Western Operations

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HAZMAT

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February 10, 1994

Ms. Juliett Shin
Hazardous Materials Specialist
ALAMEDA COUNTY HEALTH AGENCY
80 Swan Way, Room 200
Oakland, California 94621

Clayton Project No. 53704.00

Subject: Work Plan for Subsurface Investigation at Bank of America located at 1528 Webster Street in Alameda, California

Dear Ms. Shin:

Clayton Environmental Consultants, Inc. on behalf of Bank of America is pleased to present this Work Plan for Subsurface Investigation at Bank of America located at 1528 Webster Street in Alameda, California.

Clayton is planning to start drilling activities on February 22, 1994. If you have any questions please contact me at (510) 426-2676.

Sincerely,

John F. Vargas, R.G.
Supervisor, Geosciences and Remediation
Western Operations

JFV/dd
cc: Mr. Rick Oliver, Environmental Analyst, Bank of America

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Work Plan for Subsurface Investigation
at
Bank of America
1528 Webster Street
Alameda, California

Clayton Project No. 53704.00
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CONTENTS

1.0 INTRODUCTION

Clayton Environmental Consultants, Inc. was retained by Bank of America to perform a soil and groundwater investigation at the Bank of America Facility located at 1528 Webster Street in Alameda, California.

The site is located in a commercial area of the City of Alameda, north of Height Street and east of Webster Street (Figure 1). The subject facility was previously owned and operated by Security Pacific Bank as a branch office. However, the subject facility is currently vacant and not used for any commercial purposes.

An underground storage tank (UST) was located under the sidewalk, approximately 5 feet from the building foundation, on the Haight Street side. A site diagram showing the tank location is included as Figure 2.

2.0 BACKGROUND

On August 3, 1993 Mr. Mike Holbrook, Clayton Supervisor of Field Operations, Ms. Donna DiRocco, Bank of America Environmental Analyst, and Ms. Juliet Shin, Alameda County Environmental Health Department (ACEHD) Inspector observed the removal of the UST. Bay Area Tank Removal Company performed the tank removal activities.

Based on field measurements performed during the tank removal project, it appeared that the tank contained approximately 4 inches of floating product on top of water. Subsequently 750 gallons of liquid (hydrocarbons and water) were pumped from the UST by H&H Ship Service Company. The liquid was transported to Refineries Service Patterson, Inc. for proper disposal.

The UST appeared to be in good condition with only minor surface corrosion. The UST was then transported by H&H Ship Service to their facility at 220 China Basin in San Francisco, California, for destruction.

2.1 SAMPLING AND ANALYSIS

After the UST was removed, Clayton collected soil samples at approximately 8 feet below ground surface (bgs) from each end of the UST. In addition four soil samples were collected from the excavated soil pile, these samples were composited in the laboratory.

The samples were analyzed using the United States Environmental Protection Agency (USEPA) Method 8020 for benzene, toluene, ethylbenzene, and xylenes (BTEX) and USEPA Method 8015 for total petroleum hydrocarbons as diesel (TPH-D).

After sample collection was completed, the City of Alameda directed Clayton to return the soil to the excavation pit. The ACEHD required that the excavation pit to be covered with plastic sheeting prior to returning the soil.

Analytical results of the soil samples revealed elevated concentrations of TPH-D in the soil samples from the excavation pit and the soil stockpile. Analytical results are summarized in Table 1.

Table 1

Analytical Results for the Soil Samples Collected in August 1993
All Concentrations in Milligrams per Kilogram (mg/kg)

Sample #	Benzene	Toluene	Ethylbenzene	Xylenes	TPH-D	Depth
1 East	ND	0.013	ND	0.36	300	8.4 bgs
2 West	0.020	0.011	0.061	0.053	1,300	8.6 bgs
Composite	NA	NA	NA	NA	2,600	Soil pile

ND Not detected at or above the analytical detection limits
NA Not analyzed

2.2 OVEREXCAVATION

Due to the concentration of TPH-D identified in the samples from the excavation pit, Clayton recommended that overexcavation be performed to remove additional soil contamination. This work was performed on September 14, 1993, and was observed by Mr. Dariush Dastmalchi, Clayton Geologist, Ms. DiRocco, and Ms. Shin.

Approximately 25 tons of pre-excavated soil that had been returned to the excavation pit, and 25 tons of overexcavated soil were transported to Port Costa Materials (PCM) for thermal remediation and recycling.

Documented in Tank Removal Report

After overexcavation was completed, Clayton collected eight samples from the excavation pit walls. The samples were collected at approximately 8.5 feet bgs. The four samples designated as S1 (east end), S2 (west end), S4 (center north side), and S6 (center south side) were selected for laboratory analysis. Overexcavation sample locations are included in Figure 3.

The samples were transported by Bay Area Tank Removal to Geochem Environmental Laboratories for analysis. A summary of the analytical results are included in the Table 2.

Table 2
Overexcavation Soil Samples Collected in September 1993
All Concentrations in mg/kg

Sample #	Diesel	BTEX	Location
S-1	107.6	ND	East end of tank excavation
S-2	1,005	ND	West end of tank excavation

Depth
8.5' bgs
8.5' bgs from tank removal report

Table 2
Overexcavation Soil Samples Collected in September 1993
All Concentrations in mg/kg

Sample #	Diesel	BTEX	Location
S-4	ND	ND	North side of tank excavation
S-6	857	ND	South side of tank excavation

ND Not detected at or above the analytical detection limits

After sampling was completed, the excavation was backfilled using Class II base rock material. The backfill was compacted in 18-inch lifts using a vibratory plate compactor.

3.0 SCOPE OF WORK

This work plan describes activities planned at the Bank of America site to further investigate the extent of soil and possible groundwater contamination near the former UST. The tasks required to perform this investigation are described in the following subsections.

3.1 TASK 1: HEALTH AND SAFETY PLAN

A health and safety plan will be prepared for the work outlined in this work plan in accordance with the requirements of Title 29 of the Code of Federal Regulations, Section 1910.120 (29 CFR 1910.120).

3.2 TASK 2: DRILLING AND MONITORING WELL INSTALLATION PERMITS

Before commencing the field activities Clayton will obtain the necessary permits from the following agencies:

- Zone 7 Water Agency
- City of Alameda Public Works Department

Monitoring well drilling and installation permit will be obtained from Zone 7. Because the monitoring wells will be located on the side walk or the street an encroachment permit will be secured from the City of Alameda Public Works Department.

3.3 TASK 3: IDENTIFICATION OF UNDERGROUND UTILITY TRENCHES

Clayton will contact Underground Service Alert (USA) to identify the utilities leading to the site. The identified utilities will be clearly marked on the ground. Clayton will not drill within 3 feet from each side of a known utility line.

3.4 TASK 4: MONITORING WELL INSTALLATION AND SAMPLING

To further define the vertical and horizontal extent of soil and possible groundwater contamination, Clayton will observe installation of three monitoring wells (MW-1, MW-2 and MW-3) near the former UST excavation pit (Figure 3). One monitoring well will be installed within 10 feet of the former UST excavation pit to monitor the groundwater for the presence of hydrocarbons. The monitoring well will be placed in the estimated downgradient side of the former tank location. The other two monitoring wells will be located away from the tank and will be installed to determine the groundwater flow direction at the site and the extent of possible groundwater contamination. The proposed monitoring well locations are shown in Figure 3.

The monitoring wells will be installed in boreholes at least 6 inches in diameter and approximately 15 feet deep. During the drilling of the boreholes, the soil characteristics will be noted in the field. Distinguishing features such as color, odor, and relative soil moisture content will be noted. The boreholes will be converted into monitoring wells using a 2 inch diameter schedule 40 polyvinyl chloride (PVC) casing. Because of the shallow water table screened casing will be extending two feet above the water table (approximately six feet bgs). Solid casing will then be installed to the surface. The sand pack will extend to 2 feet above the screen. A 1-foot bentonite seal will be placed on top of the sand pack and the well will be sealed to the surface using cement grout. A locking cap will secure the well in a Christie box raised above the surface grade by approximately 1 inch to prevent surface run-off from entering the well head.

Drilling and sampling activities will be conducted in accordance with Clayton's drilling, well construction and sampling protocols for borehole/monitoring well installation (see Appendix), under the supervision of a Clayton civil engineer or a geologist registered in the State of California.

3.5 TASK 5: SOIL SAMPLE COLLECTION

Soil samples will be collected at five foot intervals using a 2.5-inch split barrel sampler. To aid in locating contamination, Clayton will screen the soil cuttings during drilling using a photoionization detector (PID), and visual senses to detect petroleum compounds. If contamination is encountered other than at the specified sampling depth, Clayton will collect additional samples until groundwater is encountered. No soil samples will be collected for laboratory analysis below the saturated zone.

The soil samples will be collected in precleaned brass tubes for the purpose of lithologic logging. The brass tubes selected for analysis will be sealed with aluminum foil, plastic caps, and teflon tape, and immediately placed in an iced cooler for pick up by the District's soil laboratory contractor. Legal chain-of-custody procedures will be followed for handling of soil samples.

The soil cuttings and sampling spoils generated by the drilling process will be placed into individually labeled, Department of Transportation (DOT)-approved 55-gallon drums and left onsite until proper disposal can be determined based on laboratory analysis.

3.6 TASK 6: WELL HEAD SURVEY

The monitoring wells will be surveyed by a licensed land surveyor using a surveyed benchmark. The surveyed elevations and locations of the wells will be used to confirm the local groundwater flow direction and gradient.

3.7 TASK 7: MONITORING WELL DEVELOPMENT AND SAMPLING

The well seals in the newly constructed wells will be allowed to set for at least 48 hours prior to well development. The monitoring wells will be developed to increase their yield and to minimize the fine-grained material from entering the well casing. Well development will be accomplished by removing finer materials from the natural formations surrounding the perforated sections of the wells. Development of the well can volatilize present contaminants; therefore, the wells will be allowed to settle for at least another 48 hours between development and the first purging/sampling event.

Water samples from the wells will be collected using clean disposable bailers. Water will be collected in clean laboratory supplied containers and placed immediately into an iced cooler for transport to Clayton's laboratory for analysis. The groundwater sampling activities will be conducted in accordance with Clayton's drilling, well construction and sampling protocols for borehole/monitoring well installation (see Appendix).

The water generated from wells development and sampling will be placed into DOT-approved 55-gallon drums until laboratory results from groundwater samples can be evaluated to determine the proper disposal method. The drums will be closed, labeled, and left at the site until the proper method of disposal can be determined based on laboratory analysis.

3.8 TASK 8: LABORATORY ANALYSIS

Approximately 6 soil samples and three water samples will be collected and transported to Clayton's state-certified laboratory in Pleasanton, California.

The groundwater samples will be analyzed using the following USEPA Methods in accordance with the Regional Water Quality Control Board (RWQCB) guidelines for minimum verification analyses for leaking diesel tanks:

- USEPA Method 8020 for BTEX
- USEPA Method 8015 for TPH-D

The soil samples will be analyzed using the USEPA Method 8015 for TPH-D. In addition to arrange for proper disposal of the soil and water drums selected samples will be analyzed for reactivity, corrosivity, ignitability (RCI) and metals. The number and frequency of these analysis will be determined after contacting the receiving facilities.

3.9 TASK 9: DATA ANALYSIS AND REPORT PREPARATION

Upon completion of the laboratory analysis, Clayton will prepare a report summarizing the findings of the investigation. A discussion of the site investigation technique, soil

and water sampling, analytical results, conclusions, and recommendations will be included.

4.0 SCHEDULE

The work on this project can begin immediately upon receipt of authorization to proceed from the ACEHD. We estimate that:

- Tasks 1 through 7 can be completed by March 1994.
- Task 8 can be completed by March 15, 1994.
- Task 9 can be completed by April 1994

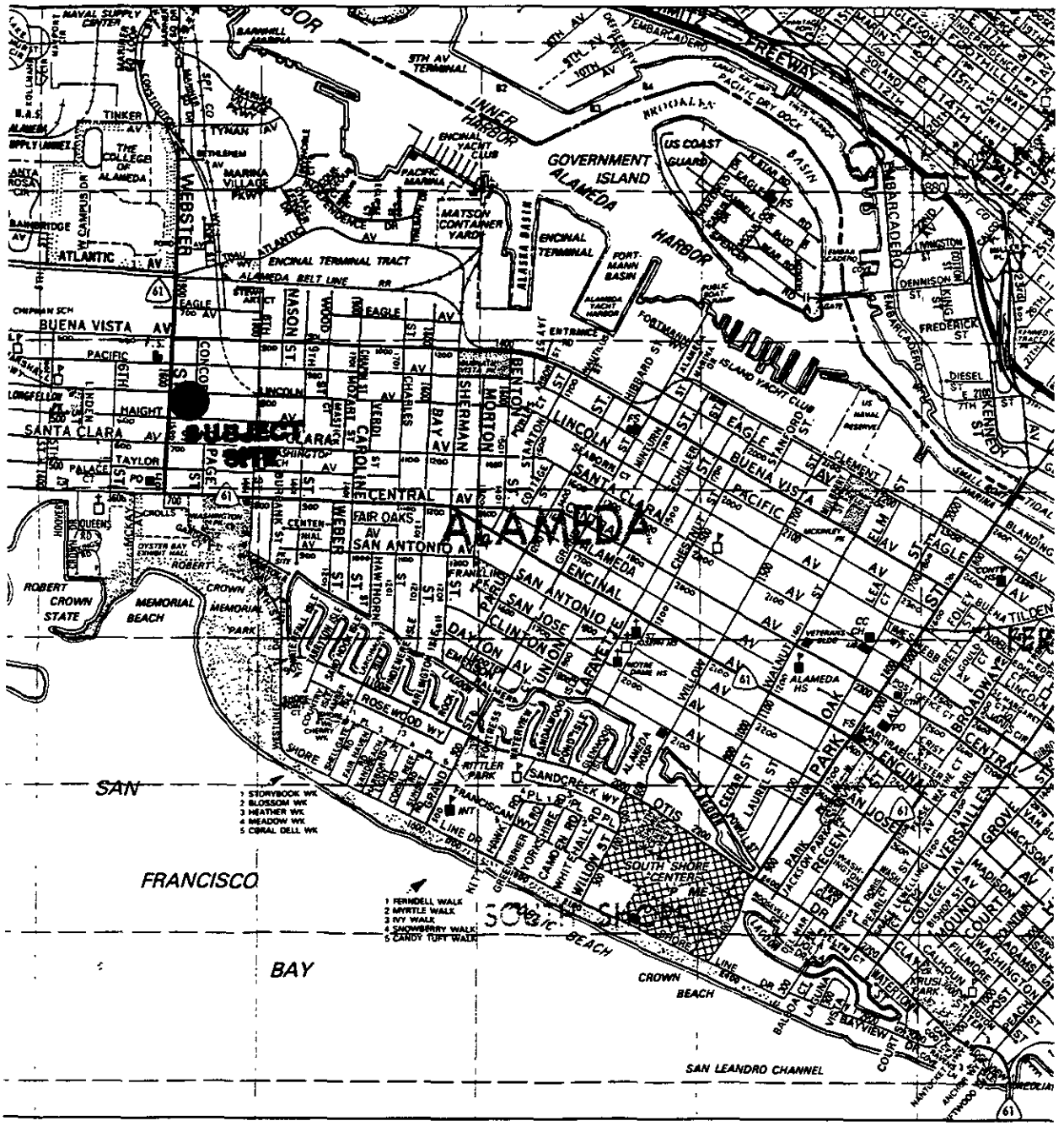
This work plan prepared by: _____
Dariush Dastmalchi
Geologist

This work plan reviewed by: _____
John F. Vargas, R.G.
Supervisor, Geosciences & Remediation
Western Operations

February 10, 1994

REGISTERED GEOLOGIST
JOHN F. VARGAS
NO. 5046
STATE OF CALIFORNIA

FIGURES



Site Location Map
BANK OF AMERICA
1528 Webster Street
Alameda, California

Clayton Project No. 49543.00

Figure
1

49543-00-16

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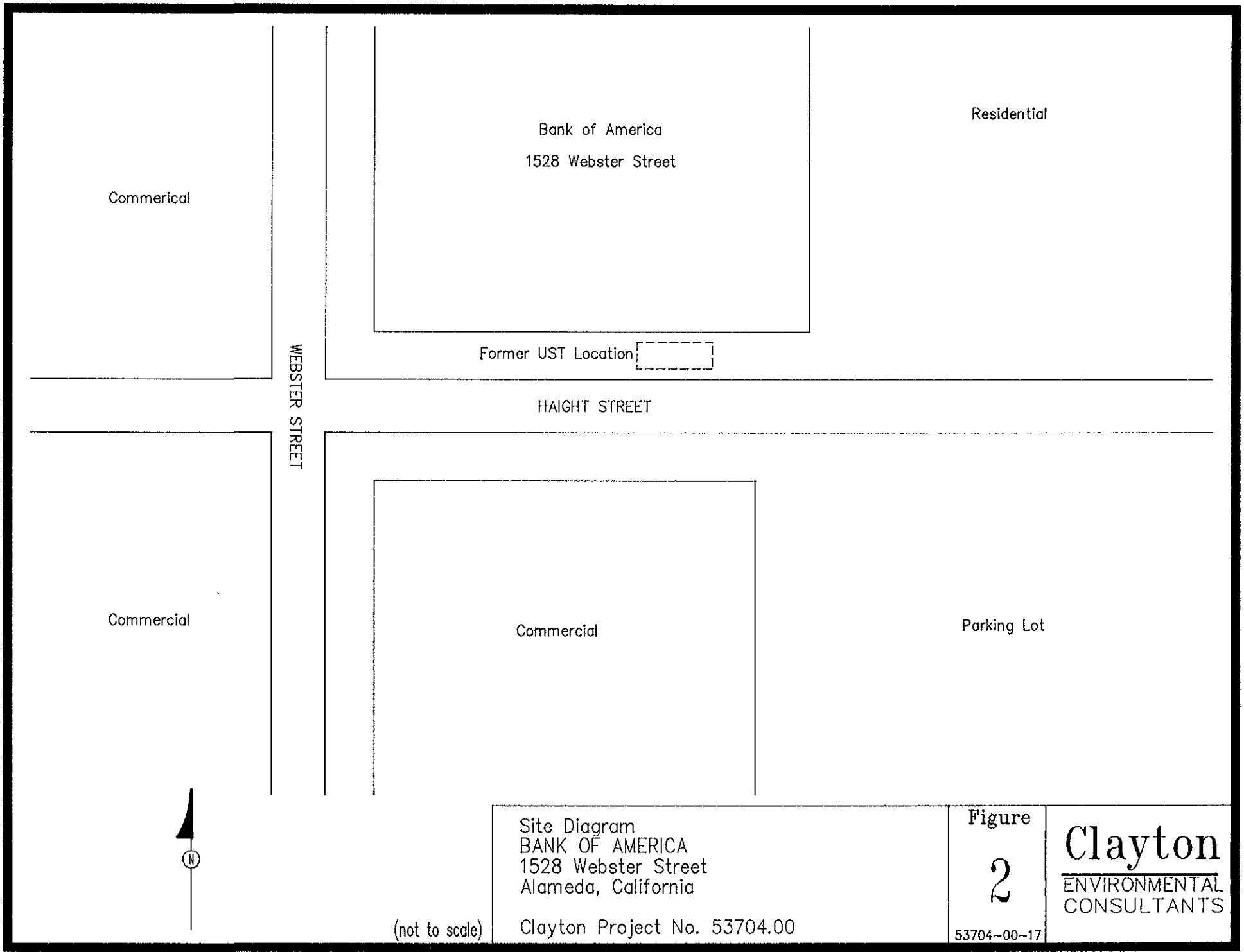

Site Diagram
BANK OF AMERICA
1528 Webster Street
Alameda, California

Clayton Project No. 53704.00

Figure
2

53704--00--17

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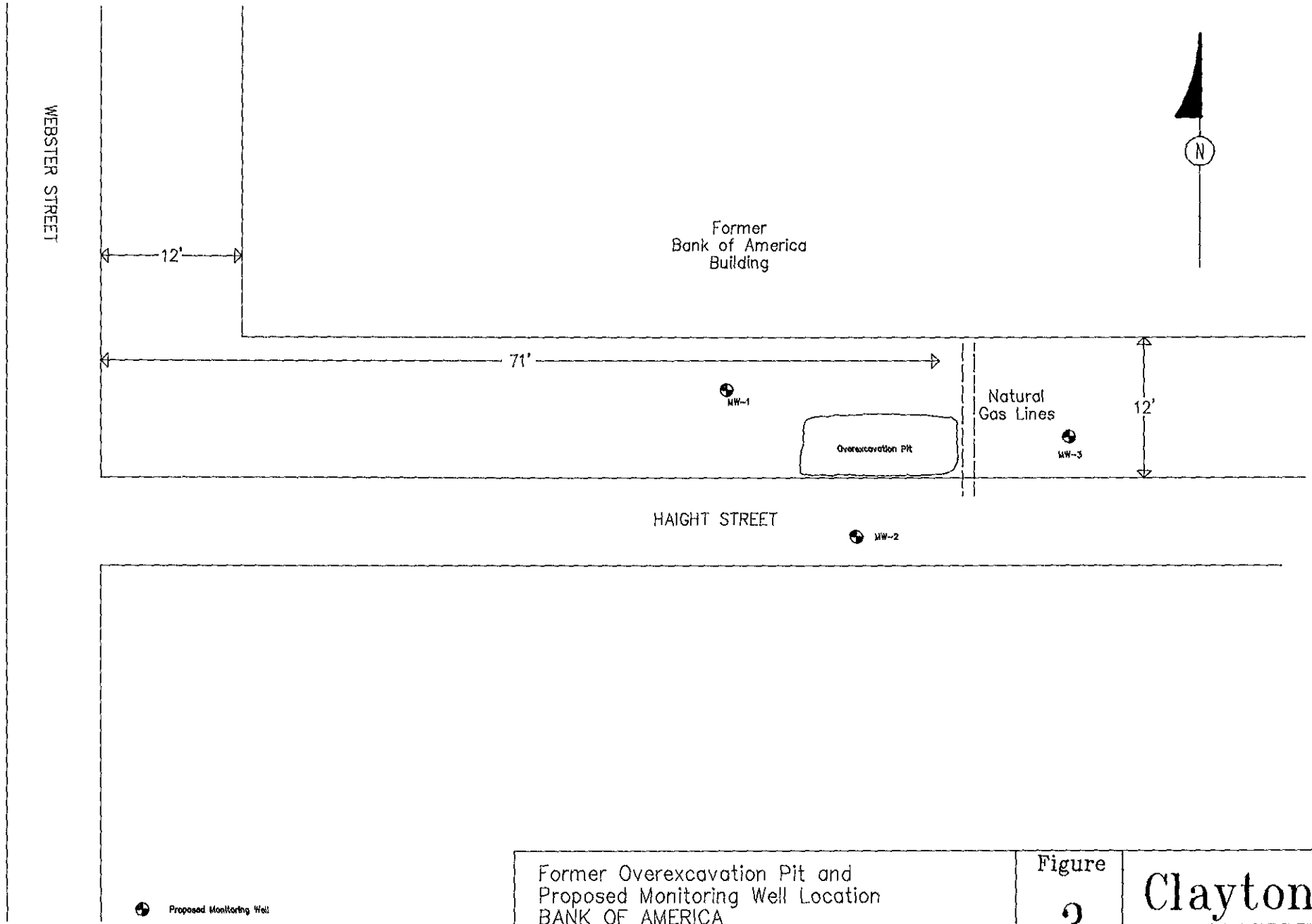

(not to scale)

Former Overexcavation Pit and
Proposed Monitoring Well Location
BANK OF AMERICA
1528 Webster Street
Alameda, California
Clayton Project No. 53704.00

Figure
3
53704-00-18

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APPENDIX A

DRILLING, WELL CONSTRUCTION, AND SAMPLING PROTOCOLS FOR BOREHOLE/MONITORING WELL INSTALLATION

DRILLING, WELL CONSTRUCTION, AND SAMPLING PROTOCOLS FOR BOREHOLE/MONITORING WELL INSTALLATION

BOREHOLE INSTALLATION

Clayton Environmental Consultants, Inc. acquires the proper governmental agency permits to bore, drill, or destroy all proposed boreholes and monitoring wells that intersect with groundwater aquifers and writes a health and safety plan.

Clayton subcontracts only with drillers who possess a current C-57 water well contractor's license issued by the State of California and whose personnel have attended the OSHA 40-hour Hazardous Materials Safety Training. Prior to starting work, a "tailgate" safety meeting including discussion of the safety hazards and precautions relevant to the particular job will be held with all personnel working on the job. Well drillers are identified on permit applications.

Borings are drilled dry by hollow- or solid-stem, continuous flight augers. Augers, drill rods, and other working components of the drilling rig are steam-cleaned before arriving onsite to prevent the introduction of contaminants. These components are also steam-cleaned between borings away from boring locations. Cleaned augers, rods, and other components are stored, and/or covered when not in use.

Our bore logs include a detailed description of subsurface stratigraphy. Clayton examines the soil brought to the surface by drilling operations, and samples undisturbed soil every 5 feet or as otherwise specified. Soil cuttings are screened for hydrocarbon contamination using a photoionization detector. Boring logs are filled out in the field by a professional geologist, civil engineer, engineering geologist who is registered by the State of California, or a technician who is trained and working under the supervision of one of the previously mentioned persons, using the Unified Soil Classification System.

SOIL SAMPLING

Soil samples are taken every 5 feet, at areas of obvious contamination, or as otherwise specified, with a California modified split-spoon sampler that is lined with three six-inch brass tubes. The sampler and rod are inserted into the borehole to the current depth and a hammer of known weight and height above the sampler are allowed to free-fall onto the rod, advancing the assembly 18 inches into undisturbed soil. Clayton uses the number of blows necessary to drive the sampler into the ground to help evaluate the consistency of materials encountered. The sampler is then pulled from the borehole and disassembled, and the three brass tubes are separated for inspection and labeling.

Clayton uses new brass liners or liners cleaned with a trisodium phosphate (TSP) solution, double rinsed with clean tap water, and air dried prior to each sampling. The sampler is also cleaned with TSP and rinsed with tap water between sampling events.
Soil samples selected for laboratory analysis are left in the brass liners, sealed with aluminum

foil and plastic caps, taped for air tightness, labeled, and immediately placed into a pre-cooled ice chest chilled to less than 4°C. Labels contain the following information: site name, date and time sampled, borehole number and depth, and the sampler's initials. The samples are transported under chain-of-custody to a state-certified laboratory. The laboratory analyzes soil samples within the prescribed holding time, storing them at temperatures below 4°C at all times.

Pending results of laboratory analysis, excess drilling and sampling cuttings are placed into Department of Transportation (DOT)-approved drums, labeled with the name of the site, address, and well number, and left at the site. Uncontaminated soil may be disposed of by the client. Soil found to contain levels of contaminants above local or state action levels will require that the client dispose of it in accordance with hazardous waste regulations. At the client's request, we will assist with the disposal of contaminated soil.

WELL CONSTRUCTION

Boreholes are converted to monitoring wells by placing 2-inch or 4-inch diameter well casing with flush-threaded joints and slotted screen into the borehole. Construction materials include polyvinyl chloride (PVC), stainless steel, or low carbon steel. The most suitable material for a particular installation will depend on the parameters to be monitored. All screens and casings used are in a contaminant-free condition when placed in the ground. No thread lubrication is used, other than teflon tape, for connecting the casing segments.

Wells extend at least 10 feet into the upper saturated zone, but do not extend through any clay layers greater than 5 feet that are below the shallow water table. The standard practice for wells installed at hydrocarbon contamination sites is to construct a well with a 20-foot long perforated interval extending 15 feet below and 5 feet above the water table in an unconfined aquifer. The top of the well is solid casing. The annular space of the borehole is backfilled with washed, kiln-dried sand to a point at least 1 foot above the slotted screen. A seal above the filter pack is formed by placing a 1- to 2-foot layer of bentonite pellets on top of the sand. The bentonite pellets are moistened by pouring clean tap water down the hole so that they can expand and seal the annulus. A neat cement grout is placed above the bentonite seal and brought to the ground surface.

Well casings are protected from surface contamination, accidental damage, and unauthorized entry or tampering with water-tight locking caps on the well casings. The caps are usually surrounded by a concrete vault. Wells are clearly identified with a metal tag or other device where the following information is recorded: well number, depth to water, depth of well, casing data including location of screened interval.

WELL DEVELOPMENT

The well seal in newly developed wells must set up for 48 to 72 hours prior to development. Since development of the well can volatilize contaminants present, the well must also settle for at least 48 to 72 hours between development and the first purging/sampling incident.

All monitoring wells are initially developed to clean the well and stabilize sand, gravel, and

disturbed aquifer materials around the screened internal perforations. Wells are developed by pumping (or bailing) and surging until water turbidity and specific conductance stabilize. In some cases, where wells are installed in low permeability formations and the wells purge dry, the well is allowed to recover and is purged dry three times. Clean tap water is introduced into the well if it does not recover rapidly enough.

Pending results by laboratory analysis, purge water from well development and sampling is placed into DOT-approved drums, labeled with the name of the site, address, well number, and left at the site. Uncontaminated water may be disposed of by the client. Water found to contain levels of contaminants above local or state action levels requires that the client dispose of it in accordance with hazardous waste requirements. At the client's request, we can assist with the disposal of contaminated purge water.

GROUNDWATER SAMPLING

To collect a representative sample of the groundwater, stagnant water within the well casing and filter material must be purged and fresh aquifer water allowed to replace it. The water is purged from the well by pumping or bailing at least three well volumes. Well volumes are calculated by measuring depth to groundwater to the nearest 0.01 foot upon arrival at the well before any purging has begun. Groundwater samples are collected only after purging has been of sufficient duration for pH, temperature, and electrical conductivity to stabilize. When purging low-yield wells, the wells are purged to dryness. When the well recovers to 80% of the depth measured upon arrival, samples are collected.

Field sampling logs maintained for each well include:

- Monitoring well identification
- Static water level, before and after pumping
- Well depth
- Condition of water prior to purging (e.g., amount of free product)
- Purge rate and volume
- pH, temperature, and conductivity during purging
- Time purged
- Time of sample collection
- Sampling method
- Name of sampler
- Climatic conditions

Water samples are collected using clean teflon bailers. All equipment that contacts samples is thoroughly cleaned before arrival at the site and between sampling events.

Water is collected in clean laboratory-supplied containers, labeled, placed immediately into an ice chest pre-cooled to 4°C, and transported to Clayton's laboratory for analysis. One trip blank will be furnished in accordance with our quality assurance/quality control (QA/QC) program.

All samples are collected in such a manner so as to minimize the volatilization of a sample

due to agitation and/or transfer from bailer to sample container. Samples are collected so that contaminants most sensitive to volatilization are sampled first.

Preservatives are not added to any sample, unless instructed. If requested, they are supplied by Clayton's laboratory.

All sample containers are labeled in the field. Labels contain the following information: project name, sample identification number, project number, date and time of collection, and sampler's initials.

Under no circumstances are sealed sample containers opened by anyone other than the laboratory personnel who perform the requested analyses. If it is necessary for samples or sample chests to leave the immediate control of the sampler prior to delivery to the laboratory, for example during shipment by an overnight shipper, a custody seal is placed on each sample container and/or sample chest to ensure that the samples have not been tampered with during transportation. The custody seal is signed by the sampler, and the date and time that the seal was placed is recorded. The elapsed time between sample collection and delivery to the laboratory never exceeds 48 hours. Water samples are not held for more than 14 days prior to analysis and are kept at 4°C at all times.

To document and trace samples from time of collection, a signed chain-of-custody record is filled out by the sampler and accompanies the samples through the laboratory analyses. The completed chain-of-custody is included with the analytical report from the laboratory.

REFERENCES

Groundwater Monitoring Guidelines, Revised February 1990. Alameda County District Groundwater Protection Program.

Leaking Underground Fuel Tank (LUFT) Field Manual: Guidelines for Site Assessment, Cleanup, and Underground Tank Closure, May 1988. State of California LUFT Task Force.

Regional Board Staff Recommendations for Initial Evaluation and Investigation of Underground Tanks, Revised November 1989. North Coast, San Francisco Bay, and Central Valley regions of the California State Water Quality Control Board.

Standards for the Construction and Destruction of Wells and Other Deep Excavations in Santa Clara County, Revised June 1989. Santa Clara Valley Water District.