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Specialists in Environmental Due
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MWs at 3093 Bldwy to S-SE

1/21/94 at 2915 Bldwy to SE

spoke w/ Lang to move MW to South-S east of former UST pit.
survey ~~Used~~ MWs at 3093 and tie in w/ GW elevation at 3080 to
confirm same aquifer and gradient.

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ALCO
HAZMAT

94 JAN 18 PM 2:36

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Specialists in Environmental Due Diligence and Remedial Services

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WORK PLAN
FOR
GROUNDWATER MONITORING WELL INSTALLATION

FORMER UNDERGROUND STORAGE TANK SITE
3080 BROADWAY
OAKLAND, CALIFORNIA

Prepared For

Mr. Gerald Shirar
7215 Pleasant Valley Road
Vacaville, CA 95688

AllWest Project No. 93337.23

January 10, 1994

Prepared by

REGISTERED PROFESSIONAL ENGINEER
LONG CHING
C 39467
EXP. 12/31/97
CIVIL
STATE OF CALIFORNIA

Long Ching, P.E.
Senior Project Manager

Reviewed by

Marc D. Cunningham, REA
President

AllWest

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January 10, 1994

Mr. Gerald Shirar
7215 Pleasant Valley Road
Vacaville, CA 95688

RE: Transmittal of Workplan for Groundwater Monitoring Well Installation
Former Underground Storage Tank Site at 3080 Broadway, Oakland, California
AllWest Project No. 93337.23

Dear Mr. Shirar:

AllWest Environmental is pleased to present the attached workplan for installing a groundwater monitoring well, and the sampling and testing of the well at the above referenced site. In accordance with your instruction, a copy of the workplan has been submitted to Ms. Eva Chu of Alameda County Department of Environmental Health in support of permit applications. For questions concerning this workplan, please call me or Marc Cunningham at (415) 391-2510.

Sincerely yours,

AllWest Environmental, Inc.

Long Ching, P.E.
Senior Project Manager

LC/bms

encls.

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WORK PLAN
FOR
GROUNDWATER MONITORING WELL INSTALLATION
AT
FORMER UNDERGROUND STORAGE TANK SITE
3080 BROADWAY
OAKLAND, CALIFORNIA

I. INTRODUCTION

This workplan describes a groundwater sampling program designed to collect baseline information on the groundwater condition at the subject site. The proposed groundwater sampling program is part of a preliminary site assessment (PSA) as required by the November 5, 1993 letter from Alameda County Department of Environmental Health.

Included with this workplan are 1) background information, 2) scope of proposed work, 3) descriptions of field procedures, drilling methods, and sampling protocols. Site location maps and a boring locations map are presented in Figures 1 through 3. Also included are example soil boring log, groundwater sampling log, and log legends (Appendix A), a diagram of groundwater well construction (Appendix B), and a site specific health and safety plan (Appendix C).

II. SCOPE OF WORK

The scope of work, as proposed by AllWest in this workplan, consists of the following tasks:

1) Prepare a workplan that outlines the proposed sampling and testing program and submit the workplan to the Alameda County Department of Environmental Health (ACDEH) for agency approval. Submit encroachment permit and excavation permit applications to City of Oakland Department of Public Works (CODPW) for necessary permits. Notify ACDEH of the planned drilling and sampling activities to allow for agency inspection as necessary.

2) Engage the service of a private underground utility locator and Underground Service Alert (USA) to locate and clear underground utilities within the proposed investigation area so that the potential of accidental damage to underground utilities will be reduced.

3) Advance one soil boring down-gradient from the former underground storage tank site. The proposed boring location is indicated on Figure 3 of this workplan. The boring will be drilled to a least 10 feet below the groundwater table, about 40 feet

deep. Soil samples will be obtained at 5 feet intervals. Convert the soil boring into a groundwater monitoring well after soil sampling is completed. Develop the well and collect a groundwater sample. Details of boring location scheme, drilling methods, sampling procedures, and quality control measures are discussed in Sections V and VI of this workplan.

4) Submit collected groundwater sample to a State of California certified laboratory for analyses of total petroleum hydrocarbons in both gasoline and diesel ranges, total oil and gease, and fuel related organics: benzene, toluene, ethylbenzene, and xylenes. Laboratory analyese will use the "standard" (2-week) turn-around-time schedule.

5) Interpret field and laboratory data, and prepare a written report describing the field activities, summarizing the findings and analytical results, and providing conclusions and recommendations.

III. WORKPLAN PREPARATION

A written workplan outlines the proposed work elements and procedures that will be prepared and submitted to ACDEH for agency review and approval. Street encroachment and excavation permit applications will be submitted to CODPW to obtain the necessary permits. The submission of this workplan to ACDEH and permit applications to CODPW constitutes the completion of this task.

IV. UNDERGROUND UTILITY CLEARING

To avoid damage to underground utility installations during the course of subsurface investigation, AllWest will contact *Underground Service Alert (USA)*, an organization for public utility information, on the pending subsurface investigation. *USA* then will notify each of the public and private entities that maintained underground utilities at the site to locate and mark their installations for field identification.

A private locator will also be employed by AllWest to conduct a magnetometer sweep of the investigation area to confirm the marked underground utilities and to located unmarked utilities, if any. Proposed well location will be relocated if in conflict with the underground utilities. The final well location will be cleared of known underground utilities.

V. FIELD INVESTIGATION AND SAMPLING

A. Drilling of Soil Borehole

Prior to the commencement of field work, ACDEH and CODPW will be notified to allow for agency inspection of drilling and/or sampling activities as necessary. One boring is planned for this investigation. The approximate location of the proposed borehole is shown on Figure 3. The borehole drilling will be performed by Soils Exploration Services, a drilling contractor with a valid C-57 license. The soil boring will be drilled with 3.75-inch inside diameter (I.D.) hollow stem augers. During the drilling operation, a field geologist from AllWest will be present to collect representative soil samples, to conduct field screening, and to maintain a continuous log.

The boring log will contain all pertinent information on drilling and soil conditions, in particular the lithology of the soils and any odor or discoloration that suggests contamination. Boring logs will be included in the final written report. A copy of the field boring log to be used, the boring log legend, and the Unified Soil Classification System (USCS) is included as Appendix A.

B. Soil Sampling Procedures

Soil samples will be obtained at regular intervals and where changes to stratigraphy occur. At a minimum, the sampling frequency will be every 5 feet to the boring termination depth of about 40 feet below the ground surface.

Soil samples will be obtained from within the borehole by advancing the boring to a point immediately above the sampling depth and driving a 2-inch split-spoon sampler (modified California sampler) into the soil through the hollow center of the drill auger. The soil sampler containing three separate six-inch brass sleeves will be driven 18 inches with a standard 140 pound hammer repeatedly dropped from a height of 30 inches. The number of blows to drive the sampler each successive 6 inches will be counted to evaluate the relative consistency of the soil.

All soil samples will be taken in 6-inch long by 2-inch diameter, pre-clean brass liners, capped at both ends with Teflon sheets and plastic end caps, sealed with inert silicon tapes, labeled, and kept refrigerated for subsequent laboratory analyses. Each soil sample will be field screened with a photo-ionizing detector (PID) and readings of the PID will be recorded on the boring logs.

C. Installation of Groundwater Monitoring Well

After soil sampling is completed, the boring will be converted into a groundwater monitoring well. The well will be installed through the center of the hollow stem augers. The augers will be removed after the well casing and filter pack is placed. Well casing composed of 2-

inch diameter, 40-schedule PVC, factory slotted pipes will be employed. The screen section of the casing will have 0.02-inch slots and extend at least 10 feet below and 5 feet above the groundwater table. The blank section will complete the well casing to the ground surface.

The filter pack around the well screen will be pre-washed #3 Monterey sand placed from the bottom of the well up to one foot above the screen section. A 1-foot bentonite seal will then be place above the filter pack to prevent surface water infiltration. The remaining length of the annular space in the well borehole will be backfilled with neat cement grout up to 2 feet below the ground surface. The uppermost two feet of the well casing will be protected by a traffic-rated Christy box set in concrete. A water-tight lockable end-cap will be placed on top of the well casing to prevent surface water intrusion and unauthorized access. A diagram of typical groundwater monitoring well construction is included as Appendix B.

D. Groundwater Sampling Procedures

The groundwater monitoring well will be developed and sampled at least 48 hours after the installation of the well to allow stabilization of the subsurface conditions. The well will be developed with the combination of pumping and surging. Well development is considered complete when groundwater is relatively sediment-free.

The groundwater will be sampled after a proper purging process. Prior to well purging, an electric water level sounder will be lowered into the well casing to measure the depth to the water to the nearest 0.01 feet. A clear teflon bailer will then be lowered into the well casing and partially submerged. Upon retrieval of the clear bailer, the surface of the water column retained in the bailer will be carefully examined for any floating product or product sheen.

After all initial measurements are completed and recorded, the well will be purged by an electrical submersible pump. A minimum of 3 to 5 well volumes of groundwater will be purged and the groundwater physical property indicators (temperature, pH, and conductivity) monitored at each well volume interval. Purging is considered complete when indicators are stabilized (consecutive readings within 10% of each other) and the purged water is relatively free of sediments. All purged water will be temporarily stored on-site in 55-gallon drums awaiting test results to determine the proper disposal method.

Groundwater sampling will be conducted after the water level has recovered to at least 80% of the initial level, recorded prior to purging. The groundwater sample will be collected by a disposable bailer. Upon retrieval of the bailer, the retained water will be carefully transferred to appropriate containers furnished by the analytical laboratory. All sample containers will have a teflon lined septum/cap and be filled such that no headspace was present. Then the container will be labeled and immediately placed on ice to preserve the chemical characteristics of its content.

To prevent cross contamination, all groundwater sampling equipment that comes in contact with the groundwater will be thoroughly decontaminated prior to each well sampling event. Disposable bailers, discarded after each well sampling event, will be used. Sample handling, storage, and transport procedures described in the following sections will be employed.

VI. Quality Assurance/Quality Control Program

A. Sample Preservation, Storage and Handling

To prevent the loss of constituents of interest, all samples will be preserved by storing in an ice chest cooled to 4°C with crushed ice immediately after collection and during transportation to the laboratory. Standard chain-of-custody protocols will be followed through all stages of sample handling.

B. Field Quality Control Samples

To detect the occurrence of cross-contamination during sampling events and to reduce the probability of false-positive results, the following procedures will be observed during sampling of this project: 1) Duplicate samples will be obtained once a day or once every twenty samples obtained. The duplicate samples will be obtained from sampling points which are known or suspected to be contaminated. 2) A field or travel blank will be included with each shipment of samples to the laboratory.

C. Chain-Of-Custody Program

All samples collected for this project will be traveled under the chain-of-custody protocol. The chain-of-custody program allows for the tracing of possession and handling of individual samples from the time of field collection through laboratory analysis. The document includes the signature of the collector, date and time of collection, sample number, number and type of sample containers including preservatives, parameters requested for analysis, signatures of persons and inclusive dates involved in the chain of possession. Upon delivery to the laboratory the document will also include the name of person receiving the samples, and date and time samples were received. A sample copy of the chain-of-custody form is included in Appendix A.

D. Decontamination Procedures and Waste Disposal

During the field investigations all down-hole tools, such as augers, probes, rods, will be thoroughly steam cleaned prior to drilling the borehole. All soil/groundwater sampling and well development equipment will be thoroughly cleaned in an Alconox (or other phosphate-free detergent) solution and rinsed with potable water prior to each use. The rinsate will be contained along with the steam cleaning rinsate from the auger decontamination described above. Disposable sampling devices will be employed where applicable to reduce the frequency of re-using the same equipment. Soil cuttings from drilling operations and rinsate water from decontamination will be contained in 55-gallon drums that meet Department of Transportation (DOT) specifications and stored temporarily on-site. Proper disposal methods for these drummed materials will be determined based on analytical findings.

VII. ANALYTICAL METHODS

The collected groundwater sample will be chemically analyzed by *Priority Laboratory*, a California Department of Health Services (DHS) certified analytical laboratory. Analytical methods proposed for this investigation include total petroleum hydrocarbons in gasoline and diesel ranges (TPH-g & TPH-d) by modified EPA method 8015, oil & grease by EPA method 5520, and fuel related volatile organics (BTEX) by EPA method 602/8020. The samples will be analyzed under the "standard" two-week turn-around time schedule.

VIII. REPORT PREPARATION

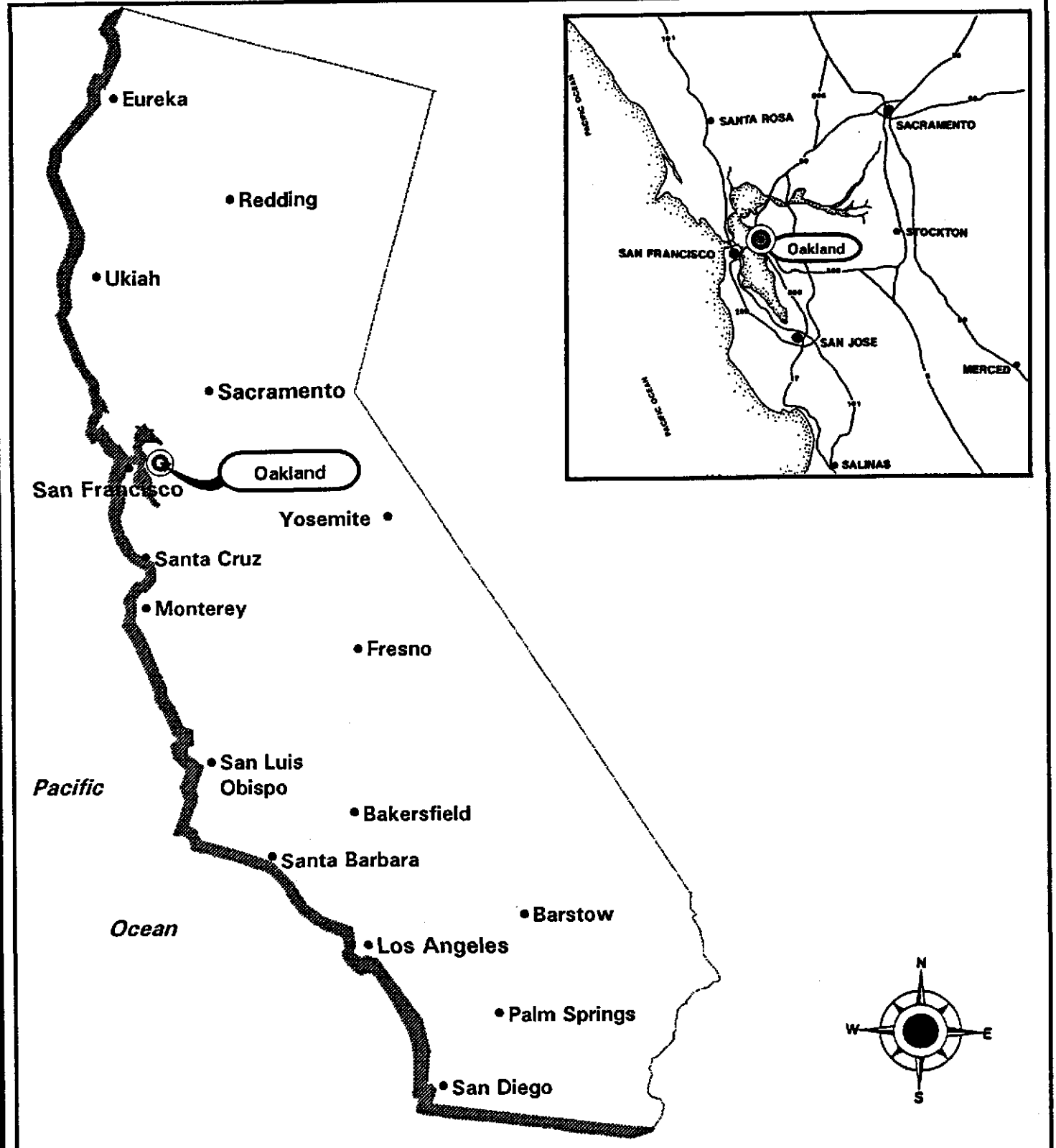
A written report summarizing the results of this investigation will be prepared at the completion of the program and submitted to Mr. Gerald Shirar for distribution. The report will contain descriptions on field activities, soil profile, laboratory results, and conclusions and recommendations. Also included in the report will be boring/well location map, logs of soil boring and groundwater sampling, and copy of chain-of-custody documents and analytical laboratory reports.

IX. PROJECT STAFF AND SCHEDULE

Mr. Long Ching, a California registered civil engineer, will provide technical oversight for this project and act as the project manager and regulatory liaison. Additionally, AllWest's staff of engineers, geologists, and technicians will be employed to perform the various tasks of the project.

The borehole drilling, soil sampling, and groundwater well installation part of the field investigation program is planned for one day. Another day of field activities is scheduled for groundwater sampling. A two-week turn-around time schedule is planned for laboratory analyses. A verbal report will be available one day after the analytical results are available. A formal written report will be prepared in two weeks after the completion of all field and laboratory work. The total project time span for this subsurface investigation is estimated at four to six weeks after the approval of this work plan.

FIGURES



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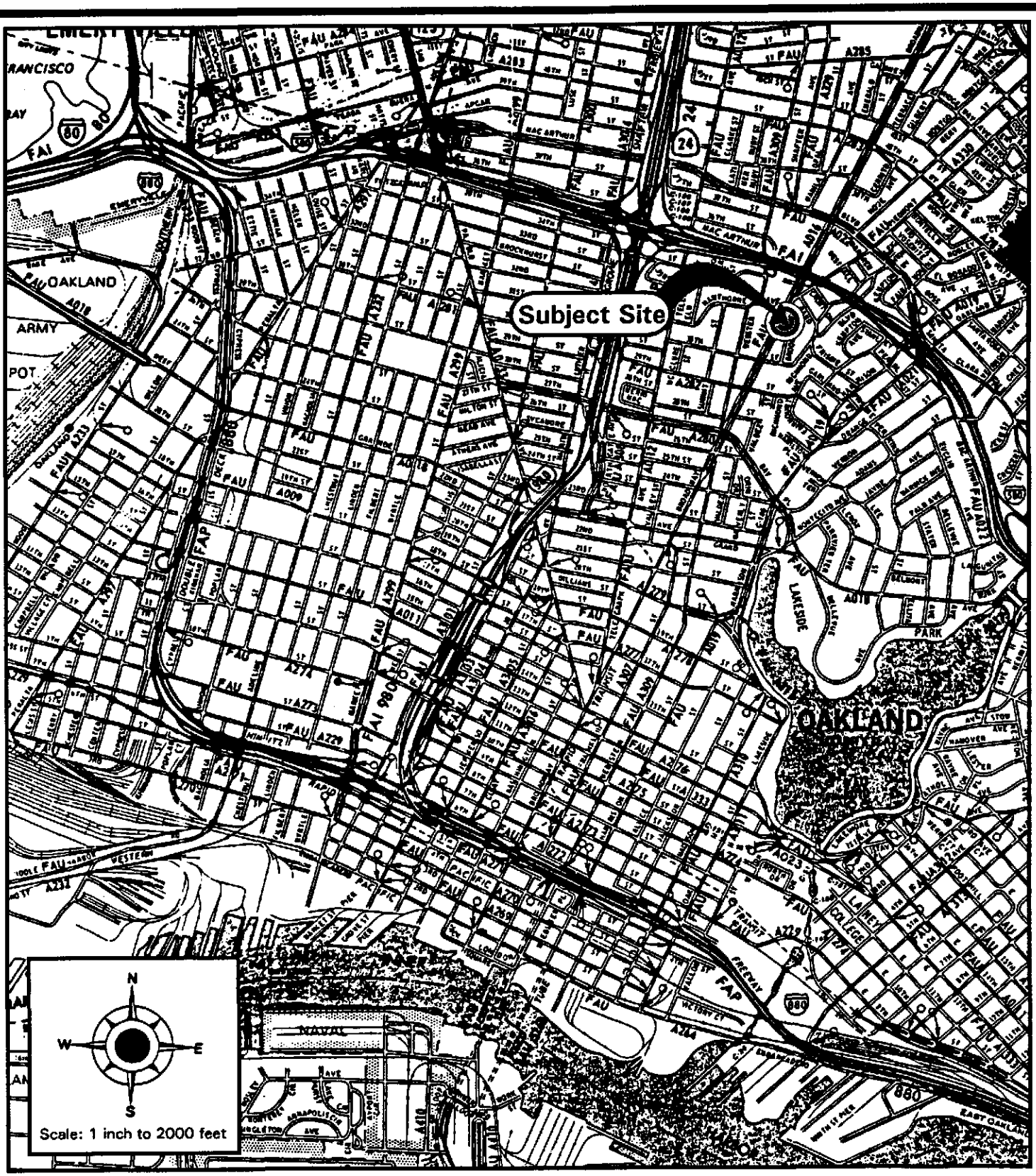
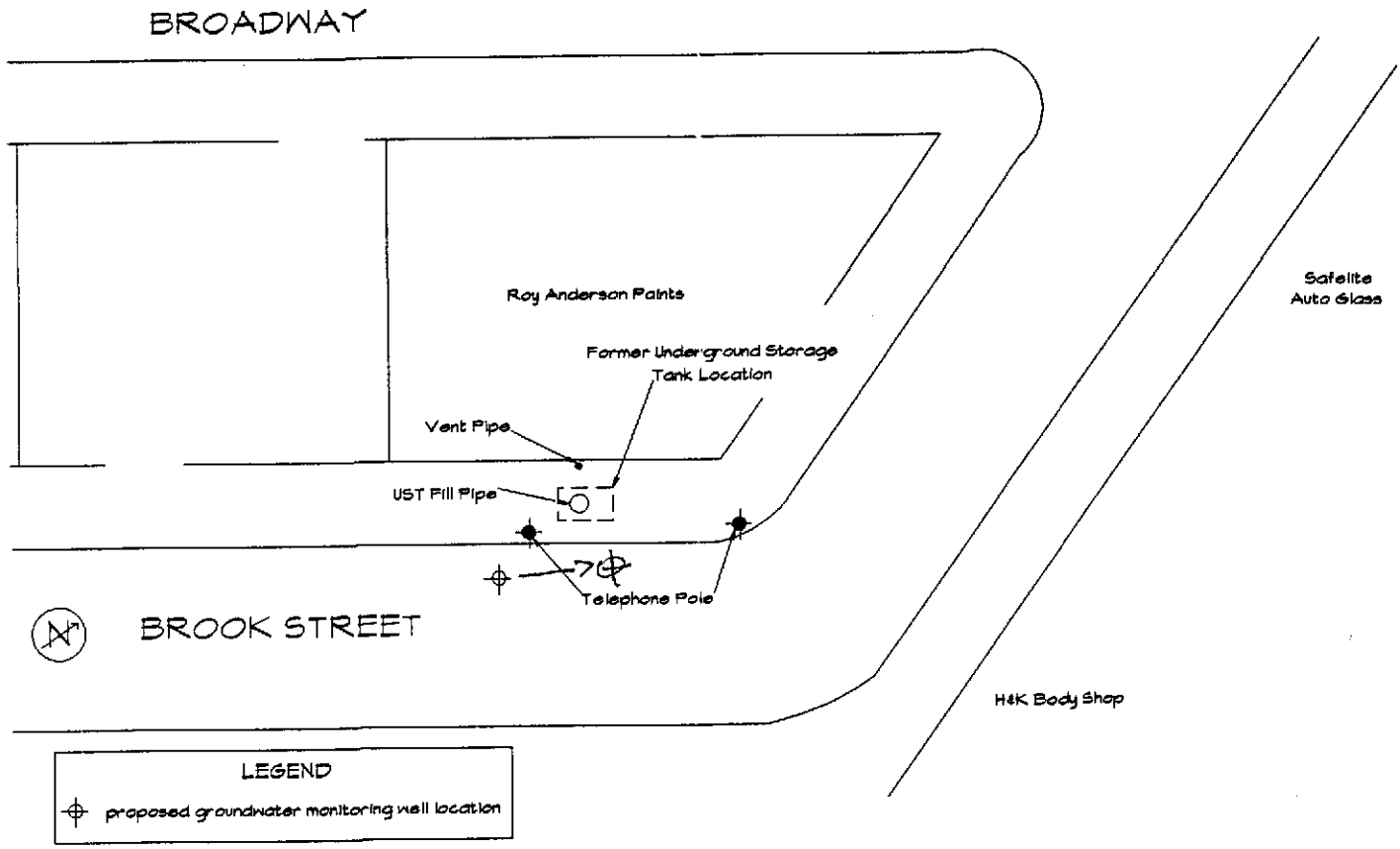
January 1994	**Site Location Map**	Project 93337.23	Figure 1
3080 Broadway, Oakland, California			Source *AllWest*



AllWest
AllWest Environmental, Inc.

January 1994	**Site Vicinity Map**	Project 93337.23	Figure 2
3080 Broadway, Oakland, California			Source *CA DOT*



AllWest Environmental, Inc.	January 1994	**Site Plan**	Project 93337.23	Figure 3
	3080 Broadway, Oakland, California			Source *AllWest*

APPENDIX A

UNIFIED SOIL CLASSIFICATION SYSTEM

PRIMARY DIVISIONS			GROUP SYMBOL	SECONDARY DIVISIONS
COARSE GRAINED SOIL	GRAVELS More than half of course fraction is larger than No. 4 sieve.	Clean gravels (less than 5% of fines)	GW	Well graded gravel-sand mixtures, little or no fines.
			GP	Poorly graded gravels or gravel-sand mixtures, little or no fines.
		Gravel with fines	GM	Silty gravels or gravel-sand-silt mixtures, with non-plastic fines.
			GC	Clayey gravels or gravel-sand-clay mixtures, with plastic fines.
	SANDS More than half of course fraction is smaller than No. 4 sieve.	Clean sands (less than 5% of fines)	SW	Well graded sands or gravelly sands, little or no fines.
			SP	Poorly graded sands or gravelly sands, little or no fines.
		Sands with fines	SM	Silty sands or sand-silt mixtures, with non-plastic fines.
			SC	Clayey sands or sand-clay mixtures, with plastic fines.
FINE GRDINED SOIL	SILTS AND CLAYS Liquid Limit less than 50%		ML	Inorganic silts and very fine sands, rock flour, or clayey silts, with slight plasticity.
			CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays.
			OL	Organic silts and organic silty clays of low plasticity.
	SILTS AND CLAYS Liquid Limit greater than 50%		MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts.
			CH	Inorganic clays of high plasticity, fat clays.
			OH	Organic clays of medium to high plasticity, organic silts.
HIGHLY ORGANIC SOILS			PT	Peat and other highly organic soils.

BORING LOG LEGEND

- Sampler Drive Interval
- Relatively Undisturbed Sample Recovered and Preserved
- Sampler Driven, No Sample Recovery
- Disturbed Sample Recovered and Preserved

ALLWEST ENVIRONMENTAL	LOG OF BORING:	SHEET 1 OF
	PROJECT NAME:	
	PROJECT NUMBER:	
	DRILLING DATE:	

DRILLING CONTRACTOR:
DRILL RIG: AUGER:
SAMPLER: HAMMER:
LOGGED BY: CHECKED BY:

Blow Count	Well	Depth in Feet	Sample Interval	USCS Code	Soil Description
		0 – 1 – 2 – 3 – 4 – 5 – 6 – 7 – 8 – 9 – 10 – 11 – 12 – 13 – 14 – 15 – 16 – 17 – 18 – 19 – 20 –			

BORING: PROJECT: SHEET OF

Blow Count	Well	Depth in Feet	Sample Interval	USCS Code	Soil Description
		20 –			
		21 –			
		22 –			
		23 –			
		24 –			
		25 –			
		26 –			
		27 –			
		28 –			
		29 –			
		30 –			
		31 –			
		32 –			
		33 –			
		34 –			
		35 –			
		36 –			
		37 –			
		38 –			
		39 –			
		40 –			

COMMENTS:

WATER LEVEL					BORING DEPTH =
TIME					
DATE					

Boring2

Groundwater Monitoring Well Sampling Field Log

Project No.: _____ Project Name: _____

Well No.: _____ Well Location: _____

Well Depth: _____ (ft.) Casing Diameter: _____ (in.)

Depth to Water: _____ (ft.) Date: _____ Time: _____

Water Column Volume: _____ (gal.) Odor? _____

Free Product? _____ Free Product Thickness: _____

Purging Method: Hand Pump _____ Submersible Pump _____ Bailer _____ Other _____

Time	pH	Conduc. (s/cm)	Temp. (F)	Water Level	Volume Removed	Remark

Purging Start Time: _____ Purging Stop Time: _____

Total Volume Purged: _____ (gal.) Well Dewater? _____

Water Level Prior to Sampling: _____ (ft.) Time: _____

Sampling Method: Teflon Bailer _____ Disposable Bailer _____ Sampling Pump _____

Sample Collected: _____ Sample No.: _____

Remark: _____

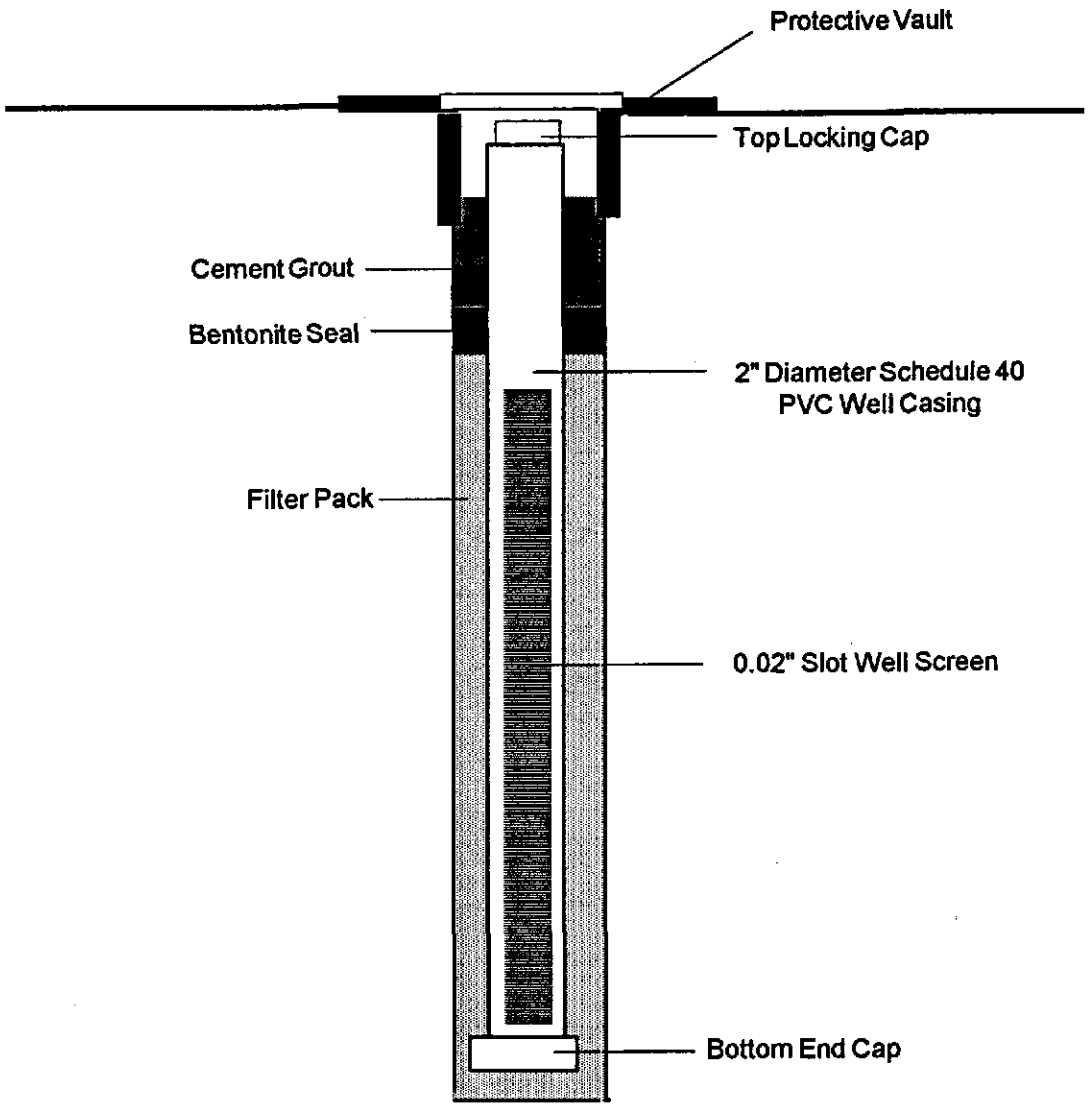
_____

_____

Sampler: _____ Date/Time: _____

APPENDIX B

Typical Groundwater Monitoring Well Construction Schematic



* Not to Scale *

AllWest AllWest Environmental, Inc.	January 1994	**Monitoring Well Diagram**	Project 93327.23	Figure B-1
	3080 Broadway, Oakland, California			Source *AllWest*

APPENDIX C

AllWest Environmental, Inc.

Specialists in Environmental Due Diligence and Remedial Services

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San Francisco, Ca 94104
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Site Specific Health and Safety Plan

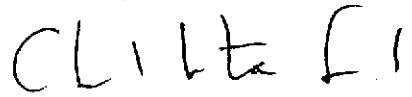
Subsurface Investigation
at
3080 Broadway
Oakland, California

ALLWEST PROJECT NO. 93337.23
January 7, 1993

Prepared by:

Long Ching
Senior Project Manager

Approved by:



Anibal Mata-Sol
Health & Safety Manager

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TABLES, FIGURES AND ATTACHMENTS

AllWest

SITE SPECIFIC HEALTH & SAFETY PLAN

Subsurface Investigation
Former Underground Storage Tank Site
3080 Broadway, Oakland, California

I. ENTRY OBJECTIVES

AllWest Environmental, Inc. (AllWest) and Soils Exploration Services (CONTRACTOR) plan to advance soil boring and install groundwater monitoring well at the subject site. AllWest will be on site to direct the overall project and record field information. CONTRACTOR will be on site to perform soil drilling, soil sampling, and well installation. The investigation is planned for January of 1994.

II. ON-SITE ORGANIZATION AND COORDINATION

The following personnel are designated to carry out the job function(s):

Project Manager	Long Ching, AllWest Environmental
Project Geologist	Marvin Snapp, AllWest Environmental
Health & Safety Manager	Anibal Mata-Sol, AllWest Environmental
Site Safety Officer	Long Ching, AllWest Environmental
Contractor	Scott Fitchie, Soils Exploration Services

Other personnel scheduled to be on site:

None

All personnel arriving/departing the site must notify the Project Manager and the CONTRACTOR's Site Superintendent or Foreman.

III. SITE BACKGROUND

Site Status: __ Active _X_ Inactive __ Unknown

Site Description:

The site is a commercial property located north of downtown Oakland with a street address of 3080 Broadway. It is on the southeast corner of the intersection between Broadway and Brook Street. The site is currently vacant. The area of concern is a

former underground storage tank site behind the building, on the west side of Brook Street. The tank was removed in May 1993 by Versar and the soil samples collected from the tank pit indicate detectable concentrations of petroleum hydrocarbon.

Waste Types: X Liquid X Solid __ Sludge __ Gas __ None

Waste Characteristics:

__ Corrosive	__ Flammable	__ Inert
__ Volatile	__ Reactive	__ Toxic
__ Radioactive	X Irritant	__ Other

Waste Categories: Wastes that may be encountered during the proposed work are soil cuttings and decontamination rinsate (rinse water from drilling tool decontamination) containing petroleum hydrocarbons.

IV. HAZARDS

Hazards Rating: __ High __ Moderate X Low __ Unknown

Hazards/Toxic Substances Likely To Be Encountered: Hazards likely to be encountered on site are limited to soil contaminated with petroleum hydrocarbons. Observe the necessary precautions while handling this material.

Reactivity, Stability, Flammability Of Substance(s) Exist On Site: Information indicate that soils at the site may contain petroleum hydrocarbons from surface spills. The most likely type of petroleum hydrocarbons is diesel fuel. Soil and water contaminated with this type of material has a low potential to be flammable and irritable. Refer to Table 1, Definition of Hazard Evaluation Guidelines and MSDS sheets for additional information.

Area Affected: All of the work areas included in this subsurface investigation program are likely to be impacted by petroleum hydrocarbons.

Weather Conditions Anticipated: Possible adverse weather conditions to be anticipated on site are cold temperatures with moderate winds and some possibility of rain. The work areas are exposed and may be affected by adverse weather conditions.

V. PERSONAL PROTECTION

The level of personal protection designated here should be considered the minimal acceptable level. Project personnel may elect to upgrade the level of protection at their discretion.

Level of Protection Required: __A __B __C _X_D (Minimum)

Level D protection includes hard hats, safety glasses, and steel toed boots.

Personal Protective Equipment: A minimum of Level D protection will be required on site for all personnel. Safety glasses, hearing protection, and neoprene gloves will be worn if conditions warrant them. The presence of volatile organic compounds will be monitored with an Organic Vapor Meter (OVM). Should the level of volatiles present in the breathing zone increase to 100 ppm, Level C protection will be required. Level C protection includes PVC boots, a tyvek suit, an air purifying respirator with combination cartridges (volatiles and particulates), and protective gloves in addition to the Level D protection.

Equipment: Health and Safety related equipment to be used on site includes: two 20 BC type Fire Extinguishers, one Organic Vapor Meter (OVM), and one First Aid Kit. The equipment will be provided by the CONTRACTOR.

VI. DECONTAMINATION PROCEDURES

All operations conducted at this site have the potential to contaminate monitoring equipment and personal protective equipment (PPE). To prevent the transfer of contamination to vehicles, administrative areas and personnel, the following procedures must be followed:

- Equipment Decontamination

  Whenever possible, equipment should be decontaminated with a solution of Alconox or soap and thoroughly rinsed with water prior to leaving the site. This must be done outside a 10-foot radius of any work area.

- Personal Decontamination

  Level D
  Segregated equipment drop
  Wash/rinse outer boot (as appropriate)
  Wash/rinse chemical resistant outer glove, then remove (as appropriate)
  Remove hard hat, goggles/safety glasses/face shield
  Remove and throw out inner disposable gloves in designated lined receptacles (as appropriate)

  Level C
  Segregated equipment drop
  Wash/rinse outer boots
  Wash/rinse chemical resistant outer gloves, then remove
  Remove outer boots and place to dry (if reusable)

Remove chemical resistant suit (remove by rolling down the suit)
Remove first pair(s) of disposable gloves
Remove respirator/hard hat/face shield dispose of cartridges and wash respirator
Remove last pair of disposable gloves

Level B
Segregated equipment drop
Wash/rinse outer boots
Wash/rinse chemical resistant outer gloves, then remove
Cross hotline (into clean area) and change air tanks, then redress or
Cross hotline (into clean area)
Remove boots and gloves
Remove SCBA, if worn over chemical resistant suit
If SCBA is worn under the suit, remove the chemical resistant suit then the SCBA
Remove hard hat

VII. CHEMICAL OF CONCERN

Potential health effects from a chemical exposure are dependant on several exposure factors such as: toxicity of substances, duration of exposure, concentration during exposure and the overall health of the person exposed.

The hazardous chemicals encountered during this investigation are anticipated to be: medium to high boiling point petroleum hydrocarbons (diesel fuel). The following is a health analysis of the chemical.

- Petroleum Hydrocarbons (petroleum fuels and oils)

  Exposure to petroleum hydrocarbons is usually via skin contact or by ingestion. This chemical is not readily absorbed into the body through skin contact but is readily absorbed by ingestion. Exposure to petroleum hydrocarbons may result in skin rash, dizziness, flushing of the face, drowsiness, incoordination, abnormal gait, tremor, confusion, respiratory depression, and cardiac arrhythmias. Long-term high level exposure to petroleum hydrocarbons may lead to liver and kidney damage.

VIII. MSDS INFORMATION

Material Safety Data Sheets (MSDS) on chemical substances encountered at the site shall be made available to all persons (including subcontractors) working at the site. For emergency situation not specifically addressed by this site safety plan refer to MSDS recommendations for action information.

IX. GENERAL PROJECT SAFETY REQUIREMENTS

Project activities will be conducted in accordance with the following minimum safety requirements:

Eating, drinking, and smoking will be restricted to designated areas.

Gross decontamination and removal of all personal protective equipment will be performed prior to leaving the site. Contaminated clothing will be removed and collected in a drum for disposal.

Shaking or blowing of potentially contaminated clothing or equipment to remove dust or other materials is not permitted.

The Site Safety Officer will be responsible for taking necessary steps to protect employees from physical hazards, including

Falling objects, such as tools or equipment.
Falls from elevations.
Tripping over hoses, pipes, tools, or equipment.
Slipping on wet or oily surfaces.
Insufficient or faulty protective equipment.
Insufficient or faulty equipment or tools.

All personnel will be required to wash their hands and faces before eating, drinking or smoking.

Field operations personnel will be cautioned to inform each other of the non-visual effects of the presence of toxics, such as,

Headaches
Dizziness
Nausea
Blurred vision
Cramps
Irritation of eyes, skin, or respiratory tract
Changes in complexion or skin discoloration
Changes in apparent motor coordination
Changes in personality or demeanor
Excessive salivation or changes in pupillary response
Changes in speech ability or pattern

Exposure To Cold Stress: Work schedules will be adjusted to provide sufficient rest periods in a heated area for warming up during operations conducted in cold weather. Also thermal protective clothing such as wind and/or moisture resistant outer wear is recommended to be worn. Dehydration, or the loss of body fluids, occurs in a cold

environment and may increase the susceptibility of the worker to cold injury due to a significant change in blood flow to the extremities. Warm sweet drinks and soups should be provided at the work site to provide caloric intake and fluid volume. The intake of coffee should be limited (Adopted from TLV's and Biological Exposures Indices 1988-1989; ACGIH)

X. MEDICAL SURVEILLANCE

CONTRACTOR and subcontractors engaged in project activities must be participants in a medical surveillance program and must be cleared by the examining physician(s) to wear respiratory protection devices and protective clothing for working with hazardous materials. The applicable requirements under 29 CFR 1910.120 of the Federal Administrative Code will also be observed.

XI. SAFETY AND ORIENTATION MEETING

Field personnel from the CONTRACTOR and its subcontractors will attend a project-specific orientation meeting for safety issues and review the project tasks before beginning work. The meeting will be led by the CONTRACTOR's site foreman. In addition, fit-testing of respiratory protective devices will be conducted as part of the safety orientation meeting when the use of a respirator may be required.

XII. WORK ZONES AND SECURITY MEASURES

The area where active excavation work is being performed will be designated as an Exclusion Zone. Only essential personnel will be allowed into an Exclusion Zone. When it is practical and local topography allows, approximately 20 to 75 feet of space surrounding the Exclusion Zone will be designated as a Contamination Reduction Zone.

XIII. TRAFFIC CONTROL

The CONTRACTOR is responsible for providing necessary traffic controls if required. Cones, wooden barricades, or a suitable alternative will be used to deny the public access to the Contamination Reduction Zone. If for any reason the safety of a member of the public (e.g., motorist or pedestrian) may be endangered, work will cease until the situation is remedied. Cones and warning signs will be used when necessary to redirect motorists or pedestrians.

XIV. PROJECT PERSONNEL

AllWest Environmental, Inc. will oversee and act accordingly during all phases of the project. The following management structure will be instituted for the purpose of successfully and safely completing this project.

Project Manager

The Project Manager will be responsible for implementing the project and obtaining any necessary personnel or resources for the completion of the project. Specific duties will include:

Coordinating the activities of CONTRACTOR and all subcontractors, to include informing them of the required personal protective equipment and insuring their signature acknowledging this Site Health and Safety Plan (Attachment A);

Selecting a Site Safety Officer and field personnel for the work to be undertaken on site;

Ensuring that the tasks assigned are being completed as planned and on schedule;

Providing authority and resources to ensure that the Site Safety Officer is able to implement and manage safety procedures;

Preparing reports and recommendations about the project to clients and affected AllWest Environmental, Inc. personnel;

Ensuring that persons allowed to enter the site (i.e., EPA, contractors, state officials, visitors) are made aware of the potential hazards associated with the substances known or suspected to be on site, and are knowledgeable as to the on-site copy of the specific site health & safety plan;

Ensuring that the Site Safety Officer is aware of all of the provisions of this site safety plan and is instructing all personnel on site about the safety practices and emergency procedures defined in the plan; and

Ensuring that the Site Safety Officer is making an effort to monitor site safety, and has designated a Field Team Leader to assist with the responsibility when necessary.

Health & Safety Manager

The Health & Safety Manager shall be responsible for the overall coordination and oversight of the site health and safety plan. Specific duties will include:

Approving the selection of the types of personal protective equipment (PPE) to be used on site of specific tasks;

Monitoring the compliance activities and the documentation processes undertaken by the Site Safety Officer;

Evaluating weather and chemical hazard information and making recommendations to the Project Manager about any modifications to work plans or personal protection levels in order to maintain safety;

Coordinate upgrading or downgrading PPE with Site Safety Officer, as necessary, due to changes in exposure levels, monitoring results, weather, other site conditions;

Approving all field personnel working on site, taking into consideration their level of safety training, their physical capacity, and their eligibility to wear the protective equipment necessary for their assigned tasks (i.e., Respirator Fit Testing Results); and

Overseeing the air monitoring procedures as they are carried out by site personnel for compliance with all company health and safety policies.

Site Safety Officer

The Site safety Officer shall be responsible for the implementation of the site safety plan on site. Specific duties will include:

Monitoring the compliance of field personnel for the routine and proper use of the PPE that has been designated for each task;

Routinely inspecting PPE and clothing to ensure that it is in good condition and is being stored and maintained properly;

Stopping work on the site or changing work assignments or procedures if any operation threatens the health and safety of workers or public;

Monitoring personnel who enter and exit the site and all controlled access points;

Reporting any signs of fatigue, work-related stress, or chemical exposures to the Project Manager and/or Health & Safety Manager;

Dismissing field personnel from the site if their actions or negligence endangers themselves, co-workers, or the public, and reporting the same to the Project Manager and/or Health & Safety Manager;

Reporting any accidents or violations of the site safety plan to the Project Manager and/or Health & Safety Manager, and documenting the same for the project in the project records;

Knowing emergency procedures, evacuation routes and the telephone numbers of the ambulance, local hospital, poison control center, fire and police departments;

Ensuring that all project-related personnel have signed the personnel agreement and acknowledgment form contained in this Site Health & Safety Plan;

Coordinate upgrading and downgrading PPE with the Health & Safety Manager, as necessary, due to changes in exposure levels, monitoring results, weather, and other site conditions; and

Perform air monitoring with approved instruments in accordance with requirements stated in this Site Health & Safety Plan.

XV. AMENDMENTS

Any changes in the scope of work of this project and/or site conditions must be amended in writing on the Site Health and Safety Plan Amendment Sheet (Attachment B) and approved by the Health and Safety Manager.

XVI. EMERGENCY RESPONSE PROCEDURES

In the event of an accident resulting in physical injury, first aid will be administered and the injured worker will be transported to the nearest hospital or emergency medical clinic for emergency treatment. A physician's attention is required regardless of the severity of the injury.

In the event of a fire explosion, or property damage, AllWest will be immediately notified. If necessary, local fire or response agencies will be called.

The CONTRACTOR shall develop a contingency plan which address procedures to be followed in the event of fire, personal accidents and explosions which may result in environmental contamination. The plan shall be reviewed and approved by AllWest before work commences.

EMERGENCY TELEPHONE NUMBERS

Fire and Police:	911
Ambulance:	911
AllWest:	415-391-2510
Contractor:	707-745-2928
Underground Service Alert (USA):	800-422-4133
CHEMTREC:	800-424-9300

Note: Only call CHEMTREC in an emergency. CHEMTREC is an Acronym for Chemical Transportation Emergency Center, a public service of the Chemical Manufacture's Association. CHEMTREC can usually provide hazard information warnings and guidance when given the identification number of the name of the product and the nature of the problem. CHEMTREC can also contact the appropriate experts.

MEDICAL:

Highland General Hospital
1411 E. 31st Street
Oakland, California
(510) 534-8055

XVII. LIMITATIONS AND AUTHORITY STATEMENT

AllWest Environmental does not guarantee the health or safety of any persons entering this site. Due to the potential hazards of this site and the activity occurring thereon, it is not possible to discover, evaluate, and provide protection for all possible hazards which may be encountered. Strict adherence to the HEALTH & SAFETY guidelines set forth herein will reduce, but not eliminate, the potential for injury at this site. The HEALTH & SAFETY guidelines in this plan were prepared specifically for this site and should not be used on any other site without prior research and evaluation by personnel trained in HEALTH & SAFETY practices. The Allwest Project manager will be responsible for implementing this plan. Both the AllWest Project Manager and the Health & Safety manager have the authority to audit site activities for compliance with this plan and may suspend, modify or halt contractors' work practices should they not meet the requirements specific to this plan.

TABLE 1
DEFINITION OF HAZARD EVALUATION GUIDELINES

HAZARD: Airborne Contaminants

Guideline	Explanation
Threshold Limit Value Time-Weighted Average (TLV-TWA)	The time-weighted average concentration for a normal 8-hour work day and a 40-hour work week, to which nearly all workers may be repeatedly exposed without adverse effect.
Permissible Exposure Limit (PEL)	Time-weighted average concentrations similar to (and in many cases derived from) the Threshold Limit Values >
Immediately Dangerous to Life and Health (IDLH)	"IDLH" or "immediately dangerous to life or health" means any atmospheric condition that poses an immediate threat to life, or which is likely to result in acute or immediate severe health effects. This includes oxygen deficiency conditions.

HAZARD: Explosion

Guideline	Explanation
Lower Explosive Limit (LEL)	The minimum concentration of vapor in air below which propagation of a flame will not occur in the presence of an ignition source.
Upper Explosive Limit (UEL)	The maximum concentration of vapor in air above which propagation of a flame will not occur in the presence of an ignition source.

HAZARD: Fire

Guideline	Explanation
Flash Point (flash p)	The lowest temperature at which the vapor of a combustible liquid can be made to ignite momentarily in air.

ATTACHMENT A

AGREEMENT AND ACKNOWLEDGEMENT STATEMENT

Site Health and Safety Plan Agreement

AllWest personnel have the authority to stop work performed by the Contractor and his subcontractors at this site if any work is not performed in accordance with the requirements of this Site Health and Safety Plan.

AllWest Environmental, Inc., project personnel contractor and subcontractor personnel are required to sign the following agreement prior to conducting work at the site.

1. I have read and fully understand the Site Health and Safety Plan and my individual responsibilities.

2. I agree to abide by the provisions of the Site Safety Plan.

Name	Signature
Company	Date
Name	Signature
Company	Date
Name	Signature
Company	Date
Name	Signature
Company	Date

ATTACHMENT B

SITE SAFETY PLAN AMENDMENT SHEET

Project Name: _____

Project Number: _____

Location: _____

Changes in field activities or hazards:

Proposed Amendment:

Proposed by: _____ Date: _____

Approved by: _____ Date: _____
Project Manager

_____ Date: _____
Health & Safety Manager

Declined by: _____ Date: _____

Amendment Number: _____

Amendment Effective Date: _____