

**FAX**

from **Geomatrix Consultants, Inc.**
2101 Webster Street, 12th Floor, Oakland, CA 94612
www.geomatrix.com

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Date: March 17, 2000

Number of pages
Including cover sheet: 14

To: Mr. Hugh Murphy

Hayward Fire Department

510-583-3641

Ms. Susan Hugo

Alameda County Health Care Services

From: Ann Holbrow

Geomatrix Consultants, Inc.

Fax Phone: 510-663-4141

Phone: 510-663-4100

Direct dial:

Email:

Project No.:

Project Name:

REMARKS:

☒ Hard copy to follow ☐ Urgent ☐ For your review ☐ Reply ASAP ☐ Please comment

Please find attached Soil Sampling Plan.

STD 6669

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2101 Webster Street
12th Floor
Oakland, CA 94612
(510) 663-4100 • FAX (510) 663-4141



March 17, 2000
Project 6262.000.0

Mr. Hugh J. Murphy
City of Hayward Fire Department
777 B Street
Hayward, CA 94541-5007

Subject: Soil Sampling Plan
Canterbury Residential Development
Hayward, California

Dear Mr. Murphy:

As requested by the City Hayward, Geomatrix Consultants, Inc. (Geomatrix) has prepared this sampling and analysis plan to characterize soil conditions on residential properties on Telford Court in the Canterbury Residential Development Hayward, California. Based on reports by third parties, affected soil from other properties in the development was moved to the vicinity of Telford Court and possibly removed subsequently. The goal of this sampling effort is to conduct an environmental site characterization to evaluate unrestricted occupancy of homes on eight residential parcels on Telford Court.

General Sampling Approach

Geomatrix will collect soil samples from each of the residential lots to characterize concentrations of chemicals of potential concern (COPCs) included in previous sampling efforts. Samples will be collected as follows:

1. Three borings will be drilled per property to a depth of approximately 8 feet below ground surface (bgs). Two borings will be advanced in the backyard and one in the frontyard using a direct-push sampling rig. Borings will be located relative to corners of the lot and/or homes using a measuring wheel and compass.
2. Samples will be collected at three depths (0.5 to 1.5 feet, 3.5 to 4.5 feet and 7.5 to 8.5 feet bgs). If the interface between fill and native material can be identified, sampling depths may be adjusted in the field to collect a sample at the interface.
3. Samples from one boring (from backyard location) will be analyzed (initial samples); samples from the other borings (back yard and front yard) will be put on hold at the laboratory until the initial results are reviewed.



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4. If results for any initial sample analyzed for metals exceed residential Preliminary Remediation Goals (PRGs; U.S. EPA, 1999), the results will be compared to background published by Lawrence Berkeley Laboratory (August 1, 1995).
5. If results for any initial sample exceed PRGs and background (where applicable), samples from the additional locations at each lot will be analyzed.

Attachment A provides Geomatrix's protocol for soil sampling. Attachment B provides site-specific directions for sample collection and labeling. Figure 1 shows approximate locations of borings; borings will be located only in exposed soil or vegetated areas.

Laboratory Analyses

Samples will be submitted to Chromalab in Pleasanton, California for metals (CCR, Title 22 metals; EPA Method 6010/7000 series) and pesticides/PCBs (EPA Method 8081/8082). 8080
8081
Samples for petroleum-related compounds will be submitted to Friedman & Bruya in Seattle, Washington; petroleum-related analyses will include total petroleum hydrocarbons as motor oil (TPHmo; U.S. EPA 8015M), volatile organic compounds (U.S. EPA Method 8260), and polycyclic aromatic hydrocarbons (PAHs; U.S. EPA Method 8270 SIMS). All samples will be run on a 24-hour turn-around except PAHs ^{PCBs}. The quickest turn-around for this analysis is 48 hours. Attachment B outlines specific directions for organizing samples for shipment to the laboratory.

Quality Assurance/Quality Control

The laboratory will analyze a method blank and lab control samples in accordance with its quality assurance plan. Matrix spike/matrix spike duplicates of site soils will also be analyzed.

Data Evaluation

Upon receipt, laboratory data will be tabulated for evaluation. Data quality will be evaluated based on field and laboratory documentation and laboratory quality control samples. Sample



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results will be compared with residential PRGs and background concentrations as previously described for the purpose of assessing potential health risk. ✓

Schedule

The schedule for the project is:

- Monday, March 20, begin field work. ✓
- Tuesday, March 21, finish field work. ✓
- Wednesday, March 22, initial sample results available from the lab (end of day) ✓
- Thursday, March 23, evaluate initial sample results and request additional analyses, as necessary ✓
- Friday, March 24, verbal report, if no additional sample analysis is required. If additional analyses are required, then a verbal report will be provided on Monday, March 27 at the end of the day. ✓

Geomatrix appreciates this opportunity to provide services to City of Hayward Fire Department. If you have any questions, please contact either of the undersigned.

Sincerely yours,
GEOMATRIX CONSULTANTS, INC.

A handwritten signature in cursive script, reading 'Ann M. Holbrow'.

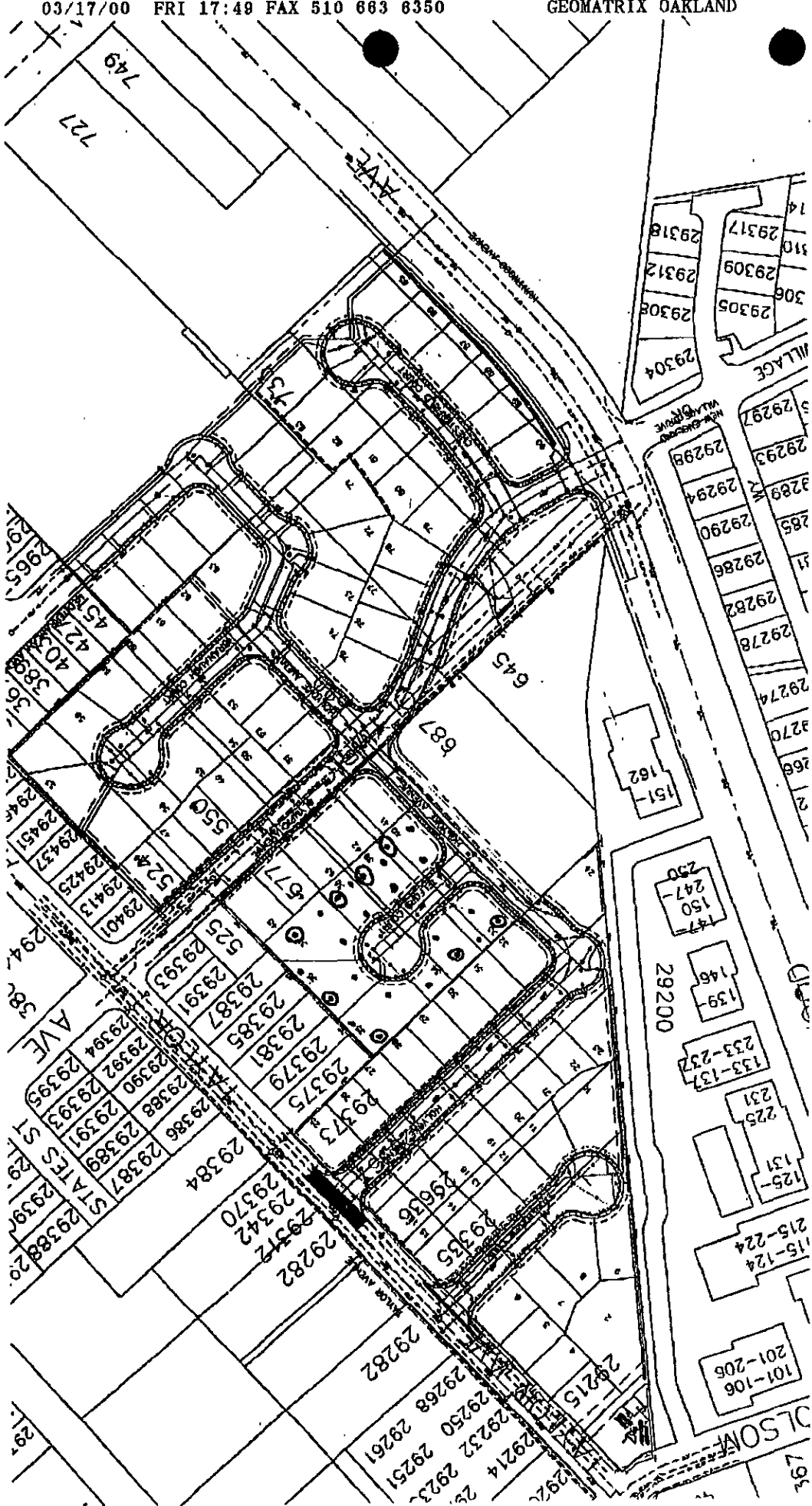
Ann M. Holbrow
Senior Scientist

A handwritten signature in cursive script, reading 'Susan Gallardo'.

Susan Gallardo, P.E.
Principal Engineer

Attachment A – Soil Sampling Protocol
Attachment B – Boring and Sample Identification Summary

Cc: Susan Hugo – Alameda County Health Care Services



Proposed
Sampling
Locations

Figure 1

- Existing location
- Sample to be analyzed

ATTACHMENT A

Soil Sampling Protocols

PROTOCOL

SOIL SAMPLING FOR CHEMICAL ANALYSIS

1.0 INTRODUCTION

This protocol describes the procedures to be followed for collecting soil samples for chemical analysis. The laboratories are certified by the appropriate regulating agency for the analyses to be performed.

Permits were acquired from the Alameda County Public Works Agency, and an underground utility check will be performed before drilling or excavating begins. An underground utility check will, at a minimum, consist of contacting a local utility alert service, if available.

The procedures presented herein are intended to be of general use and may be supplemented by a work plan and/or health and safety plan. As the work progresses and if warranted, appropriate revisions may be made by the project manager. Detailed procedures in this protocol may be superseded by applicable regulatory requirements.

2.0 SAMPLE COLLECTION

Soil samples will be collected using standard coring cylinders. The procedures for sample collection are discussed below. In addition, a direct-push rig will be used to core to a maximum depth of 8 feet and visually inspected for evidence of darkened soil; samples that indicate visibly affected soil will be collected for laboratory analysis.

The collection of Geoprobe® samples will be conducted in accordance with the protocol DIRECT-PUSH SAMPLING AND DESTRUCTION OF SOIL BORINGS. The soil sampler will be washed with laboratory grade detergent-water solution to remove soil present and rinsed with potable water prior to and between sampling. Soil samples will be collected in clean brass or stainless steel liners that have been washed with detergent-water solution and rinsed with

potable water. The liners will generally be placed in a 2-inch- or 2.5-inch-diameter sampler and then driven or pushed into the soil at the selected sampling depth. Two samples will be collected at each designated depth, one from 0 to 6 inches above the depth and one from 0 to 6 inches below the designated depth.

3.0 SAMPLE HANDLING AND PRESERVATION

Soil samples will be handled using the following procedures:

1. Clean gloves appropriate for the chemicals of concern will be worn by the sampler before touching the sample containers, and care will be taken to avoid contact with the sample.
2. The sample will be quickly observed for color, appearance, and composition. The ends of the liners will be immediately covered with Teflon[®] sheeting and/or aluminum foil, capped with plastic end caps, and sealed with tape. Glass jars will be immediately sealed with a lid.
3. The sample container will be labeled before or immediately after sampling with a self-adhesive label having the following information written in waterproof ink:
 - Geomatrix
 - Project number
 - Sample ID number
 - Date and time sample was collected
 - Initials of sample collector
4. The sample will be placed in an ice-cooled shipping chest for transport to the laboratories.

4.0 DOCUMENTATION

4.1 FIELD DATA SHEETS

A DAILY FIELD RECORD will be completed for each day of fieldwork. Locations and unique identification of soil samples collected from soil borings will be recorded on the SAMPLE LOG. Locations and unique identification of soil samples collected from excavations or stockpiles will be recorded on a DAILY FIELD RECORD, site map, and/or other appropriate form. Samples may also be recorded on a SAMPLE CONTROL LOG SHEET or in the DAILY FIELD

RECORD as a means of identifying and tracking the samples. Following review by the project manager, the original field records will be kept in the project file.

4.2 CHAIN-OF-CUSTODY PROCEDURES

After samples have been collected and labeled, they will be maintained under chain-of-custody procedures. These procedures document the transfer of custody of samples from the field to the laboratory. Each sample sent to the laboratory for analysis will be recorded on a CHAIN-OF-CUSTODY RECORD, which will include instructions to the laboratory on the analytical services required.

Information contained on the triplicate CHAIN-OF-CUSTODY RECORD will include:

- Project number
- Signature of sampler
- Date and time sampled
- Sample I.D.
- Number of sample containers
- Sample matrix (soil, water, or other)
- Analyses required
- Remarks, including preservatives, special conditions, or specific quality control measures
- Turnaround time and person to receive laboratory report
- Method of shipment to the laboratory
- Release signature of sampler and signatures of all people assuming custody
- Condition of samples when received by laboratory (to be completed by the laboratory)

Blank spaces on the CHAIN-OF-CUSTODY RECORD will be crossed out between the last sample listed and the signatures at the bottom of the sheet.

The field sampler will sign the CHAIN-OF-CUSTODY RECORD and will record the time and date at the time of transfer to the laboratory or an intermediate person. A set of signatures is required for each relinquished/received transfer, including transfer within Geomatrix. The original imprint of the CHAIN-OF-CUSTODY RECORD will accompany the sample containers; a duplicate copy will be kept in the Geomatrix project file.

If the samples are to be shipped to the laboratory, the original CHAIN-OF-CUSTODY relinquishing the samples will be sealed inside a plastic bag within the ice chest, and the chest will be sealed with custody tape which has been signed and dated by the last person listed on the chain-of-custody. U.S. Department of Transportation shipping requirements will be followed and the sample shipping receipt will be retained in the project files as part of the permanent chain-of-custody document. The shipping company (e.g., Federal Express, UPS, DHL) will not sign the chain-of-custody forms as a receiver; instead the laboratory will sign as a receiver when the samples are received.

5.0 EQUIPMENT CLEANING

The sampler, brass or stainless steel liners, spatula, and tools used in assembly and disassembly of the soil sampler will be cleaned before and after each use. All soil will be removed from the tools and parts, and the tools will be steam-cleaned or washed in laboratory-grade detergent water with a brush, followed by rinsing in potable water.

Attachments:	Figures:	Daily Field Record
		Chain-of-Custody Record
		Sample Control Log Sheet

PROTOCOL

DIRECT-PUSH SAMPLING AND DESTRUCTION OF SOIL BORINGS

1.0 INTRODUCTION

This protocol describes the procedures to be followed during coring using a direct-push sampler and the destruction of soil borings. The soil borings will provide information about geologic conditions, soil engineering properties, and/or soil quality.

The procedures presented herein are intended to be of general use and may be supplemented by a work plan and/or health and safety plan. As the work progresses and if warranted, appropriate revisions may be made by the project manager. Detailed procedures in this protocol may be superseded by applicable regulatory requirements.

Permits for drilling of soil borings were acquired from Alameda County Department of Public Works Agency before drilling was initiated. An underground utility check will be conducted before drilling begins. An underground utility check will, at a minimum, consist of contacting a local utility alert service, if available.

2.0 DRILLING

A DAILY FIELD RECORD will be completed for each day of fieldwork, and the original will be kept in the project files.

The soil borings will be advanced by hydraulically hammering a 2-inch-diameter core barrel to depths of approximately 8 feet. The Geomatrix field geologist/engineer will specify to the drill rig operator the depth of soil sample collection, method of sample retrieval, and other matters pertaining to the satisfactory completion of the borings. Samples will be collected in stainless steel sleeves. Cuttings from borings sampled for sludge will be stored properly for future disposal by the client, unless other arrangements have been made.

The direct-push sampling equipment components that fluids and cuttings contact will be cleaned before drilling each boring, as well as at the beginning of each project and at the completion of field activities. Samplers will be cleaned with Alconox and water or steam before each sampling event. Only potable water from a municipal supply will be used for decontamination of drilling equipment. Decontamination rinsate will be collected and stored properly for future disposal by the client, unless other arrangements have been made.

3.0 SAMPLING AND LOGGING

3.1 OBTAINING SAMPLES

Borings will be continuously cored or sampled at depth intervals specified by the project manager, based on the intended use of the boring. Samples and/or cuttings will be obtained for logging purposes at least every 5 feet for all borings. The samples and/or drill cuttings will be collected and described. A lithologic log of these samples will be made. Samples for chemical analysis will be collected in accordance with the protocol SOIL SAMPLING FOR CHEMICAL ANALYSIS.

3.2 LOGGING OF EXPLORATORY BORINGS

The observations of the field geologist/engineer will be recorded on a BORING LOG at the time of drilling. The drill rig operator and the field geologist/engineer will discuss significant changes in material penetrated and drilling conditions. The field geologist/engineer will be present during drilling of soil borings and will observe and record such changes by time and depth.

Core samples will be observed in the field. A lithologic description will be recorded on the BORING LOG using the Unified Soil Classification System (USCS) as described in the American Society of Testing and Materials (ASTM) Standard D 2488-90. This description will include the USCS soil type, grain sizes and estimated percentages of each, moisture content, color according to the Munsell color charts (Kollmorgen Instruments Corp.), plasticity for fine-

grained materials, consistency, and other pertinent information, such as degree of induration, calcareous content, presence of fossils and other distinctive materials.

The original field logs will be retained by the Geomatrix office for review by the responsible professional and for storage in the project files.

4.0 FIELD SCREENING

Soil samples collected from the borings may be screened using a photoionization detector.

5.0 DESTROYING SOIL BORINGS

Soil borings will be destroyed by filling the holes with a neat cement grout, cement/sand grout, or cement/bentonite grout. A high-solids bentonite grout may be used if appropriate. Geomatrix field staff will calculate the borehole volume and compare it to the volume of grout used to evaluate whether bridging has occurred. These calculations and the actual volume emplaced will be noted on the BORING LOG. Borings that are terminated above the water table and not greater than 20 feet deep may be destroyed by continuous lifts originating at the ground surface. The grout will be pumped or poured until about one-foot bgs. Commercially-available potting soil will be used to fill the remainder of the boring.

Attachments: Daily Field Record
Boring Log

Canterbury Residential Development
Project No.: 6262

ATTACHMENT B

Boring and Sample Identification Summary

BORINGS

- 3 borings in each lot
- Lot #'s are 33 to 40 counter clockwise from southwest
- Boring Label: GMX – (Lot #)(Location)
- Locations: A – Front Yard
B – Backyard (North or West)*
C – Backyard (South or East)*
*: Map north with Telford Ct. running north – south

e.g. GMX-33A

SAMPLE DEPTHS (feet bgs)

0.5-1.0'	Chromalab
1.0-1.5'	F&B

3.5-4.0'	Chromalab
4.0-4.5'	F&B

* If indications of petroleum impacts are observed,
sample depths may be adjusted.

7.5-8.0'	Chromalab
8.0-8.5'	F&B

SAMPLE ID FORMAT

ID: GMX(Lot #)(Location)-(Bottom Depth)

e.g. GMX33A-1.0 collected from boring GMX-33A at 0.5 to 1.0' bgs