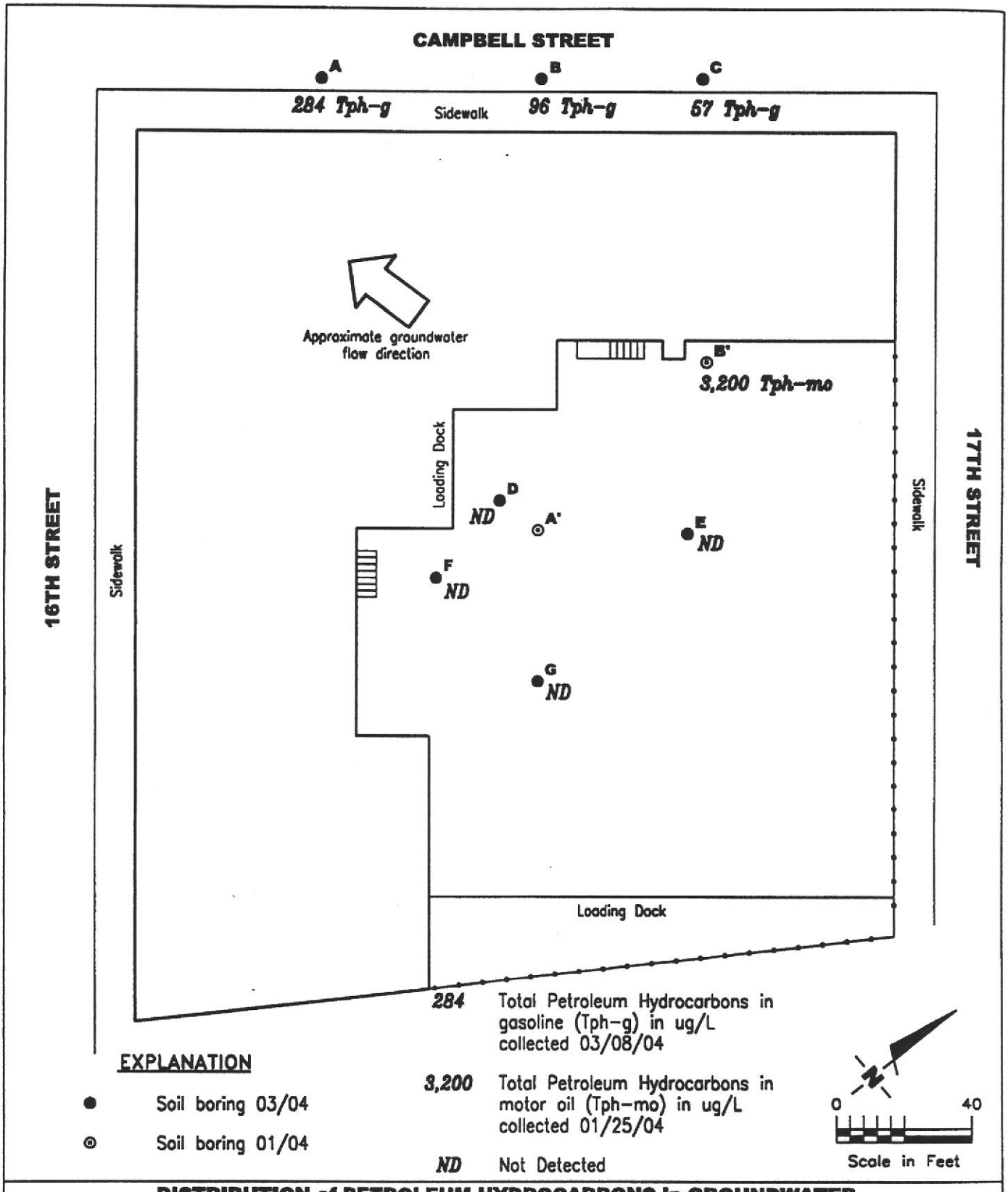


GROUNDWATER ELEVATION MAP for LOW TIDE - MARCH 8, 2004

DATE 03/04 REVIEWED BY DS	1614 Campbell Street Oakland, California	JOB NUMBER 03184B FIGURE 3

ERAS Environmental Inc.

ERAS 03-21-04 GW03184-04.dwg



DISTRIBUTION of PETROLEUM HYDROCARBONS In GROUNDWATER

DATE 03/04 REVIEWED BY DS	1614 Campbell Street Oakland, California	JOB NUMBER 03184B FIGURE 4

ERAS Environmental Inc.

ERAS 03-21-04 Tphg-mo.dwg

TABLE 1

Groundwater Elevations

1614 Campbell Street

March 8, 2004

Low Tide (6:54 AM)				
Boring	**Time**	**Top of Casing Elevation (feet above sea level)**	**Depth To Water**	**Groundwater Elevation (feet above sea level)**
D	6:50 AM	11.99	4.19	7.80
E	6:41 AM	11.43	3.09	8.34
F	6:46 AM	12.01	4.25	7.76
G	6:43 AM	11.62	3.35	8.27
High Tide (12:56 PM)				
Boring	**Time**	**Top of Casing Elevation (feet above sea level)**	**Depth To Water**	**Groundwater Elevation (feet above sea level)**
D	12:52 PM	11.99	4.20	7.79
E	12:56 PM	11.43	3.11	8.32
F	12:49 PM	12.01	4.17	7.84
G	12:48 PM	11.62	3.37	8.25

Appendix A

Drilling Permits

CITY OF OAKLAND
Office of Planning and Building

EXCAVATION PERMIT

TO EXCAVATE IN STREETS OR OTHER SPECIFIED WORK

CIVIL ENGINEERING

PERMIT NUMBER	SITE ADDRESS/LOCATION
X0000681	1614 CAMPBELL STREET, Campbell betco 16th & 17th
APPROX. START DATE: 3-5-04 / APPROX. END DATE: 3-5-04	24-HOUR EMERGENCY PHONE NUMBER (Permit not valid without 24-Hour number): 510 209 6344
CONTRACTOR'S LICENSE # AND CLASS: VIRONEX CF 705927	CITY BUSINESS TAX #: 1247727

ATTENTION:

1) State law requires that the contractor/owner call *Underground Service Alert (USA)* two working days before excavating. This permit is not valid unless applicant has secured an inquiry identification number issued by USA. The USA telephone number is 1 (800) 642-2444. UNDERGROUND SERVICE ALERT (USA) #: C-73531

2) **48 hours prior to starting work, YOU MUST CALL (510) 238-3651 TO SCHEDULE AN INSPECTION.**

OWNER/BUILDER

I hereby affirm that I am exempt from the Contractor's License Law for the following reason (Sec. 7031.5 Business and Professions Code: Any city or county which requires a permit to construct, alter, improve, demolish, or repair any structure, prior to its issuance, also requires the applicant for such permit to file a signed statement that he is licensed pursuant to the provisions of the Contractor's License law Chapter 9 (commencing with Sec. 7000) of Division 3 of the Business and Professions Code, or that he is exempt therefrom and the basis for the alleged exemption. Any violation of Section 7031.5 by any applicant for a permit subjects the applicant to a civil penalty of not more than $500):

☐ I, as an owner of the property, or my employees with wages as their sole compensation, will do the work, and the structure is not intended or offered for sale (Sec. 7044, Business Professions Code: The Contractor's License Law does not apply to an owner of property who builds or improves thereon, and who does such work himself or through his own employees, provided that such improvements are not intended or offered for sale. If however, the building or improvement is sold within one year of completion, the owner-builder will have the burden of proving that he did not build or improve for the purpose of sale).

☐ I, as owner of the property, am exempt from the sale requirements of the above due to: (1) I am improving my principal place of residence or appurtenances thereto, (2) the work will be performed prior to sale, (3) I have resided in the residence for the 12 months prior to completion of the work, and (4) I have not claimed exemption on this subdivision on more than two structures more than once during any three-year period. (Sec. 7044 Business and Professions Code).

☐ I, as owner of the property, am exclusively contracting with licensed contractors to construct the project, (Sec. 7044, Business and Professions Code: The Contractor's License Law does not apply to an owner of property who builds or improves thereon, and who contracts for such projects with a contractor(s) licensed pursuant to the Contractor's License law).

☐ I am exempt under Sec. _____, B&PC for this reason _____.

WORKER'S COMPENSATION

☐ I hereby affirm that I have a certificate of consent to self-insure, or a certificate of Worker's Compensation Insurance, or a certified copy thereof (Sec. 3700, Labor Code).

Policy # 1051536 Company Name Granite State Insurance Company

☐ I certify that in the performance of the work for which this permit is issued, I shall not employ any person in any manner so as to become subject to the Worker's Compensation Laws of California (not required for work valued at one hundred dollars ($100) or less).

NOTICE TO APPLICANT: If, after making this Certificate of Exemption, you should become subject to the Worker's Compensation provisions of the Labor Code, you must forthwith comply with such provisions or this permit shall be deemed revoked. This permit is issued pursuant to all provisions of Title 12 Chapter 12.12 of the Oakland Municipal Code. It is granted upon the express condition that the permittee shall be responsible for all claims and liabilities arising out of work performed under the permit or arising out of permittee's failure to perform the obligations with respect to street maintenance. The permittee shall, and by acceptance of the permit agrees to defend, indemnify, save and hold harmless the City, its officers and employees, from and against any and all suits, claims, or actions brought by any person for or on account of any bodily injuries, disease or illness or damage to persons and/or property sustained or arising in the construction of the work performed under the permit or in consequence of permittee's failure to perform the obligations with respect to street maintenance. This permit is void 90 days from the date of issuance unless an extension is granted by the Director of the Office of Planning and Building.

I hereby affirm that I am licensed under provisions of Chapter 9 of Division 3 of the Business and Professions Code and my license is in full force and effect (if contractor), that I have read this permit and agree to its requirements, and that the above information is true and correct under penalty of law.

Signature of Permittee [signature] ☐ Agent for ☒ Contractor ☐ Owner (for Owner) Date 3-1-04

DATE STREET LAST RESURFACED	SPECIAL PAVING DETAIL REQUIRED? ☐ YES ☒ NO	HOLIDAY RESTRICTION? (NOV 1 - JAN 1) ☐ YES ☒ NO	LIMITED OPERATION AREA? (7AM-9AM & 4PM-6PM) ☐ YES ☒ NO
ISSUED BY [signature]		DATE ISSUED	

ALAMEDA COUNTY PUBLIC WORKS AGENCY

WATER RESOURCES SECTION
399 ELMHURST ST. HAYWARD CA. 94544-1395
PHONE (510) 670-6633 James Yoo
FAX (510) 782-1939
APPLICANTS: PLEASE ATTACH A SITE MAP FOR ALL DRILLING PERMIT APPLICATIONS
DESTRUCTION OF WELLS OVER 45 FEET REQUIRES A SEPARATE PERMIT APPLICATION

DRILLING PERMIT APPLICATION

FOR APPLICANT TO COMPLETE

LOCATION OF PROJECT 1614 CAMPBELL ST, OAKLAND; Soil borings to groundwater in street; Campbell Street

CLIENT
Name MR MARK JOHNSON / NAS CONSTRUCTION
Address 6428 SOMERSET ST Phone 714 890 9896
City CYPRESS, CA. Zip 90630

APPLICANT
Name ERAS ENVIRONMENTAL, INC
Fax 510 886 5399
Address 1533 B STREET Phone 510 247 9885
City HAYWARD, CA Zip 94541

TYPE OF PROJECT
Well Construction / Geotechnical Investigation
Cathodic Protection ☐ General ☐
Water Supply ☐ Contamination ☑
Monitoring ☐ Well Destruction ☐

PROPOSED WATER SUPPLY WELL USE
New Domestic ☐ Replacement Domestic ☐
Municipal ☐ Irrigation ☐
Industrial ☐ Other ____ ☐

DRILLING METHOD:
Mud Rotary ☐ Air Rotary ☐ Auger ☐
Cable ☐ Other ☑ DIRECT PUSH

DRILLER'S NAME VIRONEX

DRILLER'S LICENSE NO. C57 705927

WELL PROJECTS
Drill Hole Diameter ____ in. Maximum
Casing Diameter ____ in. Depth ____ ft.
Surface Seal Depth ____ ft. Owner's Well Number ____

GEOTECHNICAL PROJECTS
Number of Borings Seven (7) Maximum
Hole Diameter 2 in. Depth ____ ft

STARTING DATE March 5 2004

COMPLETION DATE March 5 2004

I hereby agree to comply with all requirements of this permit and Alameda County Ordinance No. 73-68.

APPLICANT'S SIGNATURE [signature] DATE 4/25/04

PLEASE PRINT NAME William "Skip" McIntosh Rev.9-18-02

FOR OFFICE USE

PERMIT NUMBER W04-0171
WELL NUMBER ____
APN ____

PERMIT CONDITIONS
Circled Permit Requirements Apply

A. GENERAL
1. A permit application should be submitted so as to arrive at the ACPWA office five days prior to proposed starting date.
2. Submit to ACPWA within 60 days after completion of permitted original Department of Water Resources-Well Completion Report.
3. Permit is void if project not begun within 90 days of approval date.

B. WATER SUPPLY WELLS
1. Minimum surface seal thickness is two inches of cement grout placed by tremie.
2. Minimum seal depth is 50 feet for municipal and industrial wells or 20 feet for domestic and irrigation wells unless a lesser depth is specially approved.

C. GROUNDWATER MONITORING WELLS INCLUDING PIEZOMETERS
1. Minimum surface seal thickness is two inches of cement grout placed by tremie.
2. Minimum seal depth for monitoring wells is the maximum depth practicable or 20 feet.

(D.) GEOTECHNICAL / Contamination.
Backfill bore hole by tremie with cement grout or cement grout/sand mixture. Upper two-three feet replaced in kind or with compacted cuttings.

E. CATHODIC
Fill hole anode zone with concrete placed by tremie.

F. WELL DESTRUCTION
Send a map of work site. A separate permit is required for wells deeper than 45 feet.

(G.) SPECIAL CONDITIONS BHZ

NOTE: One application must be submitted for each well or well destruction. Multiple borings on one application are acceptable for geotechnical and contamination investigations.

APPROVED [signature] DATE 2-27-04

ALAMEDA COUNTY PUBLIC WORKS AGENCY

WATER RESOURCES SECTION
399 ELMHURST ST. HAYWARD, CA. 94544-1395
PHONE (510) 670-6633 James Yoo FAX (510) 782-1939

PERMIT NO. W04-0171

WATER RESOURCES SECTION
GROUNDWATER PROTECTION ORDINANCE
B#1-GENERAL CONDITIONS: GEOTECHNICAL & CONTAMINATION BOREHOLES

1. Prior to any drilling activities shall be the applicants responsibilities to contact and coordinate a Underground Service Alert (USA), obtain encroachment permit(s), excavation permit(s) or any other permits required for that Federal, State, County or to the City and follow all City or County Ordinances. No work shall begin until all the permits and requirements have been approved or obtained.

2. Boreholes shall not be left open for a period of more than **24 hours**. All boreholes left open more than 24 hours will need approval from Alameda County Public Works Agency, Water Resources Section. All boreholes shall be backfilled according to permit destruction requirements and all concrete material and asphalt material shall be to Caltrans Spec or County/City Codes. No borehole(s) shall be left in a manner to act as a conduit at any time.

3. Permitte, permittee's, contractors, consultants or agents shall be responsible to assure that all material or waters generated during drilling, boring destruction, and/or other activities associated with this Permit will be safely handled, properly managed, and disposed of according to all applicable federal, state, and local statues regulating such. In no case shall these materials and/or waters be allowed to enter, or potentially enter, on-or off site storm sewers, dry wells, or waterways or be allowed to move off the property where work is being completed.

4. Permit is valid only for the purpose specified herein **March 5 to March 5, 2004**. No changes in construction procedures, as described on this permit application. Boreholes shall not be converted to monitoring wells, without a permit application process.

5. Drilling Permit(s) can be voided/ canceled only in writing. It is the applicants responsibilities to notify Alameda County Public Works Agency, Water Resources Section in writing for an extension or to cancel the drilling permit application. No drilling permit application(s) shall be extended beyond ninety (90) days from the original start date. Applicants may not cancel a drilling permit application after the completion date of the permit issued has passed.

6. Permittee shall assume entire responsibility for all activities and uses under this permit and shall indemnify, defend and save the Alameda County Public Works Agency, its officers, agents, and employees free and harmless from any and all expense, cost, liability in connection with or resulting from the exercise of this Permit including, but not limited to, properly damage, personal injury and wrongful death.

Appendix B

Surveyor Report

C S S

CSS ENVIRONMENTAL SERVICES, INC.
Managing Cost, Scope and Schedule
95 Belvedere Street, Suite 2
San Rafael, CA 94901
Telephone: (415) 457-9551
Facsimile: (415) 457-9261

FACSIMILE TRANSMITTAL

DATE: March 10, 2003

TO: Andrew Savage (510) 886-5399 2 Page(s)
Eras Environmental

FROM: Bruce Davis

RE: **1614 Campbell, Oakland - Survey Results**

Dear Mr. Savage,

The following are results of Monday's survey at the 1614 Campbell Street site. The results present the top of well casings measured relative to sea level using NAVD88 vertical datum. The locations correspond to those labeled on the following page.

Location	Elevation
D	11.99'
E	11.43'
F	12.01'
G	11.62'

Please feel free to contact Aaron Stessman or myself with any questions.

Sincerely,

Bruce

APPENDIX C

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-diamter 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 Waters 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.

Appendix D

Field Boring Logs

Ɛras Ɛnvironmental | **Log of Boring** A

PROJECT: 1614 Campbell	ADDRESS: 1614 Campbell
JOB NUMBER: 031848	LOCATION: A in Parking lane
DATE STARTED: 3-5-04 @ 7:45	First Water (ft. bgs.): 4 feet DATE: 3-5-04
DATE FINISHED: 3-5-04	TOTAL DEPTH: 10 feet
DRILLING METHOD: Geoprobe	GEOLOGIST: Andrew Savage
DRILLING COMPANY: Vironex	Reviewed By: Gail Jones, RG

DEPTH ft.	PID (ppm)	SAMPLE NO.	RECOVERY	GRAPHIC LOG	WATER LEVEL	GEOLOGIC DESCRIPTION
						Asphalt + base rock ½" - 1" angular
						hand auger to 4 feet
				SP		@ 2 feet Sand, very dark gray (7.5YR 3/1), medium dense, damp, fine to medium grain sand, no product odor
					∇	@ 3 feet Silty sand, brown (7.5YR 4/4) damp, medium dense, fine to med grain sand, ~15% silt
5	@5' 0			SM		no product odor @ 4 feet saturated
						Same silty sand
10	@10' 2.8					Bottom of Geoprobe 10 feet
15						
20						

ERAS Environmental — **Log of Boring** B

PROJECT: 1614 Campbell	ADDRESS: 1614 Campbell
JOB NUMBER: 031614B	LOCATION: B in parking lane
DATE STARTED: 03-05-04 @ 8:41	First Water (ft. bgs.): 4 feet DATE: 3-5-04
DATE FINISHED: 03-05-04	TOTAL DEPTH: 10 feet
DRILLING METHOD: Geoprobe	GEOLOGIST: Andrew Savage
DRILLING COMPANY: Vironex	Reviewed By: Cecil Jones, RG

DEPTH ft.	PID (ppm)	SAMPLE NO.	RECOVERY	GRAPHIC LOG	WATER LEVEL	GEOLOGIC DESCRIPTION
						Multiple layers of Asphalt + ½"-1" angular base rock
				SP		hand auger to 4 feet @2 feet Sand, very dark grey (7.5YR3/1), damp, medium dense, fine to medium grain sand, no product odor
					▽	@4 feet
5	@5' 4.1		X NR NR NR NR NR	SM		Silty Sand, brown (7.5YR4/4), saturated, fine to medium grain sand, ~15% silt, medium dense, no product odor Core stuck in sampler (Some silty sand at the bottom of sampler) NPO
10	@10' 8.2					
15						
20						

ƐRAS Ɛnvironmental

Log of Boring C

PROJECT: 1614 Campbell	ADDRESS: 1614 Campbell
JOB NUMBER: 031648	LOCATION: C in parking lane
DATE STARTED: 3-5-04 @ 9:30	First Water (ft. bgs.): 4 feet DATE: 3-5-04
DATE FINISHED: 3-5-04	TOTAL DEPTH: 10 feet
DRILLING METHOD: Geoprobe	GEOLOGIST: Andrew Sang
DRILLING COMPANY: Vironex	Reviewed By: Gail Jones, RG

DEPTH ft.	PID (ppm)	SAMPLE NO.	RECOVERY	GRAPHIC LOG	WATER LEVEL	GEOLOGIC DESCRIPTION
						Asphalt + ½" + 1" aggregate base rock
						hand auger to 4feet
				SM		@2feet Silty Sand, very dark gray, (7.5YR3/1), medium dense, damp, fine to medium grain sand, ~15% silt, no product odor
					▽	@4feet Change to brown (7.5YR4/4), NPO (saturated)
5	@5' .2					
				SP		@7feet Sand, brown (7.5YR4/4) medium dense, wet, fine to medium sand, no product odor,
10	@10' 0					Bottom of Geoprobe 10feet
15						
20						

ERAS Environmental

Log of Boring D

PROJECT: 1614 Campbell	ADDRESS: 1614 Campbell
JOB NUMBER: 03184B	LOCATION: D, loading dock
DATE STARTED: 3-5-04 @ 11:00	First Water (ft. bgs.): 4 Feet DATE: 3-5-04
DATE FINISHED: 3-5-04	TOTAL DEPTH: 10 feet
DRILLING METHOD: Geoprobe	GEOLOGIST: Andrew Savage
DRILLING COMPANY: Vironex	Reviewed By: Geil Janes, RG

DEPTH ft.	PID (ppm)	SAMPLE NO.	RECOVERY	GRAPHIC LOG	WATER LEVEL	GEOLOGIC DESCRIPTION
						Concrete + ½" - 1" angular base rock
				SM	▽	hand auger to 5 feet @2 feet Silty Sand, dark brown (7.5YR3/3), medium dense, damp, fine to medium sand, ~15% silt, no product odor @4 feet Color Change to brown (7.5YR4/3) (Saturated)
5	@8' .6		NR NR	SP		@5 Sand, brown (7.5YR4/4) medium dense, wet, fine to medium sand, no product odor hole caved in push again from 5-10'
10						10 feet Bottom of Geoprobe
15						
20						

ERAS Environmental | **Log of Boring** E

PROJECT: 1614 Camp Bell	ADDRESS: 1614 Camp Bell
JOB NUMBER: 031848	LOCATION: E toward gate
DATE STARTED: 03-05-04 @ 11:40	First Water (ft. bgs.): 9 feet DATE: 03-05-04
DATE FINISHED: 3-5-04	TOTAL DEPTH: 10 feet
DRILLING METHOD: Geoprobe	GEOLOGIST: Andrew Sanger
DRILLING COMPANY: Vironex	Reviewed By: Gail Jones, RG

DEPTH ft.	PID (ppm)	SAMPLE NO.	RECOVERY	GRAPHIC LOG	WATER LEVEL	GEOLOGIC DESCRIPTION
						Concrete + ± 6" angular base rock
				SM		backfill to five feet
					▽	@2 feet Silty Sand, dark brown (7.5YR 3/2) medium dense, dry, fine to medium grain sand, ~15% silt, no product odor.
5				SP		@4 feet Sand (7.5YR 3/2) brown, medium dense, fine to medium grain sand, saturated, no product odor
				SM		@8 feet Silty Sand, brown (7.5YR 4/4) moderate brown mottled with gray (7.5YR 5/1), medium dense, fine to medium grain sand, ~15% silt, wet, no product odor, black organics
10	@10' 28.0					Bottom of Geoprobe @ 10 feet
15						
20						

ERAS Environmental — **Log of Boring** F

PROJECT: 1614 Campbell	ADDRESS: 1614 Campbell
JOB NUMBER: 03184B	LOCATION: E by String
DATE STARTED: 03-05-04 1245	First Water (ft. bgs.): 4 feet DATE: 3-5-04
DATE FINISHED: 03-05-04	TOTAL DEPTH: 10 feet
DRILLING METHOD: Geoprobe	GEOLOGIST: Andrew Savage
DRILLING COMPANY: Vironex	Reviewed By: Gail Jones RG

DEPTH ft.	PID (ppm)	SAMPLE NO.	RECOVERY	GRAPHIC LOG	WATER LEVEL	GEOLOGIC DESCRIPTION
						Concrete + ⅜" - 1" angular base rock
				SP	▽	hand auger to 5 feet [redacted] @2 feet Sand, dark brown (7.5YR3/3) med-um dense, fine to med-um grain sand, [redacted] no product odor
5			X			@4 feet Sand, brown (7.5YR4/4), medium dense, saturated, fine to med-o grain sand, ~10% silt, No product odor
			X	SM		@7 feet Silty Sand (7.5YR4/6) strong brown, mottled with gray (7.5YR5/1) medium dense, ~20% silt, fine to medium sand, no product odor, black organics present
10	@10 9.6		X			Bottom of Geoprobe 10 feet
15						
20						

ERAS Environmental — **Log of Boring** G7

PROJECT: 1614 Campbell	ADDRESS: 1614 Campbell
JOB NUMBER: 03184B	LOCATION: Grn Middle at Yard
DATE STARTED: 3-5-04 12:15	First Water (ft. bgs.): 4 feet DATE: 3-5-04
DATE FINISHED: 3-5-04	TOTAL DEPTH: 10 feet
DRILLING METHOD: Geoprobe	GEOLOGIST: Andrew Sawyer
DRILLING COMPANY: Vironex	Reviewed By: Gail Jones, RG

DEPTH ft.	PID (ppm)	SAMPLE NO.	RECOVERY	GRAPHIC LOG	WATER LEVEL	GEOLOGIC DESCRIPTION
						Concrete + ½" x 1" angular base rock
						hand auger to 5 feet
				SM		@2 feet Silty Sand, dark brown (7.5YR3/2) medium dense, damp, fine to medium sand, ~20% silt, No product odor
					▽	@4 feet color change to brown (7.5YR4/4) saturated
5						
				SM		@ 6 feet Silty Sand, brown (7.5YR4/4) mottled with dark gray (7.5YR4/1), medium dense, wet, fine to medium grain sand, ~20% silt, No Product Odor, Black organics present
						hole caved in pushed 5' to 10' twice more to get the temporary casing in.
10	@10 22.7					Bottom of Geoprobe 10 feet
15						
20						

Appendix E

Laboratory Analytical Report
Chain-of-Custody Form

North State Labs
CA ELAP # 1753
90 South Spruce Avenue, Suite V • South San Francisco, CA 94080 • **(650) 266-4563** • FAX (650) 266-4560

Case Narrative

Client: ERAS Environmental
Project: 1614 CAMPBELL / 03184B
Lab No: 04-0328
Date Received: 03/08/2004 Date reported: 03/10/2004

Seven water samples were analyzed for diesel, motor oil and gasoline range hydrocarbons by method 8015M, BTEX and MTBE by method 8021B. The silica gel cleanup procedure was performed for the analysis of diesel and motor oil. The QC/QA samples met all required criteria. Due to insufficient amount of sample supplied the LCS/LCSD results were reported for all analyses instead of MS/MSD. No errors were noted during analysis.

John A. Murphy
Laboratory Director

North State Labs
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C E R T I F I C A T E O F A N A L Y S I S

Lab Number: 04-0328
Client: ERAS Environmental
Project: 1614 CAMPBELL/ 03184B

Date Reported: 03/10/2004

Diesel, Motor Oil Range by 8015M with Silica Gel Cleanup
Gasoline,BTEX and MTBE by Methods 8015M/8021B

Analyte	Method	Result	Unit	Date Sampled	Date Analyzed
Sample: 04-0328-01 Client ID: A,4'-10'				03/05/2004	W
Benzene	SW8020F	ND<0.5	UG/L		03/08/2004
Ethylbenzene	SW8020F	1.2	UG/L		03/08/2004
Gasoline Range Organics	SW8020F	*284	UG/L		03/08/2004
Methyl-tert-butyl ether	SW8020F	ND<0.5	UG/L		03/08/2004
Toluene	SW8020F	ND<0.5	UG/L		03/08/2004
Xylenes	SW8020F	ND<1.0	UG/L		03/08/2004
Diesel Fuel #2	CATFH	ND<0.05	MG/L		03/09/2004
Motor Oils	CATFH	ND<0.5	MG/L		03/09/2004
Sample: 04-0328-02 Client ID: B,4'-10'				03/05/2004	W
Benzene	SW8020F	ND<0.5	UG/L		03/08/2004
Ethylbenzene	SW8020F	ND<0.5	UG/L		03/08/2004
Gasoline Range Organics	SW8020F	*96	UG/L		03/08/2004
Methyl-tert-butyl ether	SW8020F	ND<0.5	UG/L		03/08/2004
Toluene	SW8020F	ND<0.5	UG/L		03/08/2004
Xylenes	SW8020F	ND<1.0	UG/L		03/08/2004
Diesel Fuel #2	CATFH	ND<0.05	MG/L		03/09/2004
Motor Oils	CATFH	ND<0.5	MG/L		03/09/2004

*Does not match typical gasoline pattern.

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C E R T I F I C A T E O F A N A L Y S I S

Lab Number: 04-0328
Client: ERAS Environmental
Project: 1614 CAMPBELL/ 03184B

Date Reported: 03/10/2004

Diesel, Motor Oil Range by 8015M with Silica Gel Cleanup
Gasoline,BTEX and MTBE by Methods 8015M/8021B

Analyte	Method	Result	Unit	Date Sampled	Date Analyzed
Sample: 04-0328-03	Client ID: C,4'-10'			03/05/2004	W
Benzene	SW8020F	ND<0.5	UG/L		03/08/2004
Ethylbenzene	SW8020F	ND<0.5	UG/L		03/08/2004
Gasoline Range Organics	SW8020F	57	UG/L		03/08/2004
Methyl-tert-butyl ether	SW8020F	ND<0.5	UG/L		03/08/2004
Toluene	SW8020F	ND<0.5	UG/L		03/08/2004
Xylenes	SW8020F	ND<1.0	UG/L		03/08/2004
Diesel Fuel #2	CATFH	ND<0.05	MG/L		03/09/2004
Motor Oils	CATFH	ND<0.5	MG/L		03/09/2004
Sample: 04-0328-04	Client ID: D,4'-10'			03/05/2004	W
Benzene	SW8020F	ND<0.5	UG/L		03/08/2004
Ethylbenzene	SW8020F	ND<0.5	UG/L		03/08/2004
Gasoline Range Organics	SW8020F	ND<50	UG/L		03/08/2004
Methyl-tert-butyl ether	SW8020F	ND<0.5	UG/L		03/08/2004
Toluene	SW8020F	ND<0.5	UG/L		03/08/2004
Xylenes	SW8020F	ND<1.0	UG/L		03/08/2004
Diesel Fuel #2	CATFH	ND<0.05	MG/L		03/09/2004
Motor Oils	CATFH	ND<0.5	MG/L		03/09/2004

*Does not match typical gasoline pattern.

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C E R T I F I C A T E O F A N A L Y S I S

Lab Number: 04-0328
Client: ERAS Environmental
Project: 1614 CAMPBELL/ 03184B

Date Reported: 03/10/2004

Diesel, Motor Oil Range by 8015M with Silica Gel Cleanup
Gasoline,BTEX and MTBE by Methods 8015M/8021B

Analyte	Method	Result	Unit	Date Sampled	Date Analyzed
Sample: 04-0328-05 Client ID: E,4'-10'				03/05/2004	W
Benzene	SW8020F	ND<0.5	UG/L		03/09/2004
Ethylbenzene	SW8020F	ND<0.5	UG/L		03/09/2004
Gasoline Range Organics	SW8020F	ND<50	UG/L		03/09/2004
Methyl-tert-butyl ether	SW8020F	ND<0.5	UG/L		03/09/2004
Toluene	SW8020F	ND<0.5	UG/L		03/09/2004
Xylenes	SW8020F	ND<1.0	UG/L		03/09/2004
Diesel Fuel #2	CATFH	ND<0.05	MG/L		03/09/2004
Motor Oils	CATFH	ND<0.5	MG/L		03/09/2004
Sample: 04-0328-06 Client ID: F,4'-10'				03/05/2004	W
Benzene	SW8020F	ND<0.5	UG/L		03/09/2004
Ethylbenzene	SW8020F	ND<0.5	UG/L		03/09/2004
Gasoline Range Organics	SW8020F	ND<50	UG/L		03/09/2004
Methyl-tert-butyl ether	SW8020F	ND<0.5	UG/L		03/09/2004
Toluene	SW8020F	ND<0.5	UG/L		03/09/2004
Xylenes	SW8020F	ND<1.0	UG/L		03/09/2004
Diesel Fuel #2	CATFH	ND<0.05	MG/L		03/09/2004
Motor Oils	CATFH	ND<0.5	MG/L		03/09/2004

*Does not match typical gasoline pattern.

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C E R T I F I C A T E O F A N A L Y S I S

Lab Number: 04-0328
Client: ERAS Environmental
Project: 1614 CAMPBELL/ 03184B

Date Reported: 03/10/2004

Diesel, Motor Oil Range by 8015M with Silica Gel Cleanup
Gasoline,BTEX and MTBE by Methods 8015M/8021B

Analyte	Method	Result	Unit	Date Sampled	Date Analyzed
Sample: 04-0328-07 Client ID: G,4'-10'				03/05/2004	W
Benzene	SW8020F	ND<0.5	UG/L		03/09/2004
Ethylbenzene	SW8020F	ND<0.5	UG/L		03/09/2004
Gasoline Range Organics	SW8020F	ND<50	UG/L		03/09/2004
Methyl-tert-butyl ether	SW8020F	ND<0.5	UG/L		03/09/2004
Toluene	SW8020F	ND<0.5	UG/L		03/09/2004
Xylenes	SW8020F	ND<1.0	UG/L		03/09/2004
Diesel Fuel #2	CATFH	ND<0.05	MG/L		03/09/2004
Motor Oils	CATFH	ND<0.5	MG/L		03/09/2004

*Does not match typical gasoline pattern.

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C E R T I F I C A T E O F A N A L Y S I S

Quality Control/Quality Assurance

Lab Number: 04-0328
Client: ERAS Environmental
Project: 1614 CAMPBELL/ 03184B

Date Reported: 03/10/2004

Diesel, Motor Oil Range by 8015M with Silica Gel Cleanup
Gasoline, BTEX and MTBE by Methods 8015M/8021B

Analyte	Method	Reporting Limit	Unit	Blank	Avg MS/MSD Recovery	RPD
03/08/2004						
Benzene	SW8020F	0.5	UG/L	ND	110/108	2
Toluene	SW8020F	0.5	UG/L	ND	115/114	1
Ethylbenzene	SW8020F	0.5	UG/L	ND	111/111	0
Xylenes	SW8020F	1.0	UG/L	ND	116/115	1
Methyl-tert-butyl ether	SW8020F	0.5	UG/L	ND	97/93	4
Gasoline Range Organics	SW8020F	50	UG/L	ND	127/130	2
03/09/2004						
Benzene	SW8020F	0.5	UG/L	ND	101/99	2
Toluene	SW8020F	0.5	UG/L	ND	107/106	1
Ethylbenzene	SW8020F	0.5	UG/L	ND	105/105	0
Xylenes	SW8020F	1.0	UG/L	ND	111/111	0
Methyl-tert-butyl ether	SW8020F	0.5	UG/L	ND	91/90	1
Gasoline Range Organics	SW8020F	50	UG/L	ND	121/125	3
Diesel Fuel #2	CATFH	0.05	MG/L	ND	88/86	2
Motor Oils	CATFH	0.5	MG/L	ND	NA	NA

ELAP Certificate NO:1753
Reviewed and Approved

John A.Murphy, Laboratory Director

04-0328

North State Labs
90 South Spruce Avenue, Suite W, South San Francisco, CA 94080
Phone: (650) 266-4563 Fax: (650) 266-4560

Chain of Custody / Request for Analysis
Lab Job No.:_____ Page___ of___

Client: ERAS Environmental	Report to: Andrew Sawyer	Phone: 510 247-9825	Turnaround Time: 48 hour
Mailing Address: 1533 B Street Hayward, CA 94541	Billing to:	Fax: 510 886-5399	
		email: eraysenvironmental@sbcglobal.net	Date: 3-5-04
		PO# 031841B	Sampler: Andrew

Project / Site Address / Global ID: 1614 Campbell / 031841B

Analysis Requested

EDF ☐

	Sample ID	Sample Type	Container No. / Type	Pres.	Sampling Date / Time	TPH-D & motor oil	TPH-G BTEX / MTBE	Field Point ID
1	A, 4'-10'	W	4/40ml	HCL	3-5-04 9:10		X	
2	B, 4'-10'		4/40ml	HCL	3-5-04 9:15		X	
3	C, 4'-10'		4/40ml	HCL	3-5-04 10:15		X	
4	D, 4'-10'		4/40ml	HCL	3-5-04 13:20		X	
5	E, 4'-10'		4/40ml	HCL	3-5-04 13:15		X	
6	F, 4'-10'		4/40ml	HCL	3-5-04 13:45		X	
7	G, 4'-10'		4/40ml	HCL	3-5-04 13:30		X	
1	A, 4'-10'		2/1 liter		3-5-04	X		
2	B, 4'-10'		2/1 liter		3-5-04	X		
3	C, 4'-10'		2/1 liter		3-5-04	X		
4	D, 4'-10'		1/1 liter		3-5-04	X		
5	E, 4'-10'		2/1 liter		3-5-04	X		
6	F, 4'-10'		1/1 liter		3-5-04	X		
7	G, 4'-10'		1/1 liter		3-5-04	X		

Relinquished by:	Date: 3/5/4	Time: 2:45	Received by: NSLABS	Lab Comments/ Hazards
Relinquished by:	Date:	Time:	Received by:	
Relinquished by:	Date:	Time:	Received by:	