July 7, 1995

Mr. Eddy P. So, P.E., CHMM
Associate Water Resources Control Engineer
California Regional Water Quality Control Board
CRWQCB-San Francisco Bay Region
2101 Webster Street, Suite 500
Oakland, California 94612

VIA COURIER

Subject: 23958 Hesperian Boulevard, Hayward, CA
Remedial Action Workplan

Dear Mr. So:

Van Brunt Associates is pleased to submit the attached Revised Remedial Action Workplan for the subject site.. This Workplan has been substantially revised pursuant to our May 5, 1995 meeting. This workplan includes the requested changes in the number and locations of soil borings, grab water samples and monitoring wells. We have endeavored to provide you with all requested information including examples of our sample Chain-of-Custody forms, boring logs, and typical monitoring well construction details, etc.

This Workplan has been designed to:

1) Determine the source(s) of Volatile Organic Compounds (VOC's) found in the local groundwater;

2) Characterize the concentration and extent of residual VOC's in the groundwater;

3) Determine the presence or absence of VOC's in the soil and, if found, the extent of soil impacted;

4) Develop a comprehensive remediation plan for both groundwater and soil;

5) Guide in the preparation and generation of report(s) for the full and complete disclosure of our findings to the authorities having jurisdiction and affected property owner(s); and

6) Assist in implementing an approved remediation plan.

VAN BRUNT ASSOCIATES 1981 N. Broadway • Suite 415 • Walnut Creek, CA 94596 • Phone 510•685•5900 • Fax 510•945•0606

This Workplan takes into account regulations promulgated by both your organization and the Alameda County Health Agency.

We intend to proceed as soon as we receive approval from your office and authorization from our client, the owner. This Workplan takes into account the information that we have obtained pursuant to our recent Phase I Environmental Audit and Soil Gas Vapor Study.

Do not hesitate to contact us to discuss any necessary modifications to this Workplan.

Sincerely,

VAN BRUNT ASSOCIATES

Michael W. Van Brunt
Principal

Glenn A. Romig
Senior Engineer

MVB:lvb
94502.19R
Enclosure

TABLE OF CONTENTS

REMEDIAL ACTION WORKPLAN
FOR
THE INVESTIGATION AND REMEDIATION OF VOLATILE ORGANIC COMPOUNDS (VOC'S) FOUND IN GROUNDWATER
AT
AIRPORT PLAZA SHOPPING CENTER
N/W CORNER OF HESPERIAN AND W. WINTON
23958 HESPERIAN BOULEVARD
HAYWARD, CALIFORNIA
CRWQCB FILE 01-0413 (ES)

PREPARED FOR:

California Regional Water Quality Control Board
CRWQCB-San Francisco Bay Region
Mr. Eddy P. So, P.E., CHMM
Associate Water Resources Control Engineer
2101 Webster Street, Suite 500
Oakland, CA 94612

PREPARED BY:

Van Brunt Associates
Michael W. Van Brunt, Principal
Glenn Romig, P.E.
1517 N. Main Street, Suite 204
Walnut Creek, CA 94596
Phone: (510) 685-5900
Fax: (510) 945-0606

Revised June 1995
Submitted July 7, 1995

REPORTS ON AIRPORT PLAZA
23958 HESPERIAN BOULEVARD, HAYWARD, CA

KRAZAN & ASSOCIATES, INC.
Geotechnical Engineering Investigation (October 10, 1984)

KRAZAN & ASSOCIATES, INC.
Letter re Limited Level II ESA (November 8, 1994)

KRAZAN & ASSOCIATES, INC.
Phase I ESA (November 11, 1994)

KRAZAN & ASSOCIATES, INC.
Limited Level II ESA (November 22, 1994)

HAZARDOUS MATERIALS MANAGEMENT PLAN
23958 Hesperian Blvd., Norge Cleaners (July 20, 1994)

VAN BRUNT ASSOCIATES
Phase 1 Environmental Audit (March 10, 1995)

REPORTS ON FORMER TEXACO SERVICE STATION
23990 HESPERIAN BOULEVARD, HAYWARD, CA

HARDING LAWSON ASSOCIATES
Environmental Assessment Report (October 13, 1989)

HARDING LAWSON ASSOCIATES
Quarterly Technical Report, Second Quarter of 1990 (August 30, 1990)

INTERNATIONAL TECHNOLOGY CORPORATION
Excerpt from Report (December 18, 1990)

CEECON
Letter Report Vapor Extraction Test (July 29, 1993)

RESNA
Fourth Quarter 1993 Quarterly Report (December 29, 1993)

TERRA VAC
Dual Vacuum Extraction Remediation
Letter Work Plan (December 14, 1993)
Letter Modification to Work Plan (January 21, 1994)
Drilling Report (February 17, 1994)

TEXACO ENVIRONMENTAL SERVICES
Letter re Groundwater Monitoring & Sampling (June 10, 1994)
Letter re. Groundwater Monitoring & Sampling (August 30, 1994)

1. EXECUTIVE SUMMARY/OBJECTIVES

Groundwater containing measured levels of Tetrachloroethene (PCE) (up to 200 ppb), Trichloroethene (TCE) (up to 70 ppb), Cis, 1, 2-Dichloroethene (up to 50 ppb), and Vinyl Chloride (up to 220 ppb) have been detected in the groundwater below the subject and adjoining properties. The groundwater samples were taken from eight existing monitoring wells shown on Sheet A2. Van Brunt Associates (VBA) has performed several preliminary investigative tasks to support assessing current soil and groundwater quality. These tasks included:

1. A review of all known historical documents pertaining to the site and the adjacent Exxon station;

2. A soil gas survey of the property with 40 sampling points;

3. A field inspection to determine the actual location (as-builts) of the onsite sanitary sewer lines; and

4. Sampling and analysis of all eight Exxon monitoring wells.

This work has given us helpful preliminary information of the potential onsite groundwater VOC concentrations and some information concerning the extent of the VOC in groundwater.

The first task of our proposed work will be to complete the remedial investigation of the site. The source(s) of the found chlorinated hydrocarbons is believed to be either or both of two historical dry cleaners on the site. This has not been confirmed however by any work performed to date. The lateral extent of impacted groundwater will be identified by both monitoring wells and grab water sample analysis. Soil samples will be obtained to help establish the source or sources of the above measured chlorinated hydrocarbons. Soil sampling and analysis will be performed at each monitoring well and at other selected locations.

Initially, 17 groundwater samples will be obtained using temporary wells and 4 permanent 2-inch monitoring wells that will be installed. Sixteen soil borings will be performed from selected locations to help assess the source or sources of the spill and to discover if significantly impacted soil remains on the site. These 16 soil borings will be sampled at the 1-foot, 4-foot, 8-foot, 12-foot, 14-foot and 18-foot depths as requested. This will generate analytical data for approximately 100 samples. The locations of all proposed monitoring wells, grab water and soil samples is shown on Sheet A3 found in Section 11.

Following the completion of the remedial investigation and report submittal, interim remedial action may be taken to control the migration of the impacted groundwater. Interim remediation could include excavation and removal of impacted soil or vapor extraction, migration control, or other alternatives. We plan on removing the "L"-shaped building (Building 1) to allow for foundation slab demolition to uncover the sanitary sewer lines. These sewer lines are the principal suspect source for the VOC's found in the groundwater. This interim remediation, if performed, may not have actual clean-up threshold levels set at that time.

The beneficial uses of groundwater at the site will be assessed with the regulatory criteria for impacted soil and groundwater. A risk assessment may be required by Alameda County Health Department based on laboratory results of the soil samples. We will utilize the EPA's risk assessment protocol.

A remediation feasibility study will be performed to evaluate the various alternative corrective action options for impacted soil and groundwater. The options will be evaluated and prioritized on the technical and economic feasibility for remediation to varying concentration levels and their potential impact on beneficial uses.

The corrective action options evaluated may include pump and treat, soil vapor extraction, soil excavation, encapsulation, and other technologies. Our analysis of corrective action options will include the feasibility to:

(a) cleanup to non-detectable concentration;
(b) remediation to concentrations which do not affect groundwater beneficial uses;
(c) remediation to the maximum extent feasible based on economic and technical feasibility; and
(d) no further remediation but continued monitoring.

The corrective action alternatives will be evaluated considering the exposure risk to humans and the environment, the extent of residual ground and surface water pollution, beneficial water uses affected, hazardous nature of each pollutant, the threat of soil contamination to groundwater, water conservation, potential disposal actions and cost.

Corrective remediation will be proposed along with expected achievable remediation levels and treatment processes. A revised schedule for implementation of the selected corrective action will be provided. In addition, a plan for monitoring the effectiveness of the corrective action alternative selected will be developed.

Finally, the selected corrective action will be implemented. A report will be prepared describing how the corrective action was installed and is operating.

Status reports and self-monitoring reports will be provided on a quarterly schedule, or more frequent schedule, as required, especially during the startup period.

Once final remedial levels are reached, or the practical effectiveness of the system is found to provide no further benefit, verification monitoring will be performed for an approved time period to be established in the future. The effectiveness of the corrective action will be evaluated and a recommendation for case closure will be made when appropriate.

A leaking underground storage tank investigation and remediation program is currently active at the adjacent Exxon gasoline station. This workplan is considered compatible with all current and future remediation work for that program.

2. SITE INFORMATION

2.1 Site Address

Airport Plaza Shopping Center
Northwest Corner of Hesperian and W. Winton
23958 Hesperian Boulevard
Hayward, California
APN 432-0060-104-5
APN 432-0060-107-5

Including addresses known as:
23700 Hesperian Boulevard
23956 - 23958 Hesperian Boulevard
975 - 991 W. Winton
969 - 973 W. Winton
23800 - 23882 W. Winton

2.2 Project Directory

Owner: **Adolph P. Schuman Marital Trust** James Crafts, Esq., Co-Trustee 400 Sansome Street San Francisco, CA 94111 Office: (415) 773-5656 Fax: (415) 773-5759	**Lender:** **Fremont Bank** Mike Wallace, EVP P.O. Box 5101 Fremont, CA 94538 Office: (510) 795-5725 Fax: (510) 790-2584
Environmental Consultant: **Van Brunt Associates** Michael W. Van Brunt, Principal Glenn M. Romig P.E. 1517 N. Main Street, Suite 204 Walnut Creek, CA 94596 Office: (510) 685-5900 Fax: (510) 945-0606	**Regional Water Quality Control Board** Mr. Eddy So, P.E., CHMM Associate Water Resources Control Engineer 2101 Webster Street, Suite 500 Oakland, CA 94612 Office: (510) 286-4366 Fax: (510) 286-1380
Alameda County Health Department Ms. Madhulla Logan, M.S. Hazardous Materials Specialist 1131 Harbor Bay Parkway, Suite 250 Alameda, CA 94502 Office: (510) 567-6700 Fax: (510) 337-9335	**Hayward Fire Department** Inspector Hugh Murphy 25151 Clawiter Road Hayward, CA 94545 Office: (510) 293-8695 Fax: (510) 293-5017

Analytical Laboratory: **American Environmental Network** 3440 Vincent Road Pleasant Hill, CA 94523 Office: (510) 930-9090 Fax: (510) 930-0256	**Vapor Gas Study:** **Transglobal Environmental Geochemistry** Mark Jerpbak P.O. Box 162580 Sacramento, CA 95816 Office: (916) 736-3233 Fax: (916) 452-5806
Excavation Contractor/Hazardous Materials: To be determined	**Waste Hauler:** To be determined
Soil Landfill/Recycler: To be determined	**US Alert:** 1-800-642-2444
Drilling Contractor: To be determined	

2.3 Background

Volatile organic compounds (VOC's) have been detected in the groundwater beneath the subject site and elsewhere in the course of the Texaco gas station subsurface investigation.

Historically, two dry cleaning operations have existed on the subject site which may have caused or contributed to the cause of the findings of VOC's in the groundwater. There is no direct evidence at the present time that the VOC's found in the groundwater were caused by or came from the historical nor current dry cleaning operations on the property.

Prior to the construction of the existing improvements in 1961, the subject site was bare land. Previous to that, the property was part of an orchard. Usually, there are no significant subsurface environmental problems associated with these previous land uses.

There is currently no regulatory agency record of any former UST's on the property. Specifically, the file on this property maintained by the Hayward Fire Department does not contain any reference to an underground storage tank. There are no known regulatory citations, actions, or cases open for the subject property.

Krazan & Associates, Inc. of Sacramento, California, completed a Phase I Environmental Site Assessment on November 11, 1994 for 23700 - 23958 Hesperian Boulevard for the Taco Bell Corporation, a potential occupant for a portion of the site. Taco Bell is considering building a restaurant onsite. Van Brunt Associates has field checked the contents of that report and found it to be thorough, complete, and accurate.

A former Texaco Service Station, now Exxon, is located on the adjacent land on the corner of Hesperian Boulevard and W. Winton Avenue. Groundwater contaminated by petroleum hydrocarbons has migrated laterally from the service station and has impacted the subsurface water of the subject site. This has been determined from a laboratory test of both groundwater (hydropunch) samples and the existing monitoring well on the subject property.

The responsible party (Texaco Refining, Inc.) of the existing Leaking Underground Storage Tanks (LUST) at the adjacent Texaco site (23390 Hesperian) believes that the VOC's found in the several monitoring wells sampled have come from "off site" and suspects the subject site. Groundwater and soil vapor extraction and treatment at the adjacent Exxon service station is presently in operation.

2.4 Surrounding Community

The subject site is located in a commercial/residential setting in the City of Hayward, California. The property is built on Alameda County Assessor's Parcel Number 432-0060-104-5 and 432-0060-107-5. The area is generally commercial with single family residential units in the neighborhood to the east and north of the property. There is vacant lot on the north side of the former Antonio's Restaurant building.

The Hayward General Aviation Airport exists west of Hesperian Boulevard. The subject property is topographically flat.

2.5 Chemicals Historically Used On Site

With the exception of the existing and historical dry cleaners, there are no public records nor uses of the site that would be considered unusual or a risk to the properties environmental liability.

2.6 Site History

Historic Occupancy

Prior to the construction of the current improvements, the property existed as an open field. Prior to 1952, when the area was predominantly agricultural, the property was part of an orchard.

The current improvements were constructed in 1961 (source: historic aerial photo review, and Hayward Planning Department).

The issue of primary environmental concern to the subject site is the presence of volatile organic compounds in the groundwater. Historically, there have been two dry cleaning businesses under different ownership in Building 1. The Polk City Directories in the Hayward Public Library contain business listings for the property from the time of its development until 1976. The Polk Directories also show that the adjacent service station site existed on or before 1956. The Hayward telephone books indicate that the Payless Cleaners at 991 Hesperian existed until 1980. It may be important to note that the dry cleaning businesses at 23958 Hesperian and 991 Winton co-existed for about 10 years, from 1970 to 1980.

Polk Directory Gas Station and Cleaners Addresses

Year	24220 Hesperian	23990 Hesperian	23958 Hesperian	991 Winton
1956-57	Lee's Texaco			
1959		Lee's Texaco		
1964		Lee Alderson Texaco		Payless Cleaners
1965		Lee Alderson Texaco		Payless Cleaners
1967		Bill Cross Texaco		Payless Cleaners
1969		Bill Cross Texaco		Payless Cleaners
1970		Lyons Texaco	Washing Well Self Serve Laundry	Payless Cleaners
1971		Lyons Texaco	Washing Well Self Serve Laundry	Payless Cleaners
1972		Lyons Texaco	Norge Cleaners Self Serve Laundry	Payless Cleaners
1973		Lyons Texaco	Norge Cleaners Self Serve Laundry	Payless Cleaners
1976		Lyons Texaco	Genes Norge Cleaners Dry Cleaners	Payless Cleaners

Note: Hesperian Blvd. experienced a major re-numbering scheme between 1957 and 1959, which may have resulted in the change of address for Lee's service station.

The unoccupied building on the northwest corner of the property was formerly a restaurant called "Antonio's". The building was boarded up at the time of the physical survey, and access was not possible. Fire damage was evident on the north side of the building.

The two building on the northeast section of the property are partially occupied and the signs on the occupied and empty spaces indicate former retail use.

The "L" shaped building on the southwest portion of the property has four occupants.

Address	Tenant Sign	Occupied
975 Winton	The Hunter Lounge	Yes
979 Winton	None	No
981 Winton	None	No
985 Winton	None	No
991 Winton	Canton House Chinese	Yes
23958 Hesperian	Jack's Norge Cleaners	Yes
	Gene's Norge Cleaners	
23956 Hesperian	Howard's Drive-in	Yes

2.7 Current and Future Uses

The property has been dedicated to retail, dry cleaning, and restaurant use since it was developed in 1961. The property is substantially vacant at this time. Future demolition of all buildings is planned. The site is scheduled for a development of similar use such as a strip shopping center, retail and restaurant use.

2.8 Geology/Hydrogeology

The property is located on the alluvial flood plain on the eastern edge of the valley which forms the San Francisco Bay. The near surface materials are composed of low permeability Pleistocene alluvium consisting mostly of poorly consolidated gravely, sandy, silt and silty, sandy, clay.

Test borings have been performed on the property, and the adjacent Exxon service station. Groundwater beneath the subject site occurs at a depth of approximately 20 feet below ground surface.

3. PROJECT SCHEDULE

3.1 Field Work

We anticipate timely authorization by our client to start our work after approval. We estimate our field work will take approximately five weeks.

3.2 Laboratory Analysis

We will use AEN, a State of California accredited laboratory for lab analysis. We will submit all samples with a maximum 10-day turnaround time.

3.3 Report

We will take approximately three weeks for the preparation, checking and submittal of our report.

3.4 Bar Chart Schedule

We have attached a conceptual bar chart schedule.

ENVIRONMENTAL PROTECTION

95 JUL 11 PM 12:17

VAN BRUNT ASSOCIATES

CONSULTANTS TO REAL ESTATE
OWNERS, MANAGERS & LENDERS

TRANSMITTAL

Project No.:	94502
Project Name:	Crafts Hesperian
Date:	July 7, 1995
Subject:	Revised Workplan

TO: Mr. Eddy So

COMPANY: Regional Water Quality Control Board

ADDRESS/FAX#: 2101 Webster Street, Suite 500

Oakland, CA 94612

We are sending you:

___ Contract/Authorization To Proceed
___ Schedule
___ Plans/Sketches
___ Specifications
___ Change Order
___ Report(s)
___ Calculations/Data
___ Test Results
___ Request For Information (RFI)
___ Request For Proposal (RFP)
___ Estimates/Bids
___ Copy of Letter
___ Samples/Submittals
X Other: Workplan

Via: ___ Hand ___ Fax X Courier ___ Overnight ___ Mail

Item	Copies	Date	Description
1	1	07/7/95	Revised Workplan

Transmitted As Checked Below:

___ For Your Approval
X For Your Review & Comments
___ For Your Signature
___ For Your Use/Records
___ For Pricing/Estimate
___ For Bid Due: _____
___ Approved & Submitted
___ As Requested
___ Approved As Noted
___ Returned For Corrections
___ Re-Submit For Approval
___ Please Return

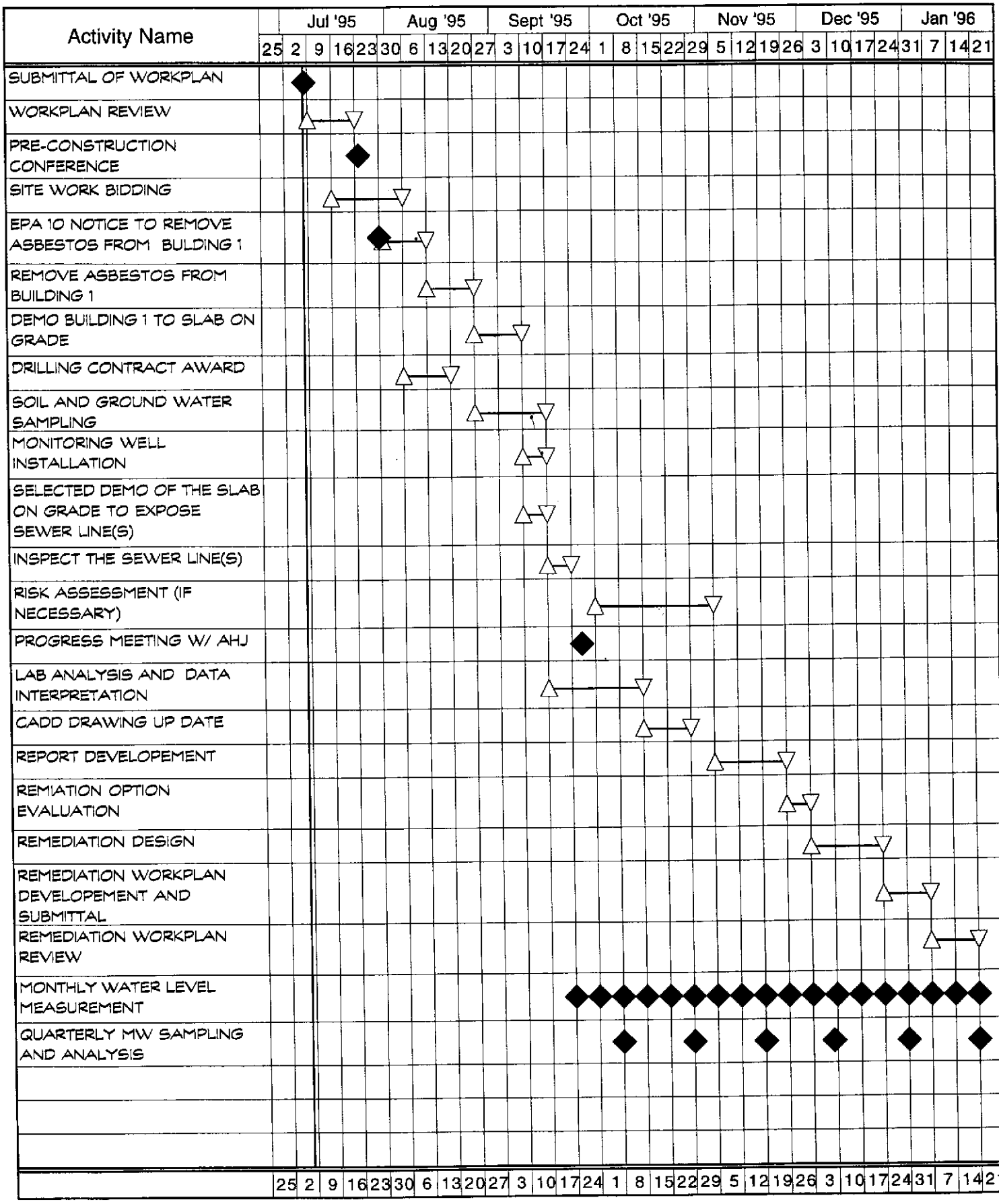
REMARKS:

BY: Michael Van Brunt
Principal

DISTRIBUTION: J. Crafts, Co-Trustee
M. Logan, Alameda County Health
H. Murphy, Hayward F.D.

1517 N. Main Street, Suite 204, Walnut Creek, CA 94596
Phone: (510) 685-5900 Fax: (510) 945-0606

AIRPORT PLAZA S.C INVESTIGATION AND REMEDAITION
CONCEPTUAL SCHEDULE PLOT DATE 7/7/95 BY VAN BRUNT ASSOCIATES



4. PROPOSED SOIL BORINGS AND HYDROPUNCH SAMPLING

4.1 Boring Location Criteria

The locations of the soil borings have been selected based on several factors: (1) known groundwater gradient, (2) the locations of the two suspect sources of VOC's, (3) the location of the existing sewer lines, and (4) CRWQCB and Alameda County Health Department input on soil boring locations.

4.2 Drilling Procedures

At each drilling location, clean drilling augers and samplers were used to eliminate the possibility of cross contamination between boreholes. The soil cuttings generated during drilling were placed in a DOT approved dumpster lined with plastic until receipt of the analytical results.

All soil sampling horizons will be field screened utilizing a portable organic vapor analyzer (OVA). The OVA readings guide the location of additional boreholes to define the lateral extent of contamination, and to determine the vertical depth of contamination within the borings.

At the conclusion of drilling and sampling, all test borings will be grouted with neat cement. Cored surfaces will be filled with concrete for appearance and strength.

Soil Sampling at the Suspect Sewer Line

Soil sampling just below the sewer line is planned. This will require demolition of the building and the foundation slab-on-grade. We will sample directly from the trench excavation or as necessary from the backhoe bucket. The backhoe operator will be instructed to obtain a firm, compacted bucket full of soil and remove it rapidly from the hole. Approximately three inches of the soil will be scraped away and a clean two-inch diameter by six-inch long brass tube will be driven into the soil. Once removed from the soil, the tube ends will be covered with Teflon tape, capped with non-reactive plastic caps, and sealed with tape. No head space will be allowed in the tubes. Samples will be labeled with a unique sample identification number and placed on dry ice in sealable bags at 4°C for storage pending delivery for laboratory analysis.

Soil Sampling from the Borings

Soil samples will be collected at the 1-foot, 4-foot, 8-foot, 12-foot, 14-foot and 18-foot depths. The samples will be collected in standard 2-inch brass sleeves utilizing a California split spoon sampling device. Brass sleeves will be sealed with Teflon tape, or other non-reactive material, capped and placed on dry ice in a thermal cooler. All drill cuttings will be logged using the Unified Soil Classification System by the on-site VBA geologist under the direction of a California Registered Geologist. Soil boring logs will be completed and included in a report summarizing the field portion of the project.

5. PROPOSED MONITORING WELL INSTALLATION

5.1 MW/Hydro-Punch Location Criteria

The locations for each of the proposed monitoring wells and grab water samples were carefully selected based on the following information: (1) known groundwater gradient, (2) known historical VOC levels, (3) the location of Exxon monitoring wells, (4) locations that would produce optimum longitudinal and transverse section for chemistry evaluation, and (5) input from CRWQCB.

5.2 Drilling Procedures

The proposed monitoring well locations will be field marked prior to drilling so that the underground locating service (USA) can inspect to insure that no utilities will be interrupted. Drilling will be accomplished with an eight-inch hollow stem, continuous flight auger. Auger flights will be cleaned prior to commencement of drilling to preclude the introduction of off-site or cross contamination. All drill cuttings and purge water will be labeled and containerized on-site in DOT approved 55 gallon drums pending laboratory results. The driller will possess a valid California State Water Well Contractors (C57) License. A DWR Water Well Driller's Report, Form 188, and laboratory data for soil and groundwater analytical results will be filed with the Alameda County Flood Control and Water Conservation District (ACWD) within 15 days following completion of the work. All soil borings will be grouted to the surface with a neat Portland Cement slurry.

During monitoring well drilling, a geologist from Van Brunt Associates will direct the field operations and log the auger borings and soil samples as they are obtained using the Unified Soil Classification System. Soil samples will be collected with a hydraulic percussion hammer using a modified California sampler equipped with one inch brass sample tubes. After sample collection, the ends of the brass tubes will be covered with Teflon tape, then plastic end caps, and finally wrapped with a non-petroleum containing tape. Soil samples will be immediately plastic bagged to prevent possible dilution, and placed on dry ice for transport to American Environmental Network (AEN) in Pleasant Hill, a California EPA Certified Laboratory. Standard chain of custody procedures will be observed.

5.3 Well Construction And Development

Each monitoring well will be constructed of 2" PVC casings with flush thread joints. Under no circumstance will glues or cement be used to join well casing material. The screen slot size and filter material grain size will be field determined based on lithology. The filter material will be washed sand. An annular seal of neat Portland cement will be placed from a bentonite seal to the surface. The seal material will be a batch plant mixed sand/cement slurry consisting of one sack of Portland Type I/II Cement to five gallons of clean water. A tremie pipe will be used for delivery of the grout. The well head will be placed below the surface in a protected vault and secured with a water-tight locking lid. The protective vault will be labeled as a "MONITORING WELL" and well cap will contain information on the well construction. The detail on Sheet 4 shows construction details used for the construction of the combination groundwater/vadose monitoring well. Well development will be undertaken using a swab and bail technique. Well development logs will be maintained.

5.4 Hydrogeologic Data

Water level measurements will be taken after well development and prior to well sampling.

6. GENERAL SAMPLING PROCEDURES

6.1 Breathing Zone Sampling

The consultant, engineer and other workers in the work area(s) will be periodically monitored at the breathing zone for occupational exposure to VOC's. We intend to monitor by both ambient air sampling by a hand-held Drager Gas measurement system for both Trichloroethene and Vinyl Chloride. Each worker classification will be monitored daily using a gas diffusion detector tube to ensure that regulatory TWA's are not exceeded. These and the other normal site safety considerations will be addressed in our site specific Health and Safety Plan.

6.2 Soil Screening

During the sewer line excavation, contaminated soils removal and soil borings, measurements will be made for concentrations of VOC's.

The soil samples will be measured for total ionizable vapors using an Organic Vapor Analyzer (OVA). This will be done to grossly characterize the vertical and lateral extent of contamination. Soil samples will be collected for OVA screening on approximately three-foot centers for both excavation sidewalls and excavation bottom. The soil readings will be taken at a distance of not greater than three inches from freshly dug soil. The OVA will be calibrated daily using hexane following the manufacturer's recommendations.

6.3 Soil Sampling

Soil samples will be collected at the 1-foot, 4-foot, 8-foot, 14-foot and 18-foot levels above the water table or at changes of lithology. Soil samples will be collected in standard 2-inch brass sleeves utilizing a California split spoon sampling device. Brass sleeves will be sealed with Teflon tape, or other non-reactive material, capped and placed on dry ice in a thermal cooler. All drill cuttings will be logged using the Unified Soil Classification System by the onsite VBA geologist under the direction of a California Registered Geologist. A soil boring log will be constructed and included in a report summarizing the field portion of the project.

6.4 Water Sampling

Groundwater is approximately 18 feet below the surface in this area. Our excavation and boring activities will extend to a maximum estimated depth of 25 feet.

Water samples will be collected from both the monitoring wells after well development and the hydropunch locations. We expect two 72 hour periods subsequent to well installation for well development prior to sampling. Water samples will be collected from a clean teflon bailer after purging a minimum of 4 well volumes from the well casing. A direct reading instrument will be used to record pH, Temperature and Specific Conductivity to insure parameter stabilization prior to sample collection. Water samples will be transferred directly to VOA vials with Teflon septums or amber bottles and subsequently placed on dry ice and reserved at industry standard temperatures.

6.5 Sample Handling And Shipment

As each sample is collected, necessary information will be logged into the field notebook, and then transferred to the sample label. The label will contain: the sample ID; date and time sampled; location; client; analytical method; and sampler's initials. The labels will be affixed to a clean, dry surface on the sample container. All samples will be immediately transferred to an ice chest containing dry ice and reserved at industry standard temperatures.

Chain-of-custody forms will be filled out as the samples are collected so that samples do not have to be removed from the ice chest except for potential repacking prior to shipment. All field documents, log books, sample labels, and chain-of-custody forms will be filled out legibly in waterproof ink. These documents will be part of the permanent project file report. Samples will be held and transported on dry ice for laboratory analysis.

7. VBA EXAMPLE FIELD FORMS

7.1 Phase II Checklist

7.2 Chain of Custody Form

7.3 Monitoring Well Construction Characteristics

7.4 Field Parameters During Well Purging for Sampling

7.5 Groundwater Elevation Data

7.6 Groundwater Analytical Data

7.7 Standard Soil Classification System

7.8 Example Boring Log Legend

7.9 Example Boring Log

7.10 Example Monitoring Well Boring Log

7.11 Monitoring Well Construction Detail

7.1 EXAMPLE FORM
PHASE II CHECKLIST

CLIENT: JAMES CRAFTS ESQ. -CO TRUSTEE

JOB: CRAFTS /HERSPERIAN

SITE ADDRESS: 23958 HESPERIAN HAYWARD CA.

2 WEEKS	Y	N	NA	Comments	OK
1. Schedule Driller					
Name					
Phone:					
Contact:					
Lic. No.:					
Insurance Cert.:					
Date Scheduled:					
Hourly Rate:					
No. Borings:					
Depth:					
Hydro Punch					
2. Permits					
Water Quality:					
AQMD:					
Fire:					
Public Works:					
3. Assign Geologist					
Glen					
Steve					
4. Work Plan					
Cover Letter:					
Workplan:					
Figures:					
Appendices:					

	1.5 WEEKS	Y	N	NA	Comments	OK
5.	**Site Inspection**					
	Site Access:					
	Topo @ Drilling Loc:					
	Parking Concerns:					
	Stick Tank:					
	Open All Ports:					
	Mark Boring Locations:					
	Measure Site:					
	OH Lines:					
	Elect. Location:					
	Water Location					
	Noise Issues					
	Ped/Traffic Hazards					
	Loc. for Cutting Drums					

	1 WEEK BEFORE	Y	N	NA	Comments	OK
6.	**USA Alert:**					
7.	**Management Notification**					
	Firm:					
	Contact:					
	Phone:					
	Address:					
8.	**Determine Gradient**					
9.	**Tank**					
	Drain:					
	Triple Rinse:					
10.	**HASP**					

1 DAY BEFORE		Y	N	NA	Comments	OK
11.	**Barricade:**					
12.	**Parking Spaces:**					

OTHER ISSUES		Y	N	NA	Comments	OK
MW CONSTRUCTION IN MEDIAN	REQUIRES TRAFFIC CONTROL					
(E) DRUMS FROM KRAZAN WK	XTRA LAB AND DISPOSAL COSTS					

LAB TURNAROUND		Y	N	NA	Comments	OK
Lab	AEN					
Requested:						
Date of Sample:						
Delivery:						
Turn around time	10 DAY					
Date of Results:						

Reporting Information:

1. Client: _____
Address: _____
_____
Contact: _____
Alt. Contact: _____

American Environmental Network
3440 Vincent Road, Pleasant Hill, CA 94523
Phone (510) 930-9090
FAX (510) 930-0256

AEN

REQUEST FOR ANALYSIS / CHAIN OF CUSTODY

Lab Job Number: _____
Lab Destination: _____
Date Samples Shipped: _____
Lab Contact: _____
Date Results Required: _____
Date Report Required: _____
Client Phone No.: _____
Client FAX No.: _____

Address Report To:

2. _____
_____
_____
_____

Send Invoice To:

3. _____
_____
_____
_____

Send Report To: 1 or 2 (Circle one)

Client P.O. No.: _____ Client Project I.D. No.: _____

Sample Team Member (s) _____

Lab Number	Client Sample Identification	Air Volume	Date/ Time Collected	Sample Type*	Pres.	No. of Cont.	Type of Cont.	ANALYSIS	Comments / Hazards

Relinquished by: (Signature)		DATE	TIME	Received by: (Signature)	DATE	TIME
Relinquished by: (Signature)		DATE	TIME	Received by: (Signature)	DATE	TIME
Relinquished by: (Signature)		DATE	TIME	Received by: (Signature)	DATE	TIME
Method of Shipment				Lab Comments		

*Sample type (Specify): 1) 37mm 0.8 µm MCEF 2) 25mm 0.8 µm MCEF 3) 25mm 0.4 µm polycarb. filter
4) PVC filter, diam. _____ pore size _____ 5) Charcoal tube 6) Silica gel tube 7) Water 8) Soil 9) Bulk Sample
10) Other _____ 11) Other _____

7.3 EXAMPLE FORM

MW PHYSICAL CHARACTERISTICS

CRAFTS/HESPERIAN

Monitoring Well Number	MW-1	MW-2	MW-3	MW-4*
Drilling Date	May 20, 1994	May 19, 1994	May 20, 1994	May 19, 1994
Well Diameter (minimum) (inches)	10.25	10.25	8.0	10.25
Diameter of Casing (inches)	4.00	4.00	2.00	2.00
Total Depth of Well (ft)	23.0	23.0	23.0	35.0
Bottom of Slotted Interval (ft)	23.0	23.0	23.0	23.0
Top of Slotted Interval (ft)	8.0	8.0	8.0	8.0
Depth Datum Reference	Top of Casing	Top of Casing	Top of Casing	Top of Casing
Depth to Free Product (ft)	N/A	N/A	N/A	N/A
Depth to Groundwater (ft) at drilling	8.0	8.0	8.0	22
Groundwater in Well Column (gals)	9.81	9.81	2.43	3.90
Total Water Purged (gals)	≈30.0	≈30.0	50.0	50.0
Manway or Stovepipe	Manway	Manway	Manway	Manway
Water Tight or Not (yes of no)	Yes	Yes	Yes	Yes
Type of Well Column Seal	Expansion Locking	Expansion Locking	Expansion Locking	Expansion Locking

7.4 EXAMPLE FORM

FIELD PARAMETERS DURING WELL PURGING FOR SAMPLING

CRAFTS/HESPERIAN

WELL	SAMPLE DATE	WELL VOLUMES	pH	TEMP ^{0}f	CONDUCTANCE µmhos	SAMPLE NUMBER
MW-1	12/08/94	0	7.1	66	1100	
		1	7.1	67	1200	
		2	7.3	67	1200	
		3	7.3	67	1200	VBA 12/08/94-1
MW-2	12/08/94	0	7.6	65	1200	
		1	7.4	64	1200	
		2	7.5	64	1200	
		3	7.5	64	1200	VBA 12/08/94-2
MW-3	12/08/94	0	7.7	74	1200	
		1	7.8	73	1300	
		2	7.7	69	1200	
		3	7.7	69	1200	VBA 12/08/94-3

7.5 EXAMPLE FORM
SUMMARY OF MONTHLY
GROUNDWATER ELEVATION MEASUREMENTS
CRAFTS/HESPERIAN

WELL	DATE MEASURED	CASING ELEVATION (ft)	DEPTH TO SWL (ft)	SWL ELEVATION (ft)
MW-1	05/27/94	98.74	8.01	90.73
	07/08/94		8.27	90.47
	08/07/94		8.32	90.42
	09/23/94		8.57	90.17
	10/07/94		8.62	90.12
	11/08/94		7.79	90.95
	12/08/94		7.74	91.00
MW-2	05/27/94	98.67	7.27	91.40
	07/08/94		7.61	91.06
	08/07/94		7.59	91.08
	09/23/94		7.84	90.83
	10/07/94		7.88	90.80
	11/08/94		7.03	91.64
	12/08/94		7.00	91.67
MW-3	05/27/94	98.00	7.86	90.81
	07/08/94		8.10	89.90
	08/07/94		8.17	89.83
	09/23/94		7.39	90.61
	10/07/94		8.33	89.67
	11/08/94		7.63	90.37
	12/08/94		7.62	90.38
MW-4	05/27/94	102.52	11.75	90.77
	07/08/94		11.98	90.54
	08/07/94		12.03	90.49
	09/23/94		12.24	90.28

7.6 EXAMPLE FORM

Table 1
Groundwater Analytical Data
23958 Hesperian Boulevard
Hayward, California

Well Number	Date Sampled	Tetrachloroethene (PCE) (ppb)	Trichloroethene (TCE) (ppb)	Cis, 1, 2-Dichloroethene (ppb)	Vinyl Chloride (ppb)
MW-3A					
MW-3B					
MW-3C					
MW-3D					

UNIFIED SOIL CLASSIFICATION SYSTEM

MAJOR DIVISIONS				TYPICAL NAMES
COARSE GRAINED SOILS	GRAVEL MORE THAN HALF OF THE COARSE FRACTION IS LARGER THAN No. 4 SIEVE SIZE	CLEAN GRAVEL WITH LESS THAN 5% FINES	GW	WELL GRADED GRAVEL, GRAVEL-SAND MIXTURE
			GP	POORLY GRADED GRAVEL, GRAVEL-SAND MIXTURE
		GRAVEL WITH OVER 12% FINES	GM	SILTY GRAVEL, GRAVEL-SAND-SILT MIXTURE
			GC	CLAYEY GRAVEL, GRAVEL-SAND-CLAY MIXTURE
	SAND MORE THAN HALF OF THE COARSE FRACTION IS SMALLER THAN No. 4 SIEVE SIZE	CLEAN SAND WITH LESS THAN 5% FINES	SW	WELL GRADED SAND, GRAVELLY SAND
			SP	POORLY GRADED SAND, GRAVELLY SAND
		SAND WITH OVER 12% FINES	SM	SILTY SAND, GRAVEL-SAND-SILT MIXTURE
			SC	CLAYEY SAND, GRAVEL-SAND-CLAY MIXTURE
FINE GRAINED SOILS MORE THAN HALF IS < No. 200 SIEVE	SILT AND CLAY LIQUID LIMIT LESS THAN 50		ML	INORGANIC SILT, ROCK FLOUR, SANDY OR CLAYEY SILT WITH LOW PLASTICITY
			CL	INORGANIC CLAY OF LOW TO MEDIUM PLASTICITY, GRAVELLY, SANDY OR SILTY CLAY (LEAN)
			OL	ORGANIC CLAY AND ORGANIC SILTY CLAY OF LOW PLASTICITY
	SILT AND CLAY LIQUID LIMIT GREATER THAN 50		MH	INORGANIC SILT, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOIL, ELASTIC SILT
			CH	INORGANIC CLAY OF HIGH PLASTICITY, GRAVELLY, SANDY OR SILTY CLAY (FAT)
			OH	ORGANIC CLAY OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILT
HIGHLY ORGANIC SOILS			PT	PEAT AND OTHER HIGHLY ORGANIC SOILS

KEY TO TEST DATA

EI	- Expansion Index
Consol	- Consolidation
LL	- Liquid Limit (in %)
PL	- Plastic Limit (in %)
PI	- Plasticity Index
SA	- Sieve Analysis
Gs	- Specific Gravity
■	- "Undisturbed Sample"
□	- Bulk Sample

		Shear Strength, psf	Confining Pressure, psf
TxUU	- Unconsolidated Undrained Triaxial	320	(2600)
TxCU	- Consolidated Undrained Triaxial	320	(2600)
DSCD	- Consolidated Drained Direct Shear	2750	(2000)
FVS	- Field Vane Shear	470	
LVS	- Laboratory Vane Shear	700	
UC	- Unconfined Compression	2000	*
UC(P)	- Laboratory Penetrometer	700	*

Notes: (1) All strength tests on 2.8" or 2.4" diameter samples unless otherwise indicated

* Compressive Strength

Project: EXAMPLE	VAN BRUNT ASSOCIATES	Figure 00

Project: Example-standard boring legend

BORING LOG LEGEND SHEET

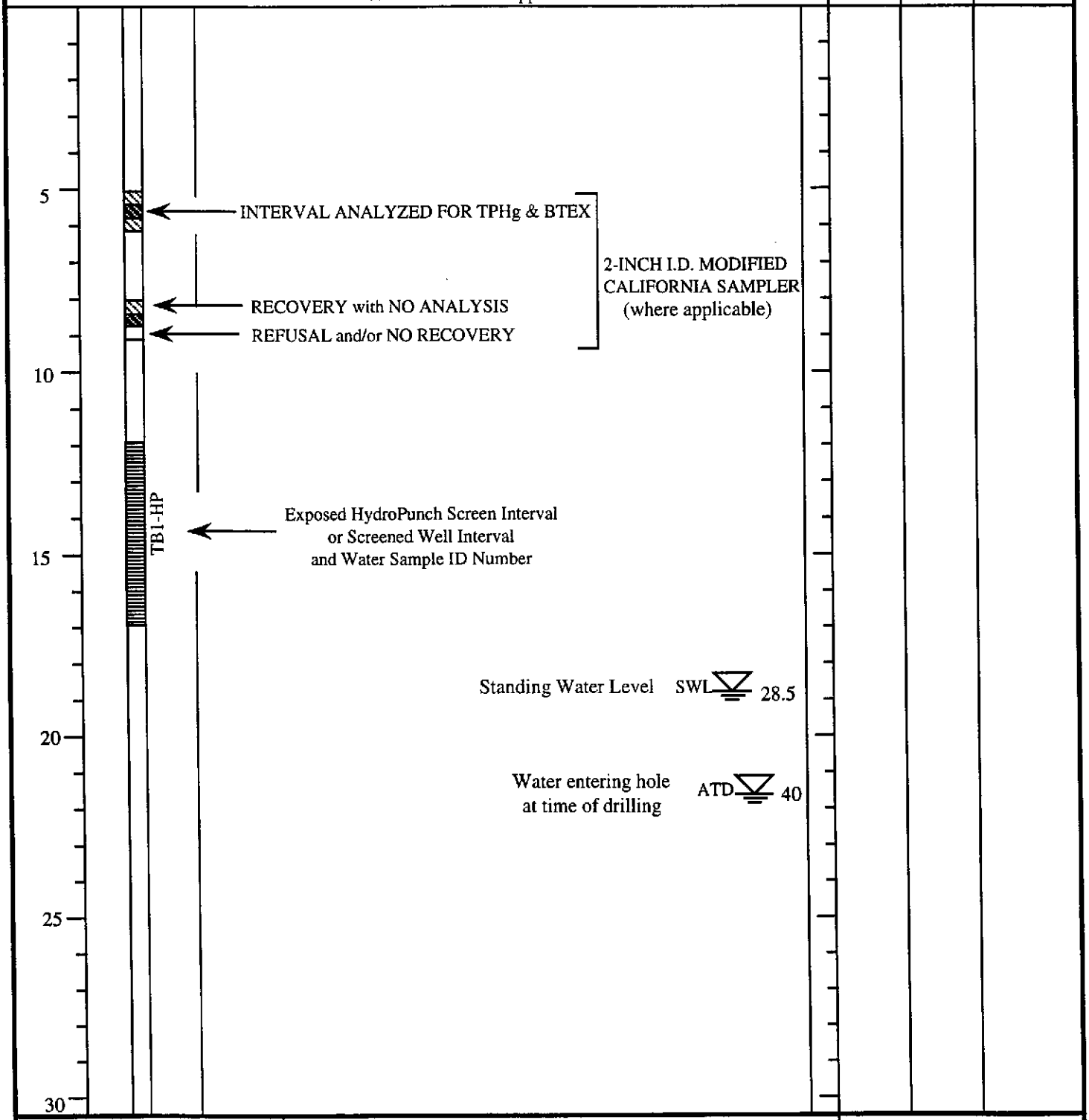
Date Drilled: _____ Remarks: _____

Type of Boring: _____

Hammer Weight: _____

Depth, Ft.	Samples	Blows/Ft	DESCRIPTION	PRODUCT "A" ppm	PRODUCT "B" ppm	Comments

Surface Elevation: Approx. 158 feet

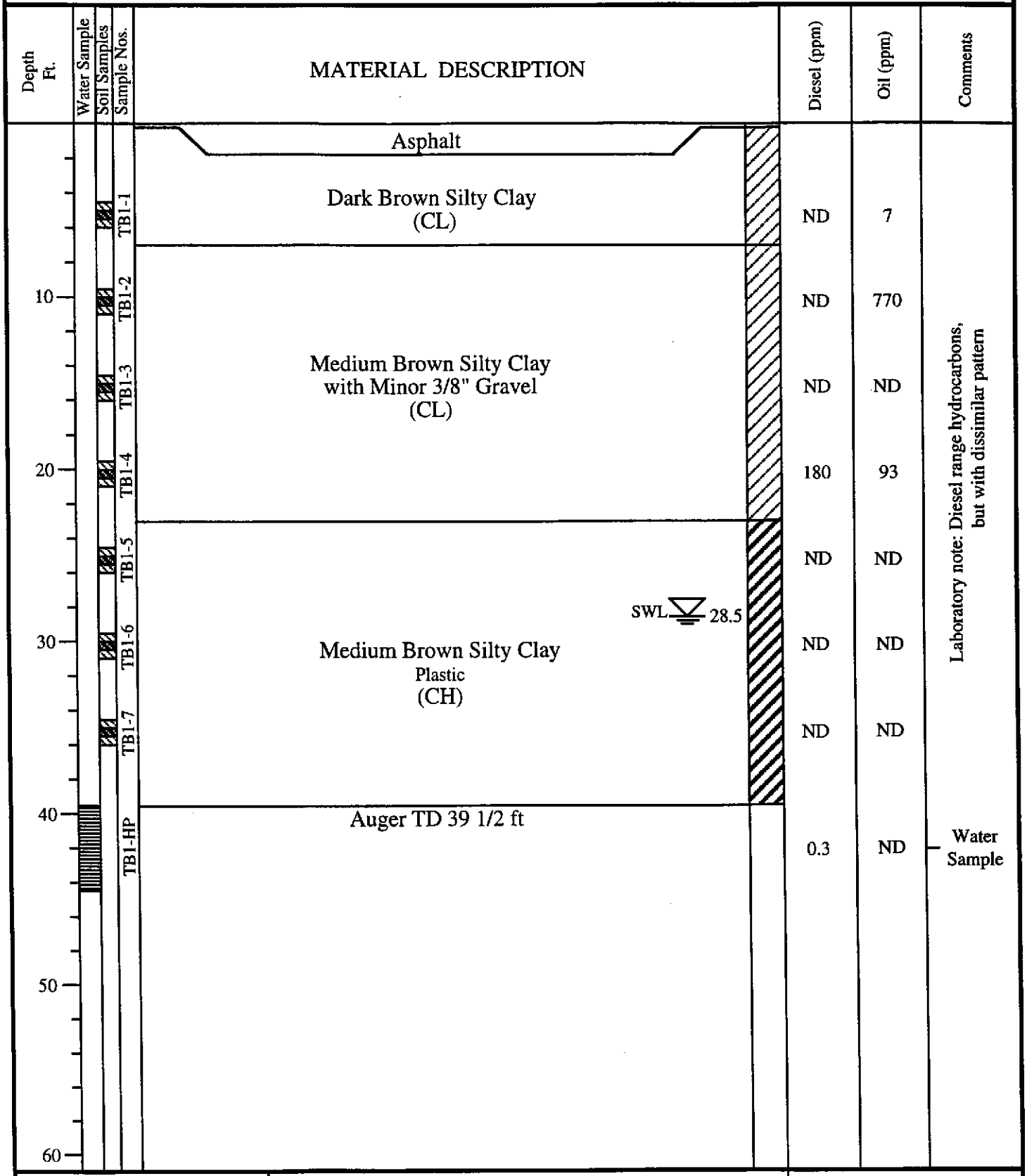


Project: EXAMPLE	VAN BRUNT ASSOCIATES	Figure 00

Project: EXAMPLE BORING LOG	Log of Test Boring TB-1

Date Drilled/Sampled: November 13, 1993
Type of Boring: 6 " Solid stem auger
Sample Method: Ca. Split Spoon

Remarks: Vertical datum - Ground Surface
Driller: ABC Corp. Start: Finish:
Logged by: S. R. Clark Reviewed by: Glen M. Romig P.E.

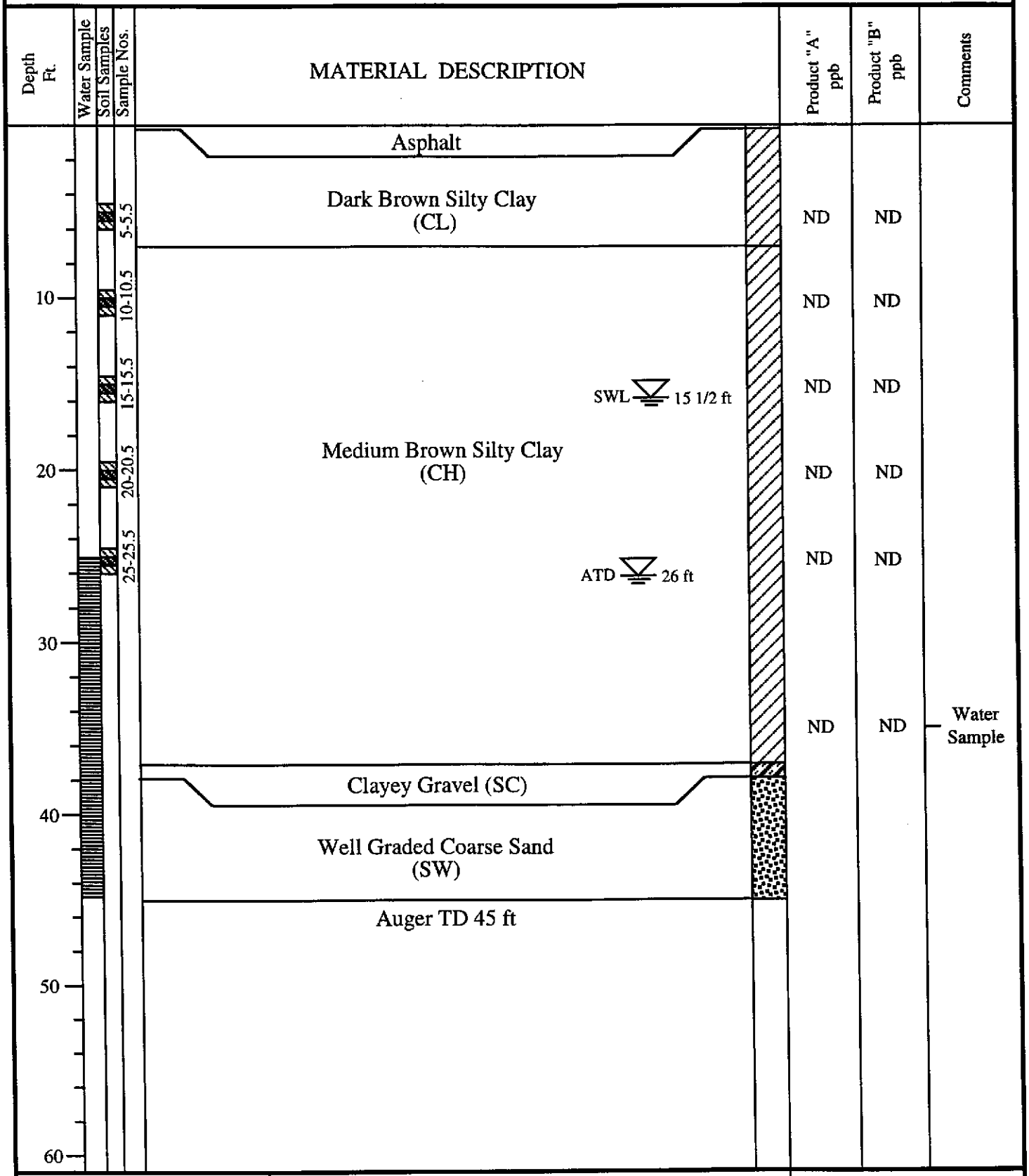


Project: EXAMPLE	Van Brunt & Associates	Figure 00

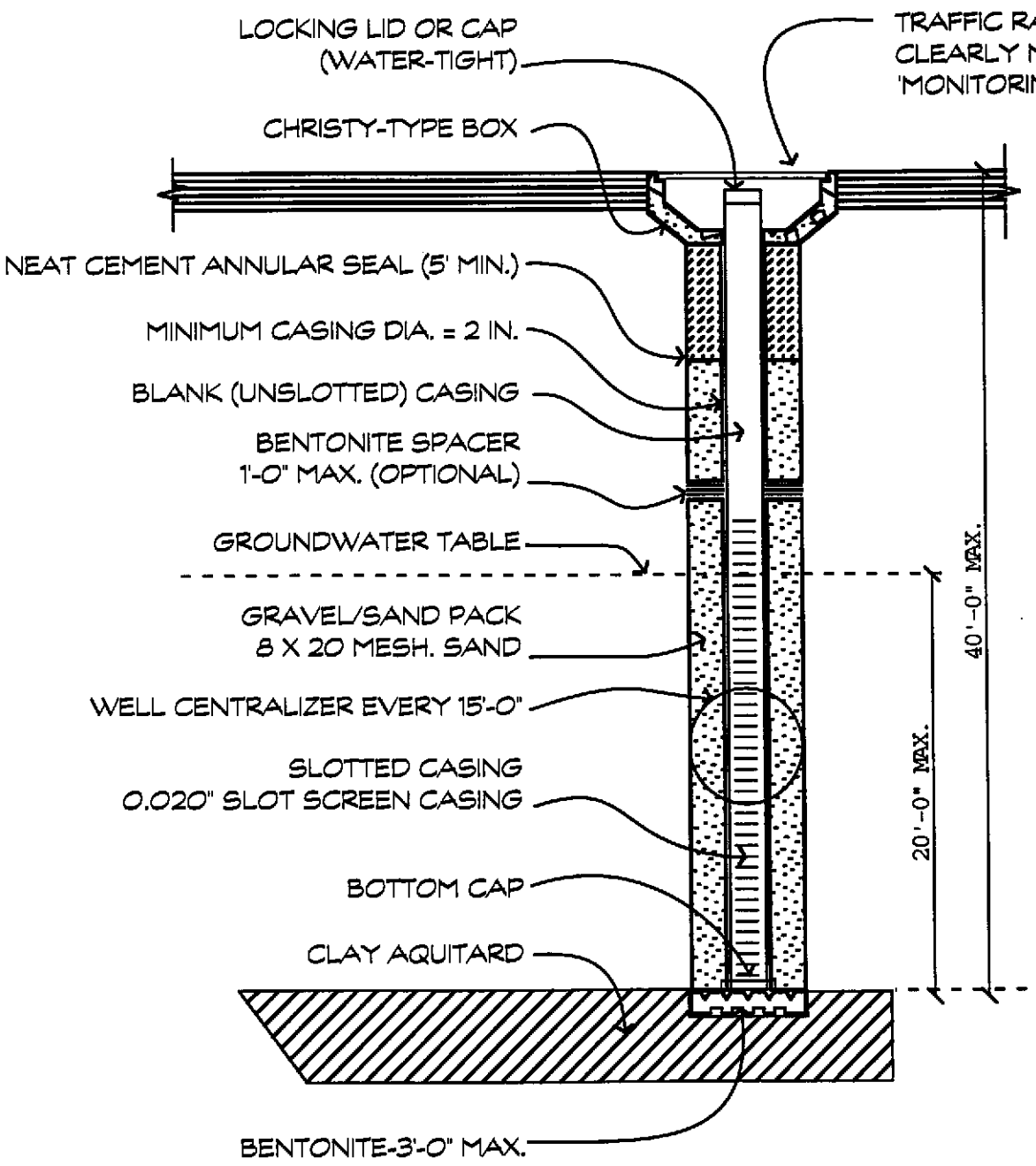
Project: EXAMPLE MW BORING LOG	Log of Monitoring Well MW-3

Drilled and constructed by: Soils Exploration Services, Benicia, CA
Proj. Geologiest : Steve Clark Started 2/11/94
Completion Date: February 11, 1994

Zone 7 Water Agency
Permit No. 94101
Reviewed by: Glen Romig P.E.



Project: EXAMPLE	Van Brunt & Associates	Figure 00



NOTE: ALL MONITORING WELLS WILL BE DRILLED USING CONVENTIONAL AUGER TECHNIQUES WITH A FIELD GEOLOGIST LOGGING SOIL TYPES

2 / -

2" MONITORING WELL CONSTRUCTION DETAIL

NOT TO SCALE

8. PROPOSED LAB ANALYSIS

8.1 Laboratory Tests For Soil

All samples will be transferred to a State of California Department of Health Services certified laboratory for analysis. A formal chain-of-custody form will accompany the shipment. Soil samples will be analyzed by EPA Method 8010.

Soil

Any soil materials removed from the sewer line excavation and surrounding area will be classified and initially segregated into four stockpiles as "heavily contaminated", "contaminated", "potentially contaminated" or "uncontaminated", based on results from OVA measurements and visual observations.

The segregated material will be moved to a staging area, adjacent to the excavation, where material will again be sampled with an OVA to confirm its initial classification. All soil stockpiles will be laid onto 10 mil plastic sheeting and subsequently covered to prevent uncontrolled loss of VOC's to the air. Soil will be segregated as indicated in the following table:

Soil Segregation Table

OVA Reading (ppm) VOCs	Designation	Treatment
0	Uncontaminated	None
1-100	Potentially Contaminated	Cover with Plastic Barrier
100-1000	Contaminated	Cover with Plastic Barrier
>1000	Heavily Contaminated	Place into and Seal DOT Approved Drums/Container

8.2 Laboratory Tests For Groundwater

All samples will be transferred to a State of California Department of Health Services certified laboratory for analysis. A formal chain-of-custody form will accompany the shipment. Soil samples will be analyzed by EPA Method 8010.

8.3 Laboratory Results For Waste Characterization

The soil OVA screening will be confirmed by approved lab analysis of representative samples of the segregated soil.

9. TREATMENT OF SOILS AND WASTE

9.1 Water

Monitoring well purge water will be stored onsite in approved containers prior to characterization.

Water wastes derived during boring and monitoring well construction were from the standard water and detergent decontamination processes for the drilling equipment. Characterization of this waste and disposal will be performed and documented.

9.2 Soil

Soil recycling or landfill options will be considered for this site.

10. OTHER CONSIDERATIONS

10.1 Site Security

The property will be vacant and should not pose a problem with field operations. During drilling operations, work areas will be established using caution tape and control barriers to afford security. All pits and excavations will be fenced.

10.2 Organic Vapor Sampling

During drilling, measurements will be made of the air and soil. Air samples will be measured for health and safety purposes as described in the Health & Safety Plan. Soil boring samples will be measured for total ionizable vapors using an Organic Vapor Analyzer (OVA). This will be done to characterize the presence and the level of contamination. Soil samples will be collected for OVA screening in approximately five foot increments as the auger flights are driven into the ground. OVA soil readings will be taken at a distance of not greater than three inches from freshly drilled soil samples. The OVA will be calibrated daily using the appropriate zero gas and/or hexane following the manufacturer's recommendations.

10.3 Equipment Decontamination

All equipment will be decontaminated prior to use and between each borehole or well location. Auger flights will be steam cleaned. The split spoon sampler, sampling sleeves, well development equipment and bailers will be washed in Alcanox and subsequently rinsed with clean water using sequential field rinsing techniques.

10.4 Permits

Necessary permits will be retrieved as needed from the authorities having jurisdiction, including the Alameda County Water and Flood Control Agency.

11. FIGURES/PLANS

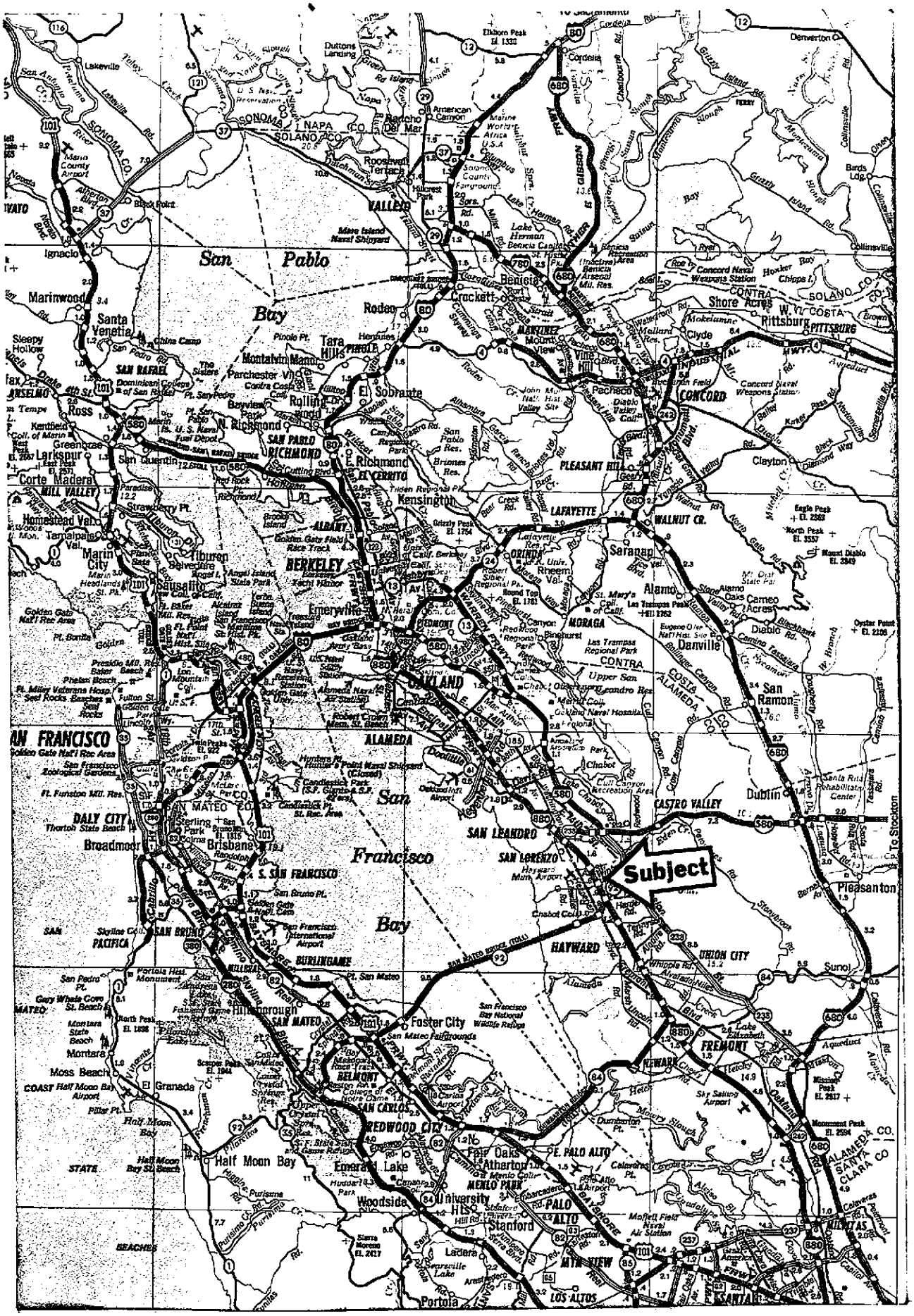
Figure 1 **Regional Location Map**

Figure 2 **Local Vicinity Map**

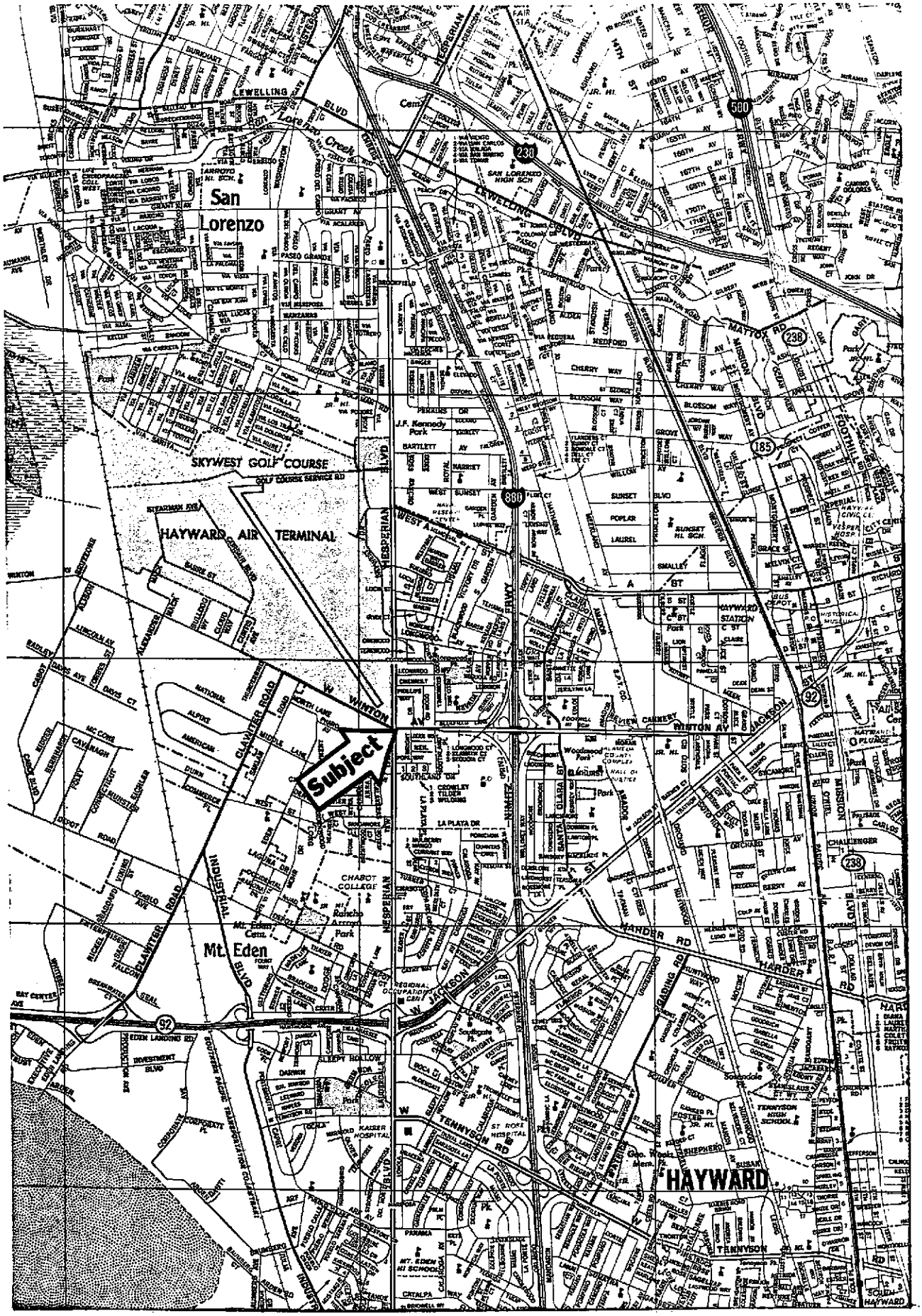
Sheet A1 **Site Plan**

Sheet A2 **Existing Monitoring Well Locations and Analytical Data**

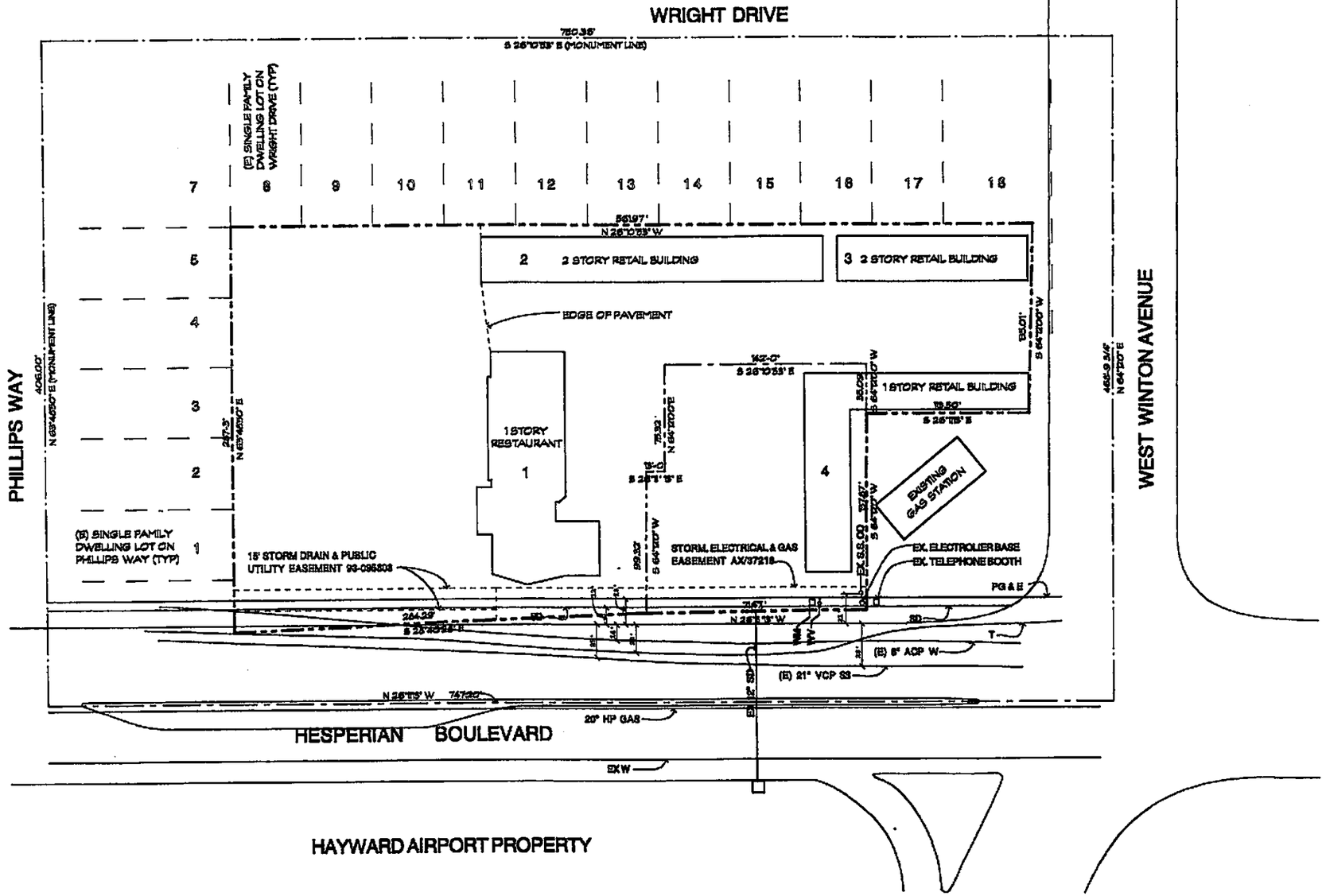
Sheet A3 **Proposed Monitoring Wells, Soils Borings and Groundwater Grab Samples**



REGIONAL LOCATION MAP



LOCAL VICINITY MAP



SYMBOL LEGEND

- A — VSA GRID COORDINATES FOR THE IDENTIFICATION OF SOIL / GROUND WATER SAMPLING LOCATIONS. A NEGATIVE NUMBER REPRESENTS UP OR CROSS GRADIENT.
- MW-3 — EXISTING GROUND WATER MONITORING WELL.
- OBSERVATION WELL.
- PROPOSED MONITORING WELL W/ SOIL SAMPLES AT 5' INTERVALS AND LITHOLOGIC LOG. NOTE: LITHOLOGY WILL BE IDENTIFIED
- SOIL SAMPLES AT 5' INTERVALS.
- GROUND WATER GRAB SAMPLE

SHEET INDEX

GROUND WATER GRADIENT ARROW

1 SITE PLAN - EXISTING SITE UTILITIES
1"= 40'-0"

OWNER: ADOLPH P. SCHUMAN MARITAL TRUST
JIM CRAFTS ESQ. CO-TRUSTEE

AIRPORT PLAZA SHOPPING CENTER
23358 HESPERIAN BLVD. HAYWARD CA.

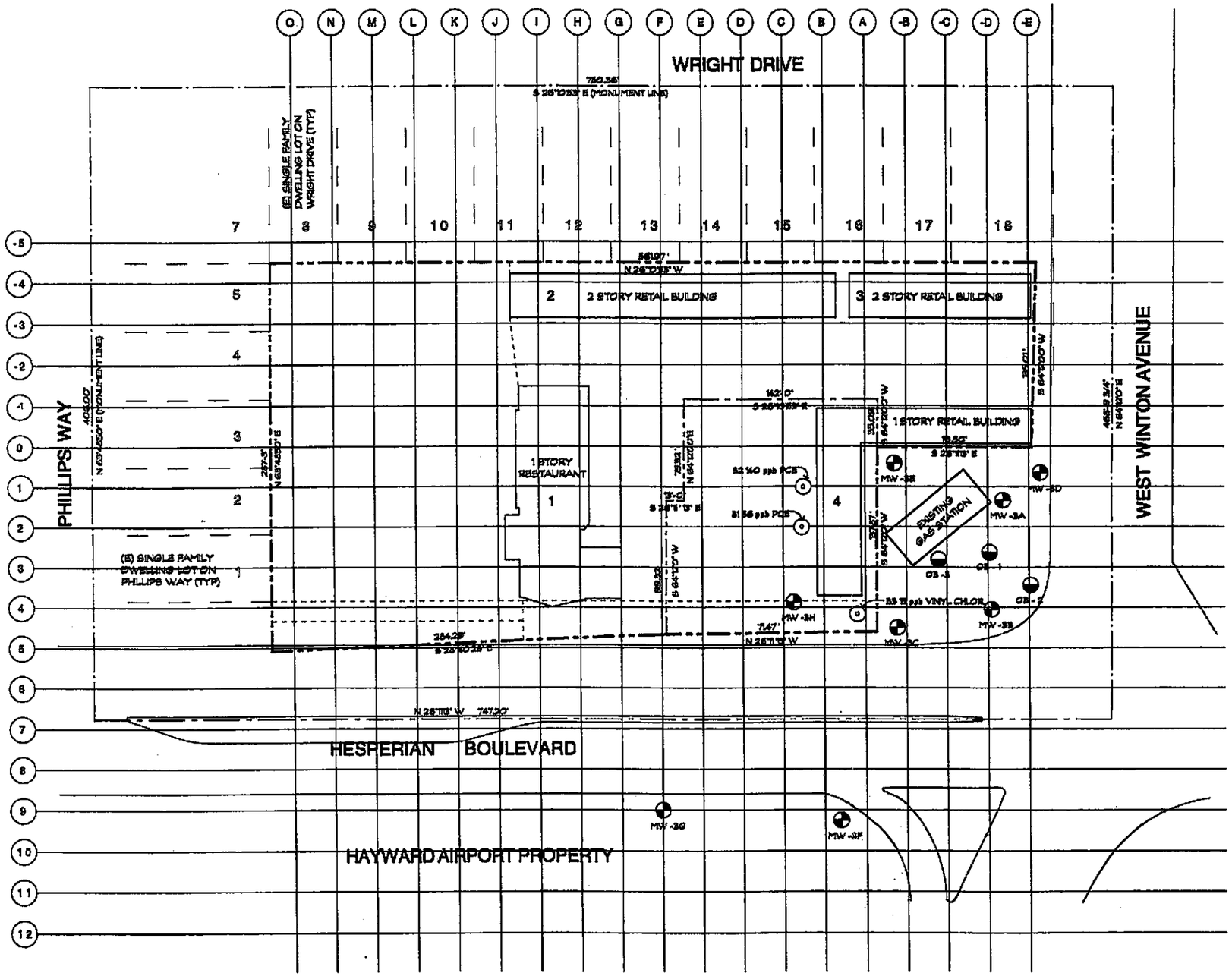
VAN BRUNT ASSOCIATES
WALNUT CREEK CALIFORNIA (510) 685-5900

TITLE SHEET

JOB # 94802

JULY 6, 1995

A1



MW - 3A	3/99	3/03			3/05
ANALYSIS METH.	801	801			8240
TRANS- 1,2 DCE	<1.0 PPb	<1.0 PPb			ND
TETRA-CH.OR.	<1.0 PPb	<1.0 PPb			ND
TRI-CH.OR.	<1.0 PPb	<1.0 PPb			ND
VINYL CH.OR.	<1.0 PPb	<1.0 PPb			ND
CIS- 1,2 DCE	ND	ND			ND

MW - 3B					3/05
ANALYSIS METH.					8240
TRANS- 1,2 DCE					ND
TETRA-CH.OR.					ND
TRI-CH.OR.					ND
VINYL CH.OR.					ND
CIS- 1,2 DCE					ND

MW - 3C					3/05
ANALYSIS METH.					8240
TRANS- 1,2 DCE					ND
TETRA-CH.OR.					ND
TRI-CH.OR.					ND
VINYL CH.OR.					ND
CIS- 1,2 DCE					ND

MW - 3D		3/99	3/03		3/05
ANALYSIS METH.		801	801		8240
TRANS- 1,2 DCE		<1.0 PPb	<1.0 PPb		ND
TETRA-CH.OR.		<1.0 PPb	<1.0 PPb		ND
TRI-CH.OR.		<1.0 PPb	<1.0 PPb		ND
VINYL CH.OR.		<1.0 PPb	<1.0 PPb		ND
CIS- 1,2 DCE		ND	ND		ND

MW - 3E		3/99	3/03		3/05
ANALYSIS METH.		801	NOT SAMPLED: WELL INACCESSIBLE		8240
TRANS- 1,2 DCE		<1.0 PPb			ND
TETRA-CH.OR.		<1.0 PPb			14 PPb
TRI-CH.OR.		<1.0 PPb			ND
VINYL CH.OR.		<1.0 PPb			ND
CIS- 1,2 DCE		ND			ND

MW - 3F	3/02	3/03	3/03	3/05	3/05	
ANALYSIS METH.	8240	801	8240	8240	8240	
TRANS- 1,2 DCE	<1.0 PPb	<1.0 PPb	<5.0 PPb	<5.0 PPb	ND	
TETRA-CH.OR.	5.1 PPb	5.8 PPb	<5.0 PPb	6.8 PPb	42 PPb	
TRI-CH.OR.	2.2 PPb	2.6 PPb	<5.0 PPb	5.8 PPb	29 PPb	
VINYL CH.OR.	98 PPb	230 PPb	220 PPb	220 PPb	62 PPb	
CIS- 1,2 DCE	<1.0 PPb	ND	<5.0 PPb	14 PPb	65 PPb	

MW - 3G		3/05	3/03	3/05	3/05	
ANALYSIS METH.		801	8240	8240	8240	
TRANS- 1,2 DCE		12 PPb	<5.0 PPb	<5.0 PPb	ND	
TETRA-CH.OR.		110 PPb	150 PPb	200 PPb	150 PPb	
TRI-CH.OR.		18 PPb	12 PPb	23 PPb	11 PPb	
VINYL CH.OR.		<1.0 PPb	<10 PPb	<5.0 PPb	ND	
CIS- 1,2 DCE		ND	14 PPb	20 PPb	6 PPb	

MW - 3H	3/02	3/05	3/03	3/05	3/05	
ANALYSIS METH.	8240	801	8240	8240	8240	
TRANS- 1,2 DCE	<1.0 PPb	23 PPb	<5.0 PPb	<5.0 PPb	ND	
TETRA-CH.OR.	880 PPb	110 PPb	170 PPb	220 PPb	69 PPb	
TRI-CH.OR.	120 PPb	40 PPb	88 PPb	72 PPb	ND	
VINYL CH.OR.	<2.0 PPb	<1.0 PPb	<10 PPb	<5.0 PPb	ND	
CIS- 1,2 DCE	140 PPb	ND	84 PPb	68 PPb	ND	

1 SITE PLAN - EXISTING GROUND WATER MONITORING WELLS AND LAB RESULTS
1"= 40'-0"

OWNER: ADOLPH P. SCHUMAN MARITAL TRUST
JIM CRAFTS ESQ. CO-TRUSTEE

AIRPORT PLAZA SHOPPING CENTER
23858 HESPERIAN BLVD. HAYWARD CA.

VAN BRUNT ASSOCIATES

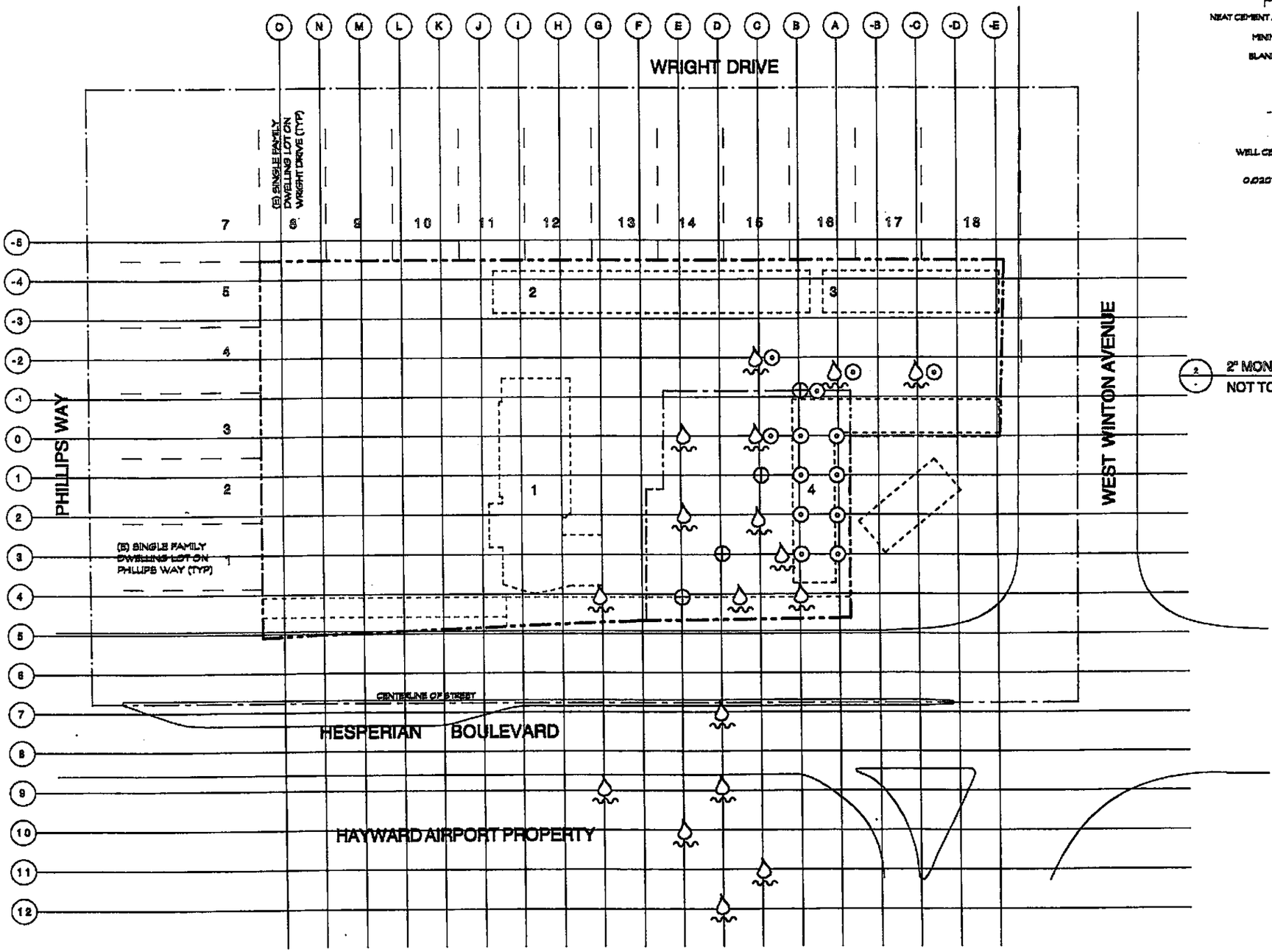
WALNUT CREEK CALIFORNIA (510) 685-5900

EXISTING GND. WATER MONITORING WELLS

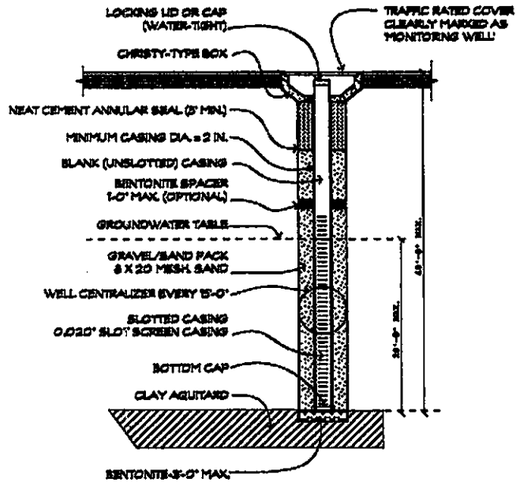
JOB #: 04502

JULY 8, 1905

A2



1 SITE PLAN - PROPOSED MONITORING WELLS, SOIL BORINGS AND GROUND WATER SAMPLES
1"= 40'-0"



NOTE: ALL MONITORING WELLS WILL BE DRILLED USING CONVENTIONAL AUGER TECHNIQUES WITH A FIELD GEOLOGIST LOGGING SOIL TYPES

2 2" MONITORING WELL CONSTRUCTION DETAIL
NOT TO SCALE

OWNER: ADOLPH P. SCHUMAN MARITAL TRUST
JIM CRAFTS ESQ. CO-TRUSTEE

AIRPORT PLAZA SHOPPING CENTER
23858 HESPERIAN BLVD. HAYWARD CA.

VAN BRUNT ASSOCIATES

WALNUT CREEK CALIFORNIA (510) 685-5900

SITE PLAN

JOB #: 94502

JULY 6, 1995

A3

12. PHOTOGRAPHS

12.1 Aerial Photo

AIRPORT PLAZA S.C.
23958 HESPERIAN BLVD.
HAYWARD, CA.

EXISTING MONITORING WELLS

AERIAL PHOTO-N.T.S.
BASE PHOTO-PACIFIC AERIAL
PHOTO AV 1750-06-44

13. REFERENCES

REPORTS ON AIRPORT PLAZA
23958 HESPERIAN BOULEVARD, HAYWARD, CA

KRAZAN & ASSOCIATES, INC.
Geotechnical Engineering Investigation (October 10, 1984)

KRAZAN & ASSOCIATES, INC.
Letter re Limited Level II ESA (November 8, 1994)

KRAZAN & ASSOCIATES, INC.
Phase I ESA (November 11, 1994)

KRAZAN & ASSOCIATES, INC.
Limited Level II ESA (November 22, 1994)

HAZARDOUS MATERIALS MANAGEMENT PLAN
23958 Hesperian Blvd., Norge Cleaners (July 20, 1994)

VAN BRUNT ASSOCIATES
Phase I Environmental Audit (March 10, 1995)

REPORTS ON FORMER TEXACO SERVICE STATION
23990 HESPERIAN BOULEVARD, HAYWARD, CA

HARDING LAWSON ASSOCIATES
Environmental Assessment Report (October 13, 1989)

HARDING LAWSON ASSOCIATES
Quarterly Technical Report, Second Quarter of 1990 (August 30, 1990)

INTERNATIONAL TECHNOLOGY CORPORATION
Excerpt from Report (December 18, 1990)

CEECON
Letter Report Vapor Extraction Test (July 29, 1993)

RESNA
Fourth Quarter 1993 Quarterly Report (December 29, 1993)

TERRA VAC
Dual Vacuum Extraction Remediation
Letter Work Plan (December 14, 1993)
Letter Modification to Work Plan (January 21, 1994)
Drilling Report (February 17, 1994)

TEXACO ENVIRONMENTAL SERVICES
Letter re Groundwater Monitoring & Sampling (June 10, 1994)
Letter re. Groundwater Monitoring & Sampling (August 30, 1994)

14. APPENDIX

14.1 VBA Health And Safety Plan Development

Van Brunt Associates will prepare and submit, if required, our standard site specific Health and Safety Plan. Van Brunt Associates always conducts at least one initial Health and Safety briefing onsite prior to commencement of work.

14.2 Chemical Hazards of Trichloroethene

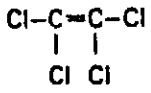
14.3 MSDS

Appendix 14.2
Chemical Hazards of Trichloroethylene

Chemical name, Structure/formula CAS and RTECS Nos., and DOT ID and Guide Nos.	Trichloroethylene $ClCH = CCl_2$ 79-01-6 KX4550000 1710 74
Synonyms, Trade names Conversion factors	Ethylene trichloride Triclene Trichloroethene 1ppm = 5.46 mg/m^3
Exposure limits (TWA unless noted otherwise	NIOSH Ca 25 ppm OSHA 50 ppm (270 mg/m^3) ST 200 ppm (1080 mg/m^3)
IDLH	Ca (1000 ppm)
Physical description	Colorless liquid (unless dyed blue) with a chloroform-like odor
Chemical and physical properties: MW BP SOL FI, P IP, Sp.Gr Flammability VP FRZ UEL LEL	 MW: 131.4 BP: 189°F SOL (77°F): 0.1% FI, P: 90°F IP: 9.45 eV SP.Gr: 1.46 Class 1C Flammable liquid, but burns with difficulty VP: 58 mm FRZ: 99°F UEL (77°F): 10.5% LEL (77°F): 8%
Incompatibilities and reactivities	Strong caustics & alkalis; chemically active metals such as barium, lithium, sodium, magnesium, titanium & beryllium
Measurement method	Char; CS_2; GC/FID; 111, (#1022)
Personal protection and sanitation	Clothing: Repeat Goggles: Reason prob Wash: Prompt wet Change: N.R. Remove: Prompt non-imperv wet

Appendix 14.2
Chemical Hazards of Trichloroethylene

Recommendations for respirator selection - maximum concentration for use (MUC)	NIOSH ¥: SCBAF:PD,PP/SAF;PD,PP:ASCBA Escape: GMFOV/SCBAE
Health Hazards:	
Route/Symptoms	Inh Head, verti; vis dist Ing Tremors, som, nau Con Vomit; ittit eyes; derm; card arrhy, pares; (carc)
First Aid	Eye: Irr immed Skin: Soap wash prompt Breath: Resp support Swallow: Medical attention immed
Target Organs	Resp sys, heart, liver, kidneys, CNS, skin

COMMON SYNONYMS:	CAS REG.NO.: 127-18-14 NIOSH NO: KX3850000 FORMULA: C_2Cl_4 STRUCTURE:	AIR W/V CONVERSION FACTOR at 25°C (12) 6.78 mg/m³ ≈ 1 ppm; 0.147 ppm ≈ 1 mg/m³ MOLECULAR WEIGHT: 165.85
Carbon dichloride Ethylene tetrachloride PCE PERC Perchloroethylene Tetrachloroethene Tetrachloroethylene		

REACTIVITY	Reactions of halogenated organic materials such as tetrachloroethylene with cyanides, mercaptans or other organic sulfides typically generate heat, while those with amines, azo compounds, hydrazines, caustics or nitrides commonly evolve heat and toxic or flammable gases. Reactions with oxidizing mineral acids may generate heat, toxic gases and fires. Those with alkali or alkaline earth metals, certain other chemically active elemental metals like aluminum, zinc or magnesium, organic peroxides or hydroperoxides, strong oxidizing agents, or strong reducing agents typically result in heat generation and explosions and/or fires (511).

PHYSICO-CHEMICAL DATA	• Physical State: Liquid (at 20°C)	(23)
	• Color: Colorless	(23)
	• Odor: Ether-like	
	• Odor Threshold: 50.000 ppm	(38)
	• Density: 1.6250 g/mL (at 20°C)	(23)
	• Freeze/Melt Point: -22.40°C	(23)
	• Boiling Point: 121.00°C	(23)
	• Flash Point: None	
	• Flammable Limits: Nonflammable	

PHYSICO-CHEMICAL DATA (Cont.)	• Autoignition Temp.: Nonflammable	
	• Vapor Pressure: 1.40E+01 mm Hg (at 20°C)	(38)
	• Satd. Conc. in Air: 1.2600E+05 mg/m^3 (at 20°C)	(67)
	• Solubility in Water: 1.50E+02 mg/L (at 20°C)	(38)
	• Viscosity: 0.890 (estimate)(at 20°C)	(21)
	• Surface Tension: 3.1300E+01 dyne/cm (at 20°C)	(59)
	• Log (Octanol-Water Partition Coeff.): 3.14	(29)
	• Soil Adsorp. Coeff.: 6.65E+02	(652)
	• Henry's Law Const.: 2.27E-02 $atm \cdot m^3/mol$ (at 20°C)	(74)
	• Bioconc. Factor: 4.90E+01 (bluegill) 6.60E+01 (estim)	(170,659)

PERSISTENCE IN THE SOIL-WATER SYSTEM	Relatively mobile in soil-water systems, including transport of vapor through air-filled pores as well as transport in solution. Chemical is resistant to hydrolysis and to biodegradation (except by acclimated mixed cultures); it may thus persist for months to years (or longer).

PATHWAYS OF EXPOSURE	The primary pathway of concern from a soil-water system is the migration of tetrachloroethylene to ground-water used as sources for drinking water. There is substantial evidence that such migration has occurred in the past. Inhalation resulting from volatilization from surface soils and drinking water may also be important.

HEALTH HAZARD DATA	Signs and Symptoms of Short-term Human Exposure: (45) Ingestion and inhalation cause nausea, vomiting, headache, dizziness, drowsiness and tremors. Skin contact with liquid causes irritation and blistering. Both liquid and vapor are irritating to the eyes. Acute Toxicity Studies: (3504) INHALATION: LC_{50} 5200 ppm · 4 hr — Mouse LC_{50} 5040 ppm · 8 hour — Rat ORAL: LD_{50} 8850 mg/kg — Rat LD_{50} 8100 mg/kg — Mouse SKIN: LD_{50} 64680 mg/kg · 10-day — Mouse Long-Term Effects: Liver and kidney toxicity Pregnancy/Neonate Data: Negative Genotoxicity Data: Negative Carcinogenicity Classification: IARC - Group 2B (possibly carcinogenic to humans) NTP - Clear evidence in mice, male rats, some evidence in female rats EPA - Group B2 (sufficient evidence in animals and inadequate evidence in humans)
HANDLING PRECAUTIONS (38)	Handle chemical only with adequate ventilation. • Vapor concentrations of 100-500 ppm: any supplied-air respirator or self-contained breathing apparatus with full facepiece; gas mask with organic vapor canister; chemical cartridge respirator with full facepiece and organic vapor cartridge. • Above 500 ppm: self-contained breathing apparatus with full facepiece operated in positive-pressure mode. • Chemical goggles if there is probability of eye contact. • Butyl, natural rubber, neoprene or PVC gloves/apron/boots to prevent repeated or prolonged skin contact with the liquid.

ENVIRONMENTAL AND OCCUPATIONAL STANDARDS AND CRITERIA

AIR EXPOSURE LIMITS:

Standards
- OSHA TWA (8-hr): 25 ppm;
- AFOSH PEL (8-hr TWA): 25 ppm; STEL (15-min): 37.5 ppm

Criteria
- NIOSH IDLH (30 min): deleted: NIOSH has recommended that the substance be treated as a potential human carcinogen.
- NIOSH REL: Lowest feasible limit
- ACGIH TLV® (8-hr TWA): 50 ppm
- ACGIH STEL (15 min): 200 ppm

WATER EXPOSURE LIMITS:

Drinking Water Standards (3742)
MCLG: 0 µg/L (proposed)
MCL : 5 µg/L (proposed)

EPA Health Advisories and Cancer Risk Levels (3977)
The EPA has developed the following Health Advisories which provide specific advice on the levels of contaminants in drinking water at which adverse health effects would not be anticipated.

- 1-day (child): 2 mg/L
- 10-day (child): 2 mg/L
- longer-term (child): 1 mg/L
- longer-term (adult): 5 mg/L
- 1E-04 cancer risk: 70 µg/L

ENVIRONMENTAL AND OCCUPATIONAL STANDARDS AND CRITERIA (Cont.)

WHO Drinking Water Guideline (666)

A tentative health-based guideline for drinking water of 10 µg/L has been proposed for tetrachloroethylene. A daily per capita consumption of two liters was assumed.

EPA Ambient Water Quality Criteria

- Human Health (355)
  - Based on ingestion of contaminated water and aquatic organisms (1E-05, 1E-06, 1E-07 cancer risk), 8 µg/L, 0.8 µg/L, 0.08 µg/L.
  - Based on ingestion of drinking water only, (1E-04, 1E-05, 1E-06 cancer risk), 70 µg/L, 7 µg/L, 0.7 µg/L.

- Aquatic Life (355)
  - Freshwater species
    acute toxicity:
    no criterion, but lowest effect level occurs at 5280 µg/L.

    chronic toxicity:
    no criterion, but lowest effect level occurs at 840 µg/L.

  - Saltwater species
    acute toxicity:
    no criterion, but lowest effect level occurs at 10,200 µg/L.

    chronic toxicity:
    no criterion, but lowest effect level occurs at 450 µg/L.

REFERENCE DOSES:

ORAL: 1.000E+01 µg/kg/day (3744)

REGULATORY STATUS (as of 01-MAR-89)

Promulgated Regulations

- Federal Programs

Clean Water Act (CWA)

Tetrachloroethylene is listed as a toxic pollutant, subject to general pretreatment regulations for new and existing sources, and effluent standards and guidelines (351, 3763). Effluent limitations have been set for tetrachloroethylene effluent in the following point source categories: electroplating (3767), organic chemicals, plastics, and synthetic fibers (3777), steam electric power generating (3802), metal finishing (3768), iron and steel manufacturing (354), and metal molding and casting (892). Limitations vary depending on the type of plant and industry.

Safe Drinking Water Act (SDWA)

Tetrachloroethylene is on the list of 83 contaminants required to be regulated under the SDWA of 1974 as amended in 1986 (3781). It is listed as an unregulated contaminant requiring monitoring in all community water systems and non-community non-transient water systems (3771). In states with an approved Underground Injection Control program, a permit is required for the injection of tetrachloroethylene-containing wastes designated as hazardous under RCRA (295).

Resource Conservation and Recovery Act (RCRA)

Tetrachloroethylene is identified as a toxic hazardous waste (U210) and a hazardous waste constituent (3783,3784). Non-specific sources of tetrachloroethylene-containing waste are solvent use (or recovery) activities, chlorinated aliphatic hydrocarbon production, and spent solvent mixtures containing 10% or more tetrachloroethylene (325). Waste streams from the following industries contain tetrachloroethylene and are listed as specific sources of hazardous waste: organic chemicals (production of carbon tetrachloride, 1,2-dichloroethane, vinyl chloride, and toluene diisocyanate) and inorganic chemicals (chlorine production) (3774, 3765). Effective July 8, 1987, the land disposal of hazardous wastes which contain halogenated organic compounds in total concentrations greater than or equal to 1000 mg/kg is prohibited. Effective August 8, 1988, the underground injection into deep wells of these wastes is prohibited. Certain variances exist until May, 1990 for land and injection well disposal of some wastewaters and non-wastewaters for which Best Demonstrated Available Technology (BDAT) treatment standards have not been promulgated by EPA (3786). Tetrachloroethylene is included on EPA's ground-water monitoring list. EPA requires that all hazardous waste treatment, storage, and disposal facilities monitor their ground-water for chemicals on this list when suspected contamination is first detected and annually thereafter (3775).

Toxic Substances Control Act (TSCA)
Manufacturers, processors, or importers who possess health and safety studies on tetrachloroethylene must submit them to EPA (3789).

Comprehensive Environmental Response, Compensation and Liability Act (CERCLA)
Tetrachloroethylene is designated a hazardous substance under CERCLA. It has a reportable quantity (RQ) limit of 0.454 kg. Reportable quantities have also been issued for RCRA hazardous waste streams containing tetrachloroethylene but these depend upon the concentration of the chemicals in the waste stream (3766). Under SARA Title III Section 313, manufacturers, processors, importers, and users of tetrachloroethylene must report annually to EPA and state officials their releases of this chemical to the environment (3787).

Federal Insecticide, Fungicide and Rodenticide Act (FIFRA)
Tetrachloroethylene is exempt from a tolerance requirement when used as a solvent or cosolvent at a level of no more than 0.6% in pesticide formulations applied to growing crops or to raw agricultural commodities after harvest. Exemptions also apply when it is used as a solvent in pesticide formulations applied to animals (315).

Marine Protection Research and Sanctuaries Act (MPRSA)
Ocean dumping of organohalogen compounds as well as the dumping of known or suspected carcinogens, mutagens or teratogens is prohibited except when they are present as trace contaminants. Permit applicants are exempt from these regulations if they can demonstrate that such chemical constituents are non-toxic and non-bioaccumulative in the marine environment or are rapidly rendered harmless by physical, chemical or biological processes in the sea (309).

Occupational Safety and Health Act (OSHA)
Employee exposure to tetrachloroethylene shall not exceed an 8-hour time-weighted average (TWA) of 25 ppm (3539).

Clean Air Act (CAA)
EPA lists tetrachloroethylene as a hazardous air pollutant for which it will establish national emission standards under Section 112 of the Clean Air Act (3803).

Hazardous Materials Transportation Act (HMTA)
The Department of Transportation has designated tetrachloroethylene as a hazardous material with a reportable quantity of 0.454 kg, subject to requirements for packaging, labeling and transportation (3180).

Food, Drug and Cosmetic Act (FDCA)
Tetrachloroethylene is approved for use as an indirect food additive as a component of adhesives (3209).

- State Water Programs

ALL STATES
All states have adopted EPA Ambient Water Quality Criteria and NPDWRs (see Water Exposure Limits section) as their promulgated state regulations, either by narrative reference or by relisting the specific numeric criteria. These states have promulgated additonal or more stringent criteria:

CALIFORNIA
California has an action level of 4 μg/L for drinking water (3098).

CONNECTICUT
Connecticut has a quantification limit of 2 μg/L and an action level of 20 μg/L for drinking water (3137,3138).

FLORIDA
Florida has set an MCL of 3 μg/L for drinking water (3219).

KANSAS
Kansas has an action level of 7 μg/L for ground-water (3213).

NEW HAMPSHIRE
New Hampshire has set an enforceable Toxic Contaminant Level (TCL) for tetrachloroethylene in drinking water of 2.3 mg/L (assumes a child weighing 10 kg who drinks one liter of water per day) (3710).

NEW JERSEY
New Jersey has set an MCL of 1 μg/L (ppb) for drinking water (3497).

OKLAHOMA
Oklahoma has a water quality criterion of 1.6 μg/L for ground-water, and has set a nonenforceable Toxic Substance Goal of zero for public and private surface waters (3534).

PENNSYLVANIA
Pennsylvania has set a human health criterion (cancer risk level) of 0.7 μg/L for surface waters (3561).

RHODE ISLAND

Rhode Island has an acute freshwater quality guideline of 240 µg/L and a chronic guideline of 5.3 µg/L for the protection of aquatic life in surface waters. These guidelines are enforceable under Rhode Island state law (3590).

SOUTH DAKOTA

South Dakota requires tetrachloroethylene to be nondetectable, using designated test methods, in ground-water (3671).

VERMONT

Vermont has a preventive action limit of 0.07 µg/L and an enforcement standard of 0.70 µg/L for tetrachloroethylene in ground-water (3682).

WISCONSIN

Wisconsin has a preventive action limit of 0.1 µg/L and an enforcement standard of 1 µg/L for tetrachloroethylene in ground-water (3840).

Proposed Regulations

- Federal Programs

Safe Drinking Water Act (SDWA)

EPA has proposed a maximum contaminant level goal (MCLG) of zero and a maximum contaminant level (MCL) of 5 µg/L for tetrachloroethylene as part of the National Primary Drinking Water Regulations. This action is expected in May, 1989, with promulgation scheduled for December, 1990 (3759).

Resource Conservation and Recovery Act (RCRA)

EPA has proposed that solid wastes be listed as hazardous because they exhibit the characteristic defined as EP toxicity when the TCLP extract concentration is equal to or greater than 0.1 mg/L tetrachloroethylene. Final promulgation of this Toxicity Characteristic Rule is expected in June, 1989 (1565). EPA has proposed listing wastestreams from the following industries as specific sources of tetrachloroethylene-containing wastes: organic chemicals (1,1,1-trichloroethane production), and inorganic chemicals (2,4-D production) (3795).

- State Water Programs

MOST STATES

Most states are in the process or revising their water programs and proposing changes in their regulations which will follow EPA's changes when they become final. Contact with the state officer is advised. Changes are projected for 1989-90 (3683).

CALIFORNIA

California has proposed an MCL of 5 μg/L for drinking water (3096).

MINNESOTA

Minnesota has proposed a Recommended Allowable Limit (RAL) of 6.6 μg/L for tetrachloroethylene in drinking water (3451). Minnesota has also proposed a Sensitive Acute Limit (SAL) of 2110 μg/L for designated surface waters, and chronic criteria of 6.6 μg/L for designated ground-waters and 3.8 μg/L for designated surface waters for the protection of human health (3452).

NEW JERSEY

New Jersey has proposed a water quality criterion of 1 μg/L for class FW2 surface waters (3496).

EEC Directives

Directive on Ground-Water(538)

Direct discharge into ground-water (i.e. without percolation through the ground or subsoil) of organohalogen compounds and substances which may form such compounds in the aquatic environment, substances which possess carcinogenic, mutagenic or teratogenic properties in or via the aquatic environment, and mineral oils and hydrocarbons is prohibited. Appropriate measures deemed necessary to prevent indirect discharge into ground-water (i.e., via percolation through ground or subsoil) of these substances shall be taken by member countries.

Directive on the Quality Required of Shellfish Waters (537)

The mandatory specifications for organohalogenated substances specify that the concentration of each substance in the shellfish water or in shellfish flesh must not reach or exceed a level which has harmful effects on the shellfish and larvae. The specifications for organo-halogenated substances state that the concentration of each substance in shellfish flesh must be so limited that it contributes to the high quality of the shellfish product.

Directive Relating to the Classification, Packaging and Labeling of Dangerous Preparations (Solvents) (544)
Tetrachloroethylene is listed as a Class II/b harmful substance and is subject to packaging and labeling regulations.

Directive on the Discharge of Dangerous Substances (535)
Organohalogens, carcinogens or substances which have a deleterious effect on the taste and/or odor of human food derived from aquatic environments cannot be discharged into inland surface waters, territorial waters or internal coastal waters without prior authorization from member countries which issue emission standards. A system of zero-emission applies to discharge of these substances into ground-water.

Directive on Toxic and Dangerous Wastes (542)
Any installation, establishment, or undertaking which produces, holds and/or disposes of certain toxic and dangerous wastes including phenols and phenol compounds; organic-halogen compounds, excluding inert polymeric materials an other substances referred to in this list or covered by other Directives concerning the disposal of toxic and dangerous waste; chlorinated solvents; organic solvents; biocides and phyto-pharmaceutical substances; ethers and aromatic polycyclic compounds (with carcinogenic effects) shall keep a record of the quantity, nature, physical and chemical characteristics and origin of such waste, and of the methods and sites used for disposing of such waste.

Directive on the Classification, Packaging and Labeling of Dangerous Substances (787)
Tetrachloroethylene is classified as a harmful substance and is subject to packaging and labeling regulations. Tetrachloroethylene may contain a stablizer and if the stablizer changes the dangerous properties of this substance should be labeled in accordance with rules in Annex I.