

Western Operations

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P.O. Box 9019  
Pleasanton, CA 94566  
(510) 426-2600  
Fax (510) 426-0106

**Clayton**  
ENVIRONMENTAL  
CONSULTANTS

January 27, 1993

Ms. Juliet Shin  
Hazardous Material Specialist  
ALAMEDA COUNTY HEALTH AGENCY  
80 Swan Way, Room 350  
Oakland, California 94621

Clayton Project No. 45040.02

**Subject: Work Plan for Remedial Investigation at the South Shore Shopping Center at the Corner of Park Street and Shoreline Drive in Alameda, California**


Dear Ms. Shin:


Clayton Environmental Consultants, Inc. is pleased to present the attached work plan for additional subsurface investigation at the subject site. This proposed work was discussed at Clayton meeting on November 18, 1992, and in your telephone conversation with Mr. Alan Gibbs on January 27, 1993.

we have scheduled drilling for February 8, 1993.

If you have any questions or require any additional information, please call me or Mr. Dariush Dastmalchi at (510) 426-2600.

Sincerely,

  
Anthony S. McElligott P.E.  
Supervisor, Remediation Services  
Western Operations

  
Dariush Dastmalchi  
Geologist

cc: Lester Feldman - Regional Water Quality Control Board  
Mike Dosen - Harsch  
Bernard Levy - Harsch  
Bob Robles - Texaco

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**WORK PLAN FOR REMEDIAL  
INVESTIGATION AT THE SOUTH SHORE  
SHOPPING CENTER, AT THE CORNER OF  
PARK STREET AND SHORELINE DRIVE  
IN ALAMEDA, CALIFORNIA**

**Clayton Project No. 45040.02  
January 27, 1993**

## **1.0 INTRODUCTION**

This work plan addresses the work requirements discussed at Clayton's meeting with the Alameda County Environmental Health Care Agency and Regional Water Quality Control Board on November 18, 1992. A summary of this meeting was included in Clayton letter dated December 10, 1992 (Attachment 1).

### **SCOPE OF WORK**

Clayton proposes to perform the following tasks to further define the extent of the groundwater contamination and future remedial actions for the subject property.

#### **Task 1: Health and Safety Plan**

A health and safety plan will be prepared based on the planned work activities and environmental investigations, as per the requirements of Title 29 of the Code of Federal Regulations, Section 1910.120 (29 CFR 1910.120).

#### **Task 2: Monitoring Well Installation**

Clayton will install two monitoring wells to further define the boundaries of groundwater impacted by petroleum products. The monitoring wells are approximately located on the attached Figures 1 & 2. Groundwater is located at a depth of 5 to 7 feet below ground surface (bgs).

One monitoring well is proposed southeast of the Lyon's Restaurant (former Texaco service station) and will be permitted and constructed within the East Bay Regional Parks District. The well will be constructed of 2-inch diameter polyvinyl chloride (PVC) casing to an approximate depth of 20 feet bgs.

The monitoring well on the Big 5 Sporting Goods site (former Goodyear building) will be permitted and constructed of 2-inch diameter PVC casing to an approximate depth of 15 feet bgs. This well was further discussed in your letter to Bernard Levy, dated December 29, 1992 (Attachment 2).

During the drilling of the monitoring wells, the soil characteristics will be logged in the field by a Clayton geologist, using the Unified Soil Classification System. Distinguishing features such as color, odor, and relative soil moisture content will be noted. Drilling and sampling activities will be conducted in accordance with the RWQCB, Tri-Regional and ACHA guidelines. Clayton's drilling, well construction, and sampling protocols for borehole/monitoring well installation (Attachment 3) will be supervised by a civil engineer registered in the State of California.

To aid in locating any contamination, Clayton will screen the soil cuttings during drilling using a photoionization detector (PID), and visually examine the soil to detect petroleum compounds. If contamination is encountered, Clayton will collect soil samples with a 2.5-inch split-barrel sampler until groundwater is encountered. Clayton anticipates shallow soil sampling at the former Goodyear underground waste oil tank. No soil samples will be collected for laboratory analysis below the saturated zone.

Clayton does not anticipate soil sample collection downgradient of the former Texaco site due to the large lateral distance from the original source of contamination.

If soil samples are selected for analysis, they 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 shipment to Clayton's state-certified laboratory in Pleasanton, California, for analysis. 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, DOT approved 55 gallon drums and left onsite until proper disposal can be determined based on laboratory analysis.

The monitoring wells will be constructed using screened casing extending above the water table. Solid casing will then be installed to the surface. The sand pack will extend to 2 feet above the screen. A 1-foot thick 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 2 inches.

A licensed land surveyor will locate the five wells relative to the existing wells on a scaled drawing to include elevations to facilitate calculating the local groundwater flow direction and gradient.

**Kamur will submit their own work plan for further remedial investigation of their site and coordinate the installation of an additional three monitoring wells on their site through their own consultant.**

### **Task 3: Monitoring Well Development and Initial Sampling**

The well seal in newly developed wells must set for 48 to 72 hours prior to development. Development of the well can volatilize contaminants present, therefore, the well must settle at least 48 to 72 hours between development and the first purging/sampling incident. The first site visit will involve well development, and the actual sampling of the well will occur during the second site visit.

The wells will be developed using disposal bailers until water turbidity and specific conductance stabilize. Water samples from the wells will be collected using clean disposable teflon 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. One trip blank will be furnished in accordance with Clayton's quality assurance/quality control (QA/QC) program.

The water generated from the well development and sampling will be placed into Department of Transportation (DOT)-approved 55-gallon drums until laboratory results from groundwater samples can be evaluated to determine proper disposal method. These drums will be closed, labeled, and left at the site.

**Task 4: Quarterly Sampling (One Quarter Only - February 1993)**

Clayton will tentatively schedule quarterly monitoring well sampling for February 1993. If the proposed new monitoring wells are installed by this time, all wells (existing and new) will be sampled concurrently to facilitate establishing a baseline for the site, data interpretation, and cut down on field expenses.

Clayton proposes to sample the following wells and analyze ground water samples by the United States Environmental Protection Agency (USEPA) methods indicated.

<u>Monitoring Well</u>	<u>Recommended Laboratory Analyses</u>
<ul style="list-style-type: none"> <li>• Former Texaco site (4 wells)               <ul style="list-style-type: none"> <li>- MW-5B, MW-14, MW-15, and new well</li> </ul> </li> <li>• Former Dry Cleaning site (5 wells)               <ul style="list-style-type: none"> <li>- MW-7B, MW-8B, MW-16, MW-17, and MW-18</li> </ul> </li> <li>• Kamur Carwash site (5 wells)*               <ul style="list-style-type: none"> <li>- MW-10, MW-12, and three new wells</li> </ul> </li> <li>• Former Goodyear site (1 well)               <ul style="list-style-type: none"> <li>- New well</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• EPA Method 5030/8015-8020 for gasoline and benzene, toluene, ethylbenzene, and xylenes (BTEX)</li> <li>• EPA Method 3510/8015 for diesel fuel</li> <li>• EPA Method 601 for purgeable halocarbons</li> <li>• Total dissolved solids (TDS)</li> <li>• EPA Method 601 for purgeable halocarbons</li> <li>• TDS</li> <li>• Monitoring only</li> <li>• EPA Method 5030/8015-8020 for gasoline and BTEX</li> <li>• EPA Method 8240 for volatile organic compounds</li> <li>• SM Method 5520 D&amp;F for oil and grease</li> <li>• TDS</li> </ul>

\* Kamur will coordinate sampling of their own wells through their consultant

**Task 5: Monitoring Well Abandonment**

Existing monitoring well MW-4 appears to be damaged beyond repair. A second inspection of this well will be conducted during the proposed drilling program outlined in Task 2 above. If the well cannot be repaired, it will be abandoned properly. This requires drilling out the damaged well casing and backfilling the hole with grout.

### **Task 6: Remediation Work Plan Preparation, Project Management, and Regulatory Liaison**

Upon completion of the above field activities and receipt of survey and analytical data, Clayton will coordinate with Texaco and Kamur on preparation of a remediation work plan.

This work plan will include the quarterly monitoring well data, iso-concentration maps, and contoured groundwater flow map, which incorporates the whole site.

The remediation work plan will establish, conceptually, how the entire site can be remediated. If possible and cost effective, the remediation plan will use an approach that will coordinate the clean up effort of the three locations on site. If the individual responsible parties decide to proceed independently, Clayton will coordinate the submittal of an overall site remediation plan. The remediation plan will provide the three parties involved and the regulators with an overview of what will be performed on site, how and where the actual work will be performed, and an estimated schedule of activities.

Project management activities will include regular progress reports detailing budget and schedule issues.

Clayton will provide these services using its commercially reasonable best efforts consistent with the level and skill ordinarily exercised by members of the profession currently practicing under similar conditions.

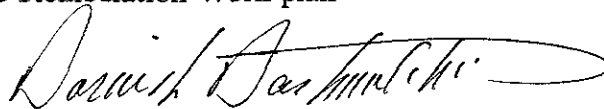
### **SCHEDULE**

Clayton has already started work on this work plan, including meeting with the client and regulatory agencies, as well as beginning the well construction/destruction permitting process.


Clayton has tentatively set the following schedule for completion of the above tasks:

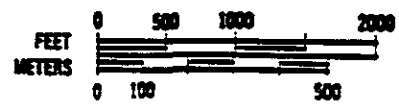
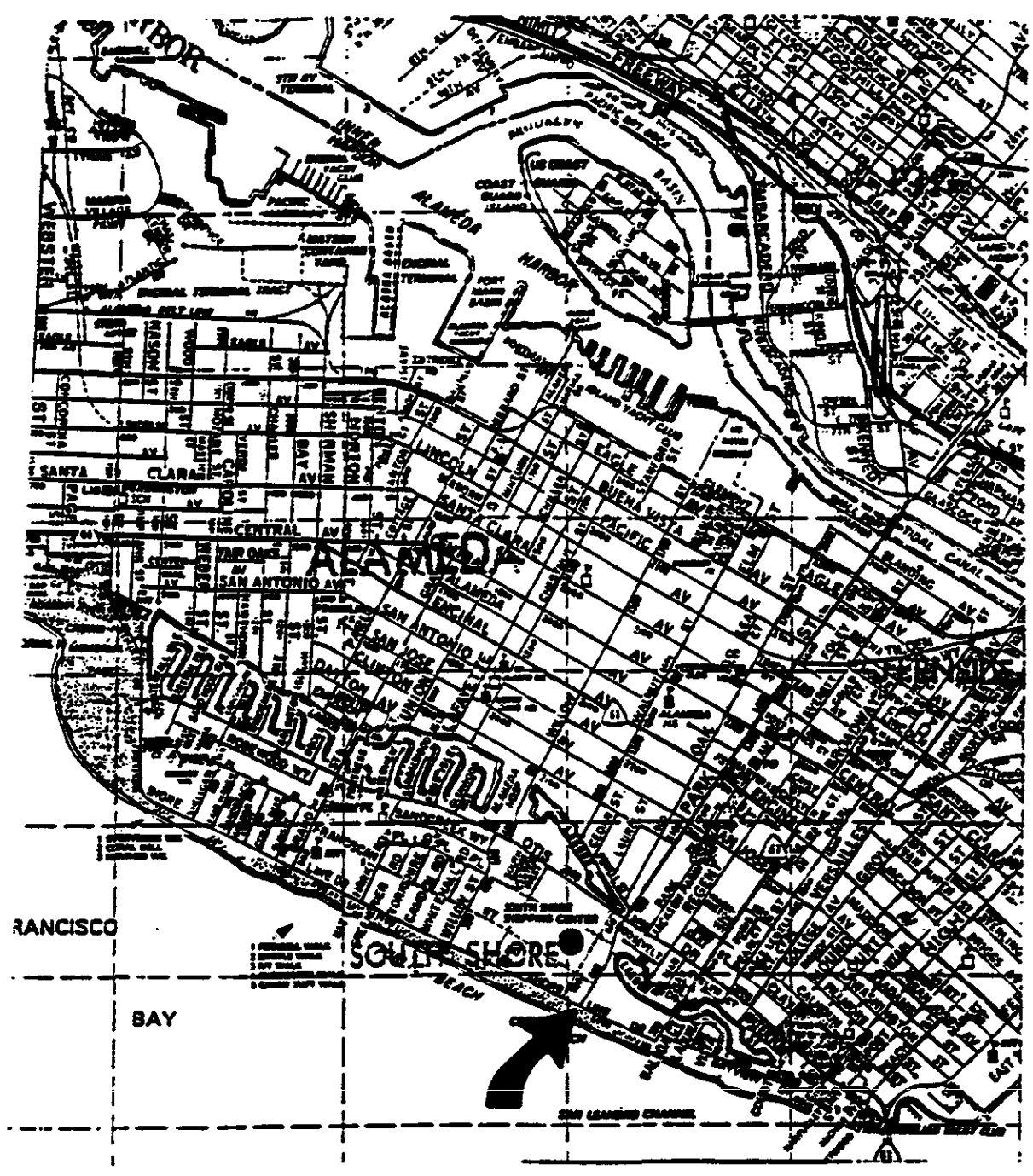
- February 8, 1993 - New monitoring wells installed
- February 14, 1993 - Quarterly monitoring well sampling
- February 28, 1993 - Sample analysis back from laboratory
- March 21, 1993 - Complete Remediation Work plan

This work plan prepared by:

  
Dariush Dastmalchi  
Geologist

This work plan reviewed by:

  
Anthony S. McElligott P.E.  
Supervisor, Remediation Group  
Western Operation  
February 5, 1993



Site Location Map  
 Harsch Investment Corporation  
 Park Street and Shore Line Drive  
 Alameda, California

Clayton Project No. 29196.00

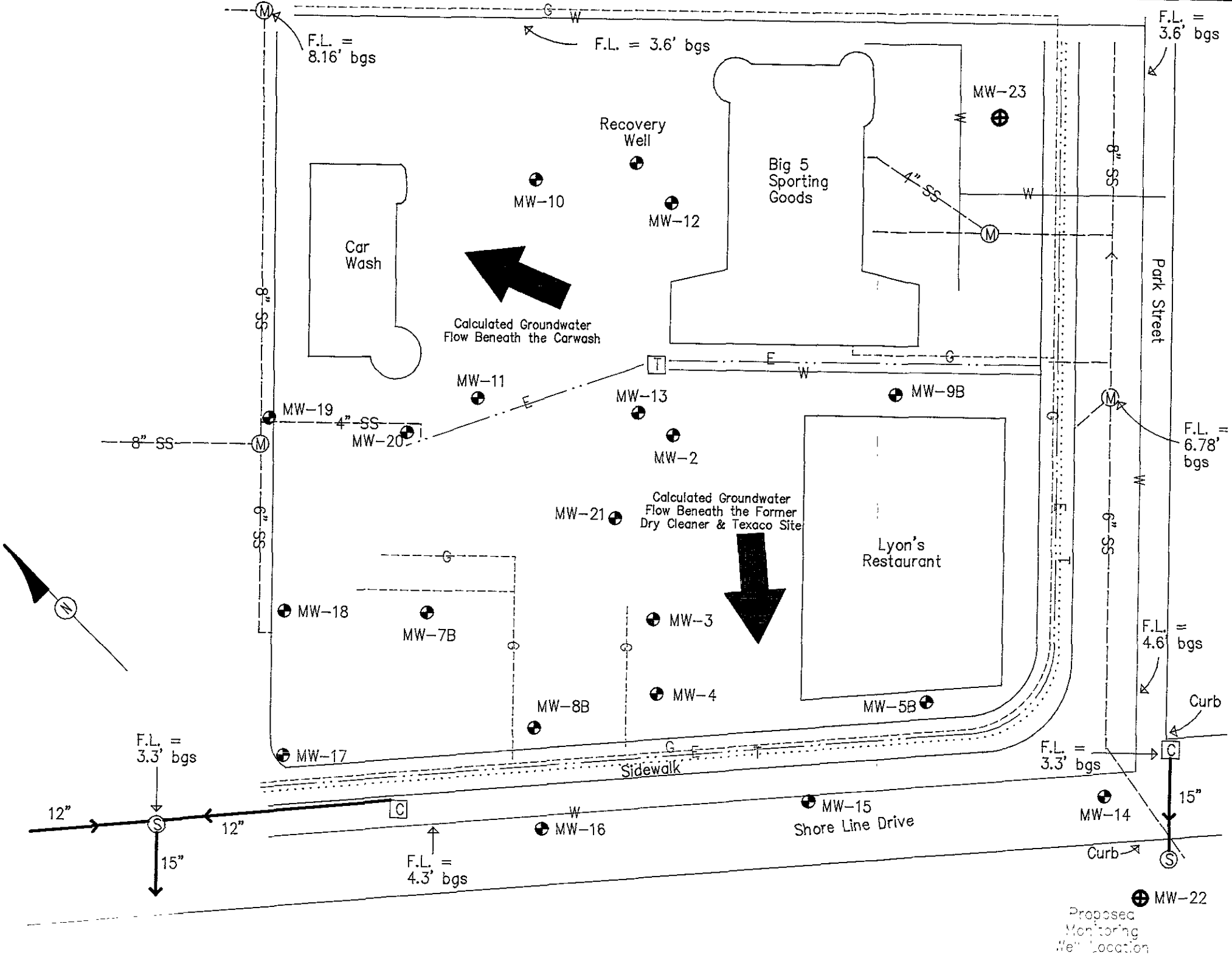
Figure

1

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29196-01-17

LEGEND	
---G---	Gas
---T---	Telephone
---E---	Electric
---W---	Water
---SS---	Reinforced concrete pipe
---SS---	Sanitary sewer
[T]	Transformer
(M)	Manhole
(S)	Storm drain
[C]	Catch basin
⊕	Monitoring well
F.L.	Flow line (bottom of pipe)
bgs	Below ground surface
⊕	Proposed Monitoring Well



East Bay Regional Park

San Francisco Bay

Utility Trenches  
 HARSCH INVESTMENT CORPORATION  
 Shore Line Drive and Park Street  
 Alameda, California

(not to scale) Clayton Project No. 42864.02

**Clayton**  
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**ATTACHMENT 1**

**DECEMBER 10, 1992 LETTER**

Mr. Mike Dosen  
Harsch Investment Corporation  
December 10, 1992

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Clayton Project No. 45040.01

preliminary remediation design and cost estimates. We also agreed to meet again on January 14 and February 9, 1993 (or sooner) and have a prepared remediation cost estimate and time frame for implementation.

Bernard Levy explained that he was not present at the meeting as legal counsel for Harsch, but merely as a liaison person, along with Mike Dosen, regarding environmental issues.

At 1:30 p.m., the following individuals joined the meeting:\*

<b>Company</b>	<b>Attendee</b>	<b>Title</b>
Alameda County Health Agency	Scott Seery	Senior Hazardous Materials Specialist
Alameda County Health Agency	Juliet Shin	Hazardous Materials Specialist
California Regional Water Quality Control Board	Lester Feldman	Environmental Specialist IV, Supervisor
California Regional Water Quality Control Board	Richard Hiatt	Environmental Specialist

\* Bob Robles of Texaco had a previous engagement and could not attend the second meeting.

Juliet Shin and Lester Feldman summarized their review of work completed at the site. Recommendations were made for completion of the following additional work. These recommendations are:

1. Future reports will include iso-concentration maps and contoured groundwater flow maps which will incorporate the car wash, the former dry cleaners, and the Texaco service station data onto a single map. The next quarterly sampling event is scheduled for January 1993, which will be summarized in a remediation work plan to be completed by March 1993.
2. Clayton will supply the regulatory agencies with well construction diagrams for the recent wells installed at the site (monitoring wells MW-15 through MW-21). These will be submitted within the next 2 weeks.
3. Clayton will correct the table in the October 1992 Quarterly Monitoring report, dated November 17, 1992, to include the October 1992 sampling results. This report will be submitted within the next 2 weeks.

Mr. Mike Dosen  
Harsch Investment Corporation  
December 10, 1992

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Clayton Project No. 45040.01

4. Clayton will review our files for additional reports on work completed at the former Goodyear site. If additional reports are found, they will be submitted within the next 2 weeks.
5. Clayton will submit a proposal to Harsch for installation and sampling of an additional monitoring well east of monitoring well MW-9 (see figure).
6. An additional well and sampling is required adjacent to the former Texaco site, downgradient of monitoring well MW-14 (see figure). Mr. Feldman agreed to assist Clayton in obtaining the necessary permits for this well as it will be installed on Park Service property. He recommended sending copies of the well permit request to Ken Berger of East Bay Regional Parks, as well as to himself, Juliet Shin, Bernard Levy, and Bob Robles.
7. Kamur Industries will install three additional monitoring wells north and east of the car wash to better define the lateral extent of contaminated groundwater.
8. Mr. Hiett recommended that Clayton review Article 11 for the latest accepted protocol for site investigation. Clayton will review this regulation within the next 2 weeks.
9. A request was made for Clayton to investigate the cause of the mounding of the groundwater table in the center of the site. Clayton is currently proposing to Harsch the installation of two additional wells, as discussed in Items 5 and 6 above. Upon completion of well installation and sampling, these wells, along with the three new Kamur wells, will be surveyed to facilitate new groundwater flow direction calculations. Upon receipt of this information, Clayton will review existing data. Our conclusions and recommendations will be included in the March 1993 remediation work plan.
10. Future reports will incorporate all monitoring well data for the entire site into one report (to include Harsch, Texaco, and Kamur). Monitoring events are to be coordinated with all three parties and to occur as one sampling event. The next quarterly monitoring event is scheduled for January 1993. The data and conclusions will be included in the March 1993 remediation work plan.
11. Clayton will prepare a remediation work plan to address soil and groundwater contamination. The work plan should include the latest January 1993 quarterly well sampling data. The target date for submitting the work plan to the regulatory agencies is March 9, 1993.

In conclusion, the meeting determined that if the interested parties continue to work together on the above items, the regulatory agency will grant an extension of the letter dated October 9, 1992 (Attachment). The new deadline for the letter is understood to be March 1993.

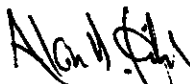
Mr. Mike Dosen  
Harsch Investment Corporation  
December 10, 1992

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Clayton Project No. 45040.01

This letter is being copied to the parties listed below. Upon your approval, or after making any required changes, Clayton will forward a copy of this to the regulatory agencies.

If you have any questions, please call me at (510) 426-2676.

Sincerely,



Alan D. Gibbs, R.G.  
Supervisor, Geology  
Western Operations

ADG/cmh

c: Bob Robles, Texaco Environmental Services  
Bernard Levy, Harsch Investment Corporation  
Frank Hamed-Fard, Soil Tech Engineering, Inc.  
Murray Stevens, Kamur Industries, Inc.

**ATTACHMENT 2**

**DECEMBER 29, 1992 LETTER**

ALAMEDA COUNTY  
HEALTH CARE SERVICES  
AGENCY

DAVID J. KEARS, Agency Director



RAFAT A. SHAHID, ASST. AGENCY DIRECTOR

DEPARTMENT OF ENVIRONMENTAL HEALTH  
State Water Resources Control Board  
Division of Clean Water Programs  
UST Local Oversight Program  
80 Swan Way, Rm 200  
Oakland, CA 94621  
(510) 271-4530

December 29, 1992

Bernard Levy  
Harsch Investment Corp.  
235 W. MacArthur Blvd., Ste 630  
Oakland, CA 94111

STID 1773

RE: South Shore Shopping Center, located at Park Street and  
Shore Line Drive, Alameda, California

Dear Mr. Levy,

This office has reviewed the letter from Clayton Environmental, dated December 23, 1992, requesting a waiver for the requirement to install a well east of MW-9 based on the results of the tank removal in May 1990. According to the information provided, it appears that no further investigations are required for the former 500-gallon waste oil underground storage tank at this time. However, according to Woodward-Clyde's Phase II Site Exploration report, dated July 1989, up to 340 ppm Oil and Grease was identified in soil samples collected from borings placed beneath the Good Year building. Additionally, ground water samples collected from wells in the vicinity of the Good Year building, such as well MW-9 and Chevron's wells, have consistently identified contamination. Therefore, this office is still requiring that you install the monitoring well to determine whether ground water has been impacted east of the Good Year building. A work plan for the installation of this well shall be submitted to this office by March 1993.

Ground water samples from this well shall initially be analyzed for Oil and Grease, Volatile Organic Compounds (VOCs), Total Petroleum Hydrocarbons as gasoline (TPHg), and benzene, toluene, xylenes, and ethylbenzene (BTEX).

If you have any questions or comments, please contact me at (510) 271-4530.

Sincerely,

A handwritten signature in cursive script, appearing to read 'Juliet Shin'.

Juliet Shin  
Hazardous Materials Specialist

Mr. Bernard Levy  
RE: South Shore Shopping Center  
December 29, 1992  
Page 2 of 2

cc: Richard Hiett, RWQCB

Alan D. Gibbs  
Clayton Environmental Consultants  
1252 Quarry Lane  
P.O. Box 9019  
Pleasanton, CA 94566

Edgar Howell-File(JS)

**ATTACHMENT 3**

**SAMPLING PROTOCOLS**



## **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 Federal Express, 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.